

**NATIONWIDE
PERSONAL
TRANSPORTATION
STUDY**

AUTOMOBILE OWNERSHIP

REPORT NO. 11

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Nationwide Personal Transportation Study
Automobile Ownership
Report No. 11

Reported by:

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Introduction

Knowledge of factors underlying automobile ownership are useful in evaluating current transportation facilities, estimating future needs for highway services and forecasting future trends in highway transportation modes. This report presents data compiled from the Nationwide Personal Transportation Survey concerning the variables affecting household automobile ownership, and represents the most complete national overview to date.

Description of Data

Data collected in this survey were used to study the effect of selected variables on car ownership. The first part of the report relates car ownership to such household characteristics as place of residence of principal driver by incorporated places and unincorporated areas and size of the standard metropolitan statistical areas (SMSA's), income and household composition including number of occupants and number of licensed drivers. The second part of the report relates car ownership to characteristics of the automobile including age of the automobile and automobile ownership rates by place of residence and household income. The third part of the report relates car ownership to characteristics of vehicle trips and vehicle-miles of travel and person trips and person-miles of travel. Daily trip generation rates and miles of travel per household are included.

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Highlights

- . . . Almost 80 percent of all households in the United States own a car: 48 percent have one car, 26 percent have two cars, and 5 percent have three-or-more cars; the remaining 21 percent do not own a car.
- . . . The incidence of car ownership increases as income increases. About 37 percent of household with incomes of less than \$3,000 annually own a car compared to 99 percent of households with incomes of \$15,000 and over.
- . . . More than half of households without a car made less than \$3,000 annually, while more than 70 percent of households with incomes of \$15,000 and over are multiple-car owners.
- . . . The number of adults (person 16 years of age and older) in a household determines to a large degree the number of cars in a household.
- . . . The number of licensed drivers in the household is directly related to the number of cars in the household.
- . . . The percent of households with a licensed driver increases as income increases.
- . . . The percent of late-model cars increases slightly as the number of cars per household increases.
- . . . Considering all year-models, cars purchased as new appear to have higher average annual miles per vehicle than cars purchased as used, regardless of the number of cars in the households.
- . . . More than half of all automobiles are in two-driver households.
- . . . One and two-car households each generate about 42 and 44 percent of all vehicle trips respectively, while three-or-more car households make only 10 percent of all vehicle trips.
- . . . The average household makes 6.2 person trips by automobile daily; 5.9 person trips for one-car households, 9.1 person trips for two-car households and 12.4 person trips for three-or-more car households.
- . . . An increase in number of household occupants results in an increase in the number of daily person trips per household.
- . . . Daily person trips per household increase with increased car ownership during each season of the year; however, person-miles of travel per household increase only during the fall and winter.

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BACKGROUND AND PROCEDURES

Background

The Nationwide Personal Transportation Survey was designed to obtain up-to-date information on national patterns of travel. Earlier surveys, limited primarily to automobile and truck travel, were conducted in a number of States between 1930-1940 and more recently between 1951-1959. In April 1961 a national survey was conducted to estimate characteristics of travel and ownership and use of automobiles. In this national survey, family income data were available which could be related to travel patterns.

Survey procedures

Data for the Nationwide Personal Transportation Survey were collected in 1969-1970 by the Bureau of the Census of the Department of Commerce for the Federal Highway Administration of the Department of Transportation.

The survey was based on a multi-stage probability sample of housing units located in 235 sample areas, comprising 485 counties and independent cities, representing every State and the District of Columbia. The 235 sample areas were selected by grouping all the Nation's counties and independent cities into about 1,900 primary sample units (PSU's) and further forming 235 strata containing one or more PSU's that was relatively homogeneous according to socio-economic characteristics. Within each of the strata, a single PSU was selected to represent the stratum. Within each PSU, a probability sample of housing units was selected to represent the civilian non-institutionalized population.

The households in the Nationwide Personal Transportation Survey comprised two outgoing panels in the Quarterly Housing Survey (QHS) conducted by the Bureau of the Census. One panel was interviewed in April, July, and October 1969 and January 1970; the second panel was interviewed only once in August, 1969.

Experienced field staff of the Bureau of the Census were assigned to the survey. Training consisted of a one-day session for field supervisors by Washington office personnel, and a one-day session of training of the interviewers by field supervisors. In addition, interviewers were assigned home-study exercises to be turned in before each interview period. The interviewers were also observed periodically by field office supervisory personnel.

The completed questionnaires were edited first in the Census regional field office to clear up inconsistencies and omissions and later in the Washington office. The data were coded, put on tapes and mechanically edited. An edited tape for each survey month was furnished to the Federal Highway Administration for processing.

At the first visit to a selected household (panel 1 during April 1969), sections I through VII of the household questionnaire were completed as well as a control card. On the control card were entered data on characteristics of the household such as income, automobile ownership, and age and sex of persons in the households. Only Section VI and VII of the questionnaire were completed at subsequent interviews at the households in panel 1. A copy of the questionnaire is contained in Appendix A.

Each of the tables in this report contain a reference source to a particular table from which the sample base can be determined. These sample bases are identified in Appendix A. A copy of the questionnaire is also found in the Appendix.

Sampling Variability

The Nationwide Personal Transportation Survey is based on a probability sample and the estimates are subject to sampling variability. The term "sampling variability" refers to the expected differences between the results of the survey and those that would have been obtained had a complete census been taken.

Some items such as person or household characteristics or number of vehicles were collected only during the first visit to a household in April or in August. Standard errors of estimates and measures of sampling variability were calculated from data collected those two months. Estimates of the standard errors for characteristics of vehicle trips and vehicle miles were determined from variance functions fitted to the data collected during the five months of interviewing.

Most of the data are presented as percentage distributions. The base value of each 100 percent figure is also indicated. Tables I.A-1, 2; II.A-1-2; III.A-1-2; IV.-1; and VI.-A-1, 2; in Appendix B give the standard errors for specified percentages and base values. The appropriate standard error may be determined by interpolation. In general, the chances are about two out of three that the difference due to sampling variability between the estimated value and a figure that would have been obtained from a complete census does not exceed the standard error.

Other possible sources of error

In addition to variability arising from the use of samples and household responses, errors may have been made by interviewers or by other personnel involved in the collection and processing of data. Quality controls at all levels of data collection, coding, and editing were exercised by the Bureau of the Census.

AUTOMOBILE OWNERSHIP

I. Automobile Ownership and Characteristics of the Household

Place of residence

All areas and places

As shown in table 1, 79.4 percent of all households in the U. S. have one-or-more automobiles: 48.4 percent have one automobile, 26.4 percent have two automobiles and 4.6 percent have three-or-more automobiles; the remaining 20.6 percent do not own an automobile. The percent of automobile-owning households is greatest in unincorporated areas and lowest in incorporated places of 1,000,000 and over. Specifically, the percent of households without automobiles is almost four times greater in places of 1,000,000 and over (47.6 percent) than in unincorporated areas (12.4 percent). As shown in the bottom half of table 1, places of 1,000,000 and over, have only 6.4 percent of all car-owning households and 22.4 percent of all "car-less" households.

Standard Metropolitan Statistical Areas (SMSA's)

Car-owning households constitute almost 80 (78.9) percent of the total SMSA population (table 2). From 79.1 to 85.3 percent of all households in SMSA's of under 3,000,000 have an automobile while the percent of car-owning households in SMSA's of 3,000,000 and over decreases to 70.8 percent. As shown in the bottom half of table 2, 24.1 percent of all car-owning households and 37.2 percent of all households without a car reside in SMSA's of 3,000,000 and over.

Table 1. Percent of households by automobile ownership
and place of residence in all areas and places.

Automobile ownership per household	Place of residence									
	Unincor- porated areas	Incorporated places							All in- corpor- ated places	All areas & places
		Under 5,000	5,000- 24,999	25,000- 49,999	50,000- 99,999	100,000- 999,999	1,000,000 & over			
	Within population groups									
One	52.8	48.4	45.9	49.6	46.8	47.4	40.8	46.4	48.4	
Two	29.5	29.3	30.4	30.0	27.9	22.6	10.5	25.0	26.4	
Three-or-more	5.3	4.4	6.5	6.2	5.5	3.0	1.1	4.3	4.6	
Subtotal	87.6	82.2	82.8	85.8	80.2	73.0	52.4	75.7	79.4	
None	12.4	17.8	17.2	14.2	19.8	27.0	47.6	24.3	20.6	
All house- holds	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ¹	
	By population groups									
One	33.3	9.8	15.8	6.8	7.8	18.3	8.2	66.7	100.0	
Two	34.1	10.9	19.2	7.5	8.5	16.0	3.8	65.9	100.0	
Three-or-more	35.0	9.4	23.2	8.8	9.4	11.8	2.4	65.0	100.0	
Subtotal	33.7	10.2	17.4	7.0	8.1	17.2	6.4	66.3	100.0	
None	18.5	8.5	13.9	4.4	7.8	24.5	22.4	81.5	100.0	
All house- holds	30.6	9.8	16.7	6.6	8.0	18.7	9.6	69.4	100.0 ¹	

^{1/} 62.5 million households.

SOURCE: Based upon unpublished table H-18 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 2 . Percent of households by automobile ownership
and place of residence in SMSA's.

Automobile ownership per household	SMSA population size-groups						All
	100,000-250,000	250,000-499,999	500,000-999,999	1,000,000-1,999,999	2,000,000-2,999,999	3,000,000 & over	
	Within population size-groups						
One	47.7	42.7	53.6	49.3	50.2	43.5	47.4
Two	32.7	30.0	23.5	27.7	26.7	24.2	27.0
Three-or-more	4.9	6.4	3.2	6.4	3.8	3.1	4.5
Subtotal	85.3	79.1	80.3	83.4	80.7	70.8	78.9
None	14.7	20.9	19.7	16.6	19.3	29.2	21.1
All households	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ^{1/}
	By population size-groups						
One	14.9	12.1	18.4	17.9	12.0	24.7	100.0
Two	17.9	15.0	14.1	17.7	11.2	24.1	100.0
Three-or-more	16.2	19.2	11.7	24.7	9.5	18.7	100.0
Subtotal	16.0	13.5	16.6	18.2	11.6	24.1	100.0
None	10.3	13.4	15.2	13.5	10.4	37.2	100.0
All households	14.8	13.5	16.3	17.2	11.4	26.8	100.0 ^{1/}

^{1/} 41.5 million households.

SOURCE: Based upon unpublished table H-18 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Income

The incidence of automobile ownership increases as household income increases (figure 1). As shown in table 3, 36.9 percent of households with incomes of less than \$3,000 annually own an automobile compared to 98.8 percent of households with incomes of \$15,000 and over.

The proportion of automobiles owned per household increases as income increases. Approximately 63.1 percent of those households with incomes of less than \$3,000 do not own a car. More than half of the households with incomes from \$3,000-\$10,000 own one car. In the \$10,000-\$14,999 income bracket, 53.2 percent are multiple-car households. In the \$15,000 and over income bracket, only one-fourth are single-car households, while 71.4 percent are multiple-car owners.

Looking at the bottom half of table 3, we find that 50.2 percent of all car-owning households had incomes of \$7,500 and over; of the single-car households, 53.6 percent had incomes of \$6,000 and over; of the two-car households, 65.8 percent had incomes \$7,500 and over, and for households with three-or-more cars, 55.4 percent had incomes of \$10,000 and over. More than half (52.4 percent) of the households without a car earned less than \$3,000 annually.

Household composition

Number of adults

The number of automobiles in a household is directly related to the number of adults (ie: persons of driving age) in a household; and the incidence of automobile ownership increases as the number of adults in a household increases (table 4). Over half of all households with only one adult do not own a car and over half of the no-car households have only one driving-age member. A little more than 10 percent of all two-adult households do not have a car and these households constitute one-third of all "car-less" households. Less than 10 percent of all three-or-more adult households do not have a car and these households comprise less than 10 percent of all "car-less" households.

Note quite half of all one-adult households own a car, more than four-fifths of all two-adult households and more than 90 percent of all three-or-more adult households have a car.

Approximately two-thirds of all households with one car consist of two adults, more than 60 percent of all two-car households consist of two adults and 85 percent of all three-or-more car households have three-or-more adults.

FIGURE 1. PERCENT OF HOUSEHOLDS BY CAR OWNERSHIP AND INCOME CLASSES

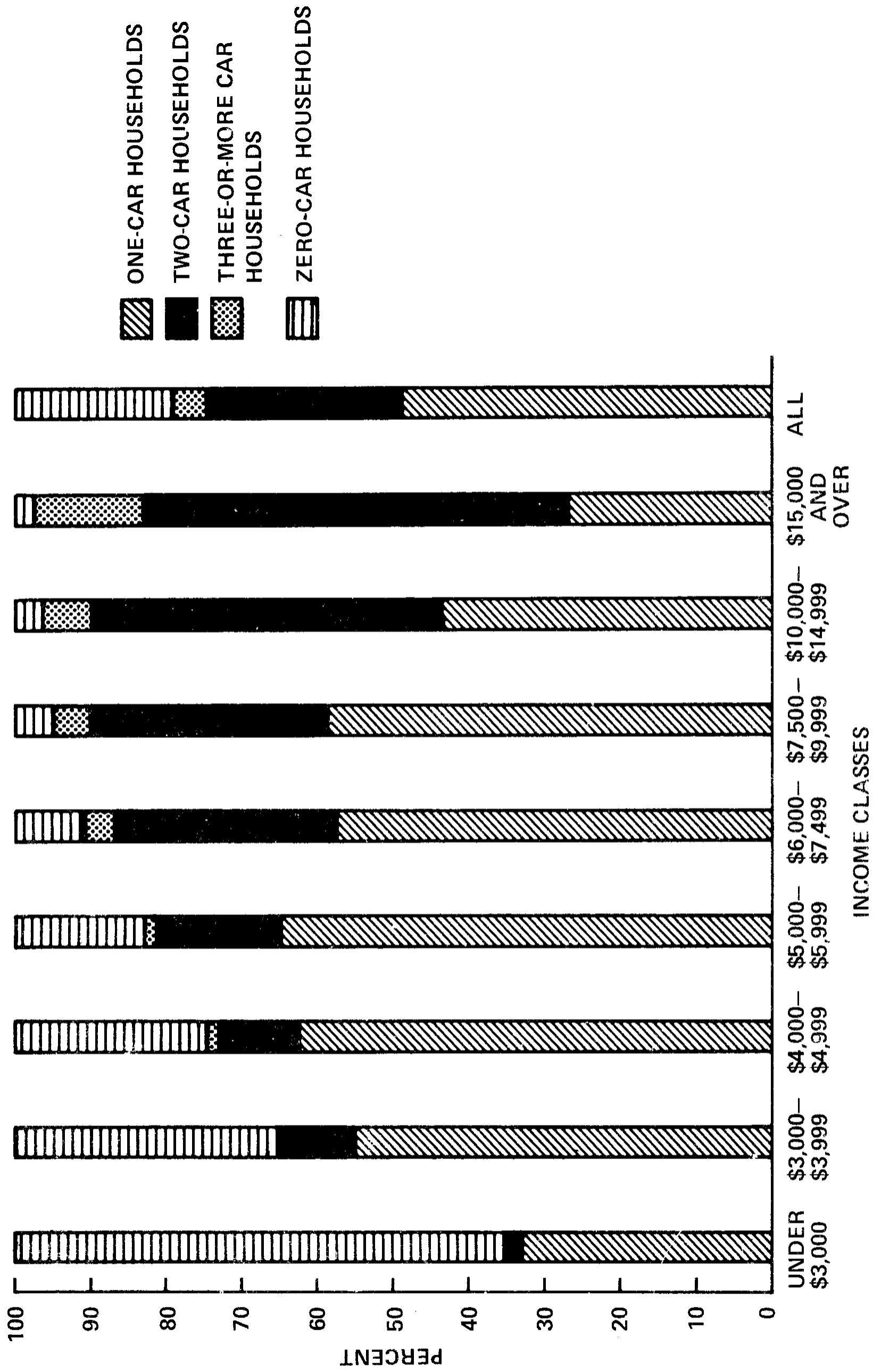


Table 3. Percent of households by automobile ownership and annual income.

Automobile ownership per household	Annual household income								Unreported	All
	Under \$3,000	\$3,000-3,999	\$4,000-4,999	\$5,000-5,999	\$6,000-7,499	\$7,500-9,999	\$10,000-14,999	\$15,000 & over		
	Within income groups									
One	33.6	56.5	62.3	64.7	57.9	59.2	44.0	27.4	40.5	48.4
Two	3.3	8.4	11.3	16.5	29.4	30.8	46.0	55.2	34.2	26.4
Three-or-more	0.0	0.3	1.4	2.0	3.6	5.1	7.2	16.2	9.1	4.6
Subtotal	36.9	65.2	75.0	83.2	90.9	95.1	97.2	98.8	83.8	79.4
None	63.1	34.8	25.0	16.8	9.1	4.9	2.8	1.2	16.2	20.6
All households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ^{1/}
	By income groups									
One	11.8	8.7	7.9	11.1	13.8	18.9	16.5	4.4	6.9	100.0
Two	2.2	2.4	2.6	5.2	11.2	17.9	31.6	16.3	10.6	100.0
Three-or-more	0.0	0.5	1.9	3.6	9.0	13.6	28.1	27.3	16.0	100.0
Subtotal	8.0	6.1	5.8	8.7	12.6	18.3	22.2	9.7	8.6	100.0
None	52.4	12.6	7.4	6.7	7.0	4.4	2.5	0.4	6.6	100.0
All households	17.1	7.5	6.1	8.3	11.5	15.4	18.1	7.8	8.2	100.0 ^{1/}

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^{1/} 62.5 million households

SOURCE: Based upon unpublished table H-18 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 4. Percent of households by automobile ownership and number of adults

Automobile ownership per household	Number of adults ^{2/} per household			All households
	One	Two	Three-or-more	
	Within households			
One	42.3	57.3	32.2	48.4
Two	1.5	29.1	42.6	26.4
Three-or-more	-	1.2	17.0	4.6
Subtotal	43.8	87.6	91.8	79.4
None	56.2	12.4	8.2	20.6
All households	100.0	100.0	100.0	100.0 ^{1/}
	By households			
One	18.3	66.3	15.4	100.0
Two	1.2	61.4	37.4	100.0
Three-or-more	0.0	14.9	85.1	100.0
Subtotal	11.6	61.6	26.8	100.0
None	57.2	33.6	9.2	100.0
All households	20.9	55.9	23.2	100.0 ^{1/}

^{1/} 62.5 million households.

^{2/} Adults, for purposes of this report, are defined as "persons of driving age."

SOURCE: Based upon unpublished table H-18 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Number of licensed drivers

Less than half (44.2 percent) of all licensed drivers are in one-car households, 34.6 percent are in two-car households and 8.4 percent are in households with three-or-more cars; a little more than ten percent (12.8) of all licensed drivers are in "car-less" households (table 5). Approximately 80 percent (79.1) of all one-driver households have one car and 15.6 percent do not have any cars. More than half (52.5 percent) of all two-driver households have a single car and almost ten percent less (43.0 percent) have two cars; there are only two cars in more than half (54.3 percent) of all three-driver households, and almost twenty percent (19.1) of these households have only one car.

Almost three-fourths (73.8 percent) of all households have two-or-more licensed drivers, less than one-fifth (17.2 percent) have only one driver and 8.7 percent of all households are without a licensed driver. Almost sixty percent (59.4) of one-car households have two drivers and 30.8 percent have a single driver; 62.1 percent of two-car households have two licensed drivers and understandably, almost ninety percent (86.8) percent of all three-or-more car households have three-or-more licensed drivers. About one-fifth (21.1 percent) of all "car-less" households have a licensed driver present while almost 70 percent (68.3) do not have any.

Relationship of licensed drivers per household to annual household income

The percent of one-driver households increases as income increases to \$5,000; for households with incomes over \$5,000, the percent of one-driver households decreases while the percent of multiple-driver households increases (table 6 and figure 2). Specifically, the percent of single-driver households increases from 34.5 percent of total for households with incomes of less than \$3,000 to 48.4 percent for households with incomes of \$4,000-\$4,999 and then decreases to 11.3 percent for households with incomes of \$15,000 and over; the percent of households with two-or-more licensed increases from 11.9 to 36.9 and 88.7 percent of each income class respectively. As expected, the percent of households without a licensed driver decreases as income increases from more than half (53.6 percent) of households with incomes of under \$3,000 to an insignificant percentage for households with incomes of \$15,000 and over.

The distribution of driver-households by income is shown in the bottom half of table 6. While less than one-third (26.7 percent) of one-driver households have incomes of \$7,500 and over, it increases to 57.1 percent for two-driver households and more than 65 percent for three-or-more driver households. More than 70 (71.9) percent of all households without a licensed driver have incomes of less than \$4,000 annually.

Table 5. Percent of households by automobile ownership and licensed drivers

Automobile ownership per household	Licensed drivers per household							Total
	One	Two	Three	Four or-more	Sub-total	Zero	Unknown	
	Within households							
One	79.1	52.5	19.1	12.9	48.1	0.0	92.6	44.2
Two	5.1	43.0	54.3	45.8	38.2	0.0	0.0	34.6
Three-or-more	0.1	2.2	25.6	40.8	9.4	0.0	3.6	8.4
Subtotal	84.3	97.7	99.0	99.5	95.7	0.0	96.2	87.2 ^{2/}
None	15.6	2.3	1.0	0.5	3.8	100.0	0.0	12.8
Unknown	0.1	0.0	0.0	0.0	0.5	0.0	3.8	<u>3/</u>
All households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ^{1/}
	By households							
One	30.8	59.4	7.1	2.1	99.4	0.6	0.0	100.0
Two	2.5	62.1	25.8	9.6	100.0	0.0	0.0	100.0
Three-or-more	0.3	12.9	50.0	36.8	100.0	0.0	0.0	100.0
Subtotal	16.6	56.0	18.7	8.3	99.6	0.0	0.4	100.0
None	21.1	9.0	1.2	0.4	31.7	68.3	0.0	100.0
All households	17.2	50.0	16.4	7.4	91.0	8.7	0.3	100.0 ^{1/}

^{1/} 62.5 million households.

^{3/} Data insufficient for analysis

^{2/} Of all car-owning households, one-car households represent 61.0 percent, two-car households represent 33.3 percent and households with three-or-more cars represent 5.7 percent.

SOURCE: Data obtained from a special tabulation of the Nationwide Personal Transportation Study conducted by the Bureau of Census for the Federal Highway Administration, 1969-70.

Table 6. Percent of households by number of licensed drivers and annual income

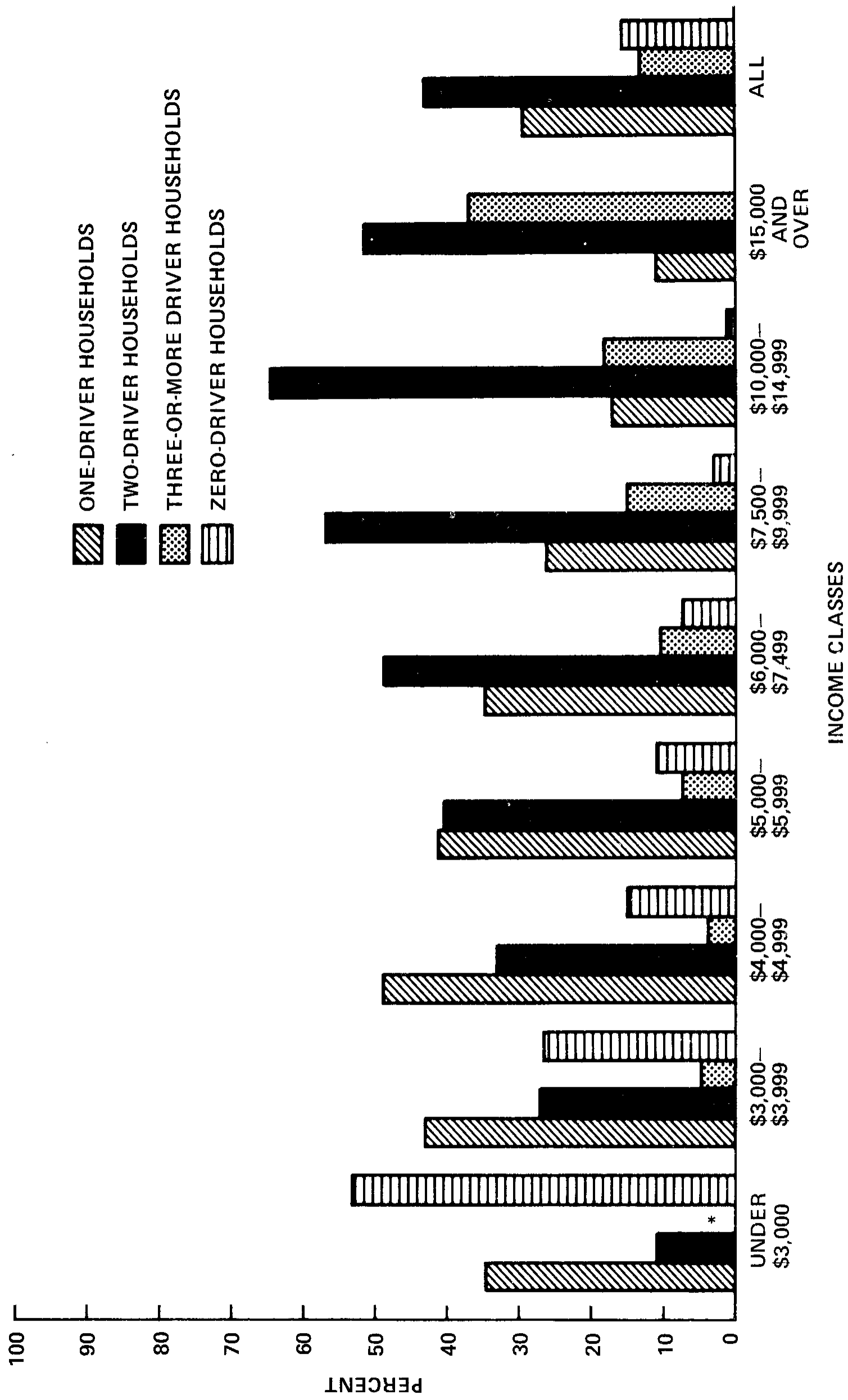
Number of licensed driver(s) per household	Income classes										All households
	Under \$3,000	\$3,000-3,999	\$4,000-4,999	\$5,000-5,999	\$6,000-7,499	\$7,500-9,999	\$10,000-14,999	\$15,000- & over	Income unknown		
	Within income classes										
One	34.5	42.6	48.4	41.2	34.7	26.0	16.4	11.3	19.2	29.4	
Two	10.4	26.8	33.0	40.4	48.2	57.1	64.2	51.9	59.0	42.8	
Three	1.4	3.4	3.9	5.4	7.3	11.5	14.3	25.9	21.8	9.4	
Four-or-more	0.1	1.1	2/	2.3	2.7	3.1	3.7	10.9	0.0	3.0	
Subtotal	46.4	73.9	85.3	89.3	92.9	97.7	98.6	100.0	100.0	84.6	
None	53.6	26.1	14.7	10.7	7.1	2.3	1.4	2/	0.0	15.4 1/	
All households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
	By licensed drivers										
One	20.0	10.8	10.1	11.6	13.6	13.6	10.1	3.0	7.2	100.0	
Two	4.2	4.7	4.7	7.8	13.0	20.6	27.1	9.4	8.5	100.0	
Three	2.6	2.7	2.5	4.8	9.0	18.9	27.5	21.4	10.6	100.0	
Four-or-more	0.6	2.7	2/	6.3	10.2	15.8	22.4	27.8	14.2	100.0	
Subtotal	9.4	6.5	6.2	8.8	12.7	17.8	21.1	9.1	8.4	100.0	
None	59.6	12.3	5.7	5.9	5.3	2.3	1.6	0.3	7.0	100.0	
All households	17.1	7.5	6.1	8.3	11.5	15.4	18.1	7.8	8.2	100.0 1/	

1/ 62.5 million households

2/ Data insufficient for analysis

SOURCE: Data obtained from a special tabulation of the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

FIGURE 2. PERCENT OF HOUSEHOLDS BY LICENSED DRIVERS AND INCOME CLASSES



* DATA INSUFFICIENT FOR ANALYSIS.

II. Automobile Ownership and Characteristics of the Automobile

Age of automobile

Place of residence of driver

The average age of automobiles in unincorporated areas was 5.3 years compared to 5.0 years in incorporated places (table 7). Among the different population size-groups of incorporated places, some pattern was noted. The average age of automobiles in one and two-car households was generally highest in places under 5,000 and generally lowest in the larger size places. For automobiles in households with three-or-more cars, a reverse trend was noted: automobiles in places of 1,000,000 and over averaged 5.5 years compared to automobiles in places of under 5,000 which averaged 4.1 years.

Household income

As income increases, the average age of the automobile decreases (table 8 and figure 3). This is true regardless of the number of automobiles in the household. Specifically, for households with incomes of less than \$3,000, the average age of automobiles in one and two-car households was 7.2 years and decreased to 3.5 and 4.1 years respectively for automobiles households with incomes of \$15,000 and over. For households with incomes of \$15,000 and over, the average age of automobiles in three-or-more car households was 4.2 years.

Within each income group, as the number of automobiles owned per household increased, the average age of the car increased somewhat. For example, at the \$7,500-9,999 income level, the average age of an automobile in a one-car household was 4.2 years, in a two-car household it was 5.4 years, and in three-or-more households it was 5.9 years.

The average age of all automobiles was 5.1 years and showed no variation by number of automobiles per household.

Model-year

For each of the model years, two-car households had the greatest percent of cars, while three-or-more car households had the smallest percent of cars.

Table 7 . Average automobile age (years) by household ownership and place of residence in all areas and places.

Automobile ownership per household	Population size-groups										All areas & places
	Unincorporated areas	Incorporated places					All incorporated places				
		Under 5,000	5,000-24,999	25,000-49,999	50,000-99,999	100,000-999,999		1,000,000 and over			
One	5.2	5.6	5.0	5.0	5.4	5.0	4.8	5.0	5.1	5.1	
Two	5.3	5.4	4.9	5.0	5.4	4.6	4.8	5.0	5.2	5.2	
Three-or-more	5.5	4.1	5.0	5.3	4.6	5.4	5.5	4.9	5.1	5.1	
All cars	5.3	5.5	5.0	5.0	5.3	4.8	4.8	5.0	5.1	5.1	

SOURCE: Based upon unpublished table T-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

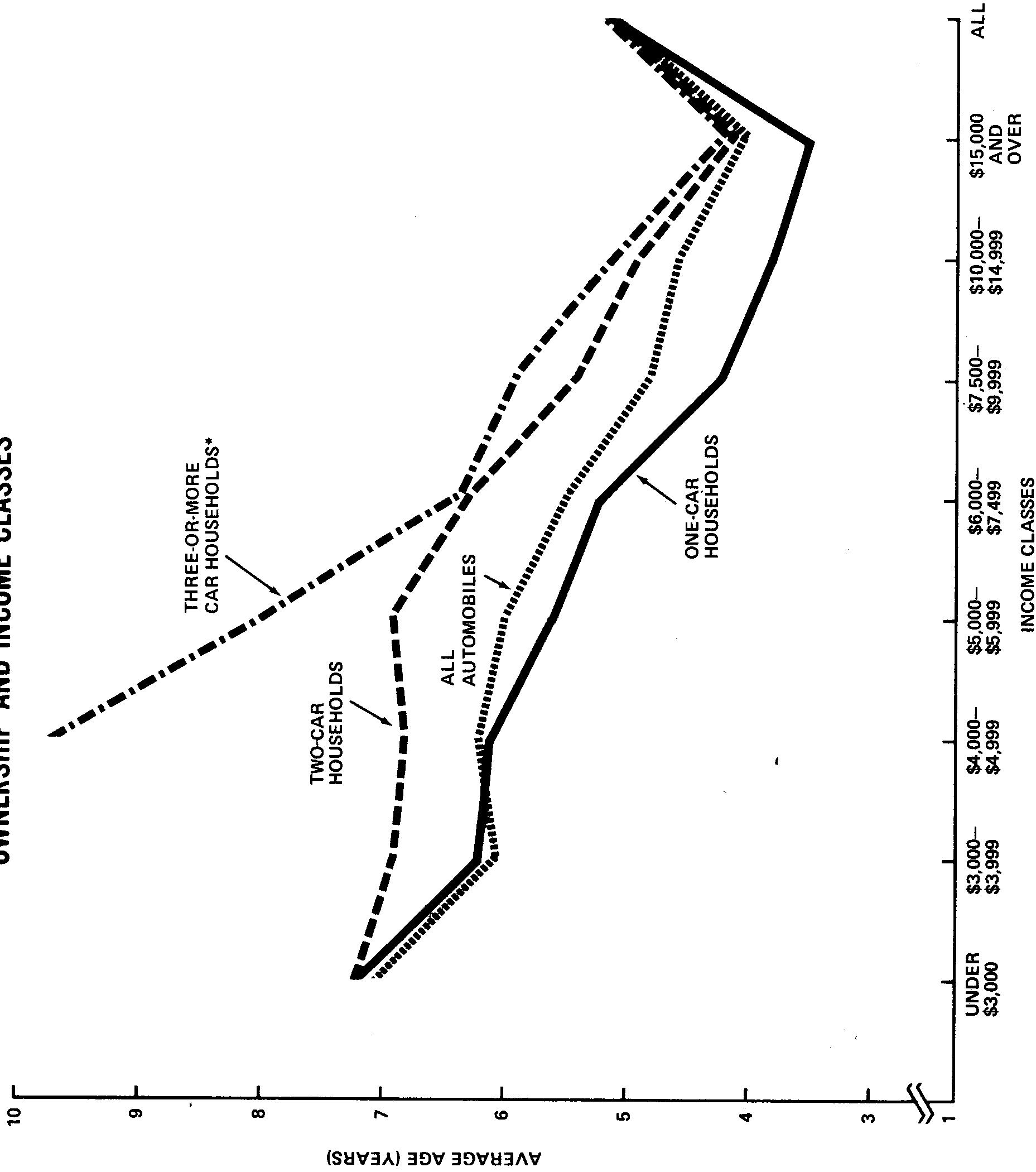
Table 8. Average automobile age (years) by household ownership and income classes.

Automobile ownership per household	Income classes								Total
	Under \$3,000	\$3,000-3,999	\$4,000-4,999	\$5,000-5,999	\$6,000-7,499	\$7,500-9,999	\$10,000-14,999	\$15,000 & over	
One	7.2	6.2	6.1	5.6	5.2	4.2	3.8	3.5	5.1
Two	7.2	6.9	6.8	6.9	6.3	5.4	4.9	4.1	5.1
Three-or-more	<u>1/</u>	<u>1/</u>	9.7	8.0	6.2	5.9	5.1	4.2	5.1
All automobiles	7.0	6.1	6.2	6.0	5.6	4.8	4.6	4.0	5.1

1/ Data insufficient for analysis

SOURCE: Based upon unpublished table T-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

FIGURE 3. AVERAGE AUTOMOBILE AGE (YEARS) BY HOUSEHOLD CAR OWNERSHIP AND INCOME CLASSES



*DATA INSUFFICIENT FOR INCOMES OF LESS THAN \$4,000.

As shown in the bottom half of table 9, 53.2 percent of all automobiles were 1966 model-year or later. The percent of late model-year automobiles (1966 or later) increased slightly as the number of automobiles per household increased. Approximately 52.1 percent of all automobiles in one-car households were 1966 model-years or later; in two-car households, it increased slightly to 53.8 percent, and in three-or-more households, 54.6 percent of all automobiles were 1966 model-year or later.

Whether automobile was purchased as new or used

About half (50.7 percent) of all automobiles purchased as new were 1967 model-year and later, while more than half (56.3 percent) of the automobiles purchased as used were 1963 model-year and earlier (table 10). The percent of 1967 model-year and later cars purchased as new varied from 48.4 percent for one-car households to 60.2 percent for three-or-more car households. The percent of 1963 model-year and earlier automobiles purchased as used showed some variation by household ownership.

Whether automobile was purchased new or used and annual miles per automobile

As shown in table 11, considering all model-years, automobiles purchased as new appear to have higher average annual miles per vehicle than automobiles purchased as used, regardless of the number of automobiles in the household. The average annual mileage per automobile was 12,500 miles (new) and 10,700 (used). For one-car households, automobiles purchased as new averaged 11,400 miles as against 10,200 miles for cars purchased as used. Automobiles purchased by two and three-or-more car households showed the same trends.

Although the overall average mileage for all automobiles purchased as new exceeded the overall average mileage for all automobiles purchased as used, average mileage for each model-year showed the reverse. This may be due to the fact that, as shown in table 10, a greater percent of automobiles purchased new were in the newer model-years - higher mileage classes, and the greater percent of automobiles purchased used were in the older - lower mileage classes.

In addition, for all classes of automobile ownership, while the average mileage of automobiles purchased new or used generally decreased with age, the pattern for automobiles purchased used showed more fluctuation than it did for automobiles purchased new. For example, for two-car households, the average annual mileage for automobiles purchased new decreased from 19,000 miles for the 1969 model-year automobile to 6,700 miles for the 1961 model-year automobile. For these same households, the average annual mileage for automobiles purchased used was 22,400 miles for the 1969 model-year

Table 9. Percent of automobiles by household ownership and model-year

Automobile ownership per household	Model-year										All auto- mobiles'	
	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960		Before 1960
	Within model-year											
One	39.1	39.3	40.5	44.0	45.5	44.2	48.2	42.3	36.8	45.2	36.4	42.5
Two	45.3	46.2	46.6	45.9	44.1	43.0	42.2	46.2	52.9	43.1	47.5	45.4
Three-or-more	15.6	14.5	12.9	10.1	10.4	12.8	9.6	11.5	10.3	11.7	16.1	12.1
All auto-mobiles	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ^{1/}
	By model-year											
One	12.2	15.4	12.2	12.3	11.6	8.5	9.7	5.8	3.6	3.0	5.7	100.0
Two	12.5	17.7	12.5	11.1	12.6	7.7	6.4	5.5	5.4	2.3	6.3	100.0
Three-or-more	14.4	18.5	12.6	9.1	13.1	9.5	6.1	4.1	2.1	3.5	7.0	100.0
All auto-mobiles	12.6	16.9	12.3	11.4	12.2	8.3	7.7	5.5	4.2	2.7	6.2	100.0 ^{1/}

^{1/} 72.3 million cars

SOURCE: Based on unpublished table T-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 10. Percent of automobiles purchased new and used by model-year and household ownership

Automobile ownership per household	Model-year of automobile										All auto- mobiles	
	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960		Before 1960
	Automobiles purchased new											
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
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
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
All auto- mobiles	14.5	20.6	15.6	14.3	11.6	7.5	6.0	3.1	2.4	1.3	3.1	100.0 ^{1/}
	Automobiles purchased used											
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
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
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
All auto- mobiles	0.5	3.1	6.2	8.8	13.0	12.1	11.7	11.8	6.8	7.0	19.0	100.0 ^{2/}

1/ 32.5 million automobiles

2/ 32.9 million automobiles

SOURCE: Based upon unpublished table T-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 11. Average annual miles per automobile by household ownership, model-year, and whether purchased new or used (000)

Automobile ownership per household	Model-year of automobile										All		
	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960		Before 1960	
One	17.2	14.4	12.5	10.8	9.4	8.3	7.4	5.1	6.4	5.4	3.9	11.4	
Two	19.0	16.7	12.5	11.4	10.6	10.0	10.1	9.1	6.7	*	6.1	13.2	
Three-or-more	16.9	16.8	13.0	12.5	10.5	9.8	8.5	7.9	6.1	*	5.2	13.4	
All automobiles	18.0	15.8	12.6	11.2	10.1	9.2	8.7	7.2	6.5	8.7	5.0	12.5	
				Automobiles purchased used									
One	*	13.9	12.5	11.8	9.9	9.9	12.0	9.5	10.7	8.5	6.9	10.2	
Two	22.4	24.4	16.1	11.6	14.0	10.2	9.7	8.9	*	6.2	7.0	10.9	
Three-or-more	*	14.6	14.7	13.7	*	13.8	13.5	8.2	7.1	*	6.6	12.2	
All automobiles	*	18.3	14.5	11.9	12.9	10.5	11.2	9.1	12.5	7.9	6.9	10.7	

*Data insufficient for analysis.

SOURCE: Based upon unpublished table T-13 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

automobile, increasing to 24,400 miles for the 1968 model-year automobile, decreasing to 11,600 miles for the 1966 model-year automobile, etc. For amore detailed discussion of vehicle-miles, age of automobile and automobile ownership, see Report No. 2: Annual Miles of Automobile Travel.

Distribution of automobiles by household
ownership and licensed drivers per household

The distribution of automobiles is almost equally divided between one and two-car households: 42.5 and 45.4 percent respectively; 12.1 percent of all automobiles are in households with three-or-more cars (table 12).

More than half (53.8 percent) of all automobiles are in two-driver households, 22.8 percent are in one-driver households and the remaining 23.4 percent are in households with three-or-more drivers.

Table 12. Percent of automobiles by household ownership and number of licensed drivers

Automobile ownership per household	Number of licensed drivers per household				Total
	One	Two	Three	Four-or-more	
One	88.2	36.0	9.0	5.4	42.5
Two	11.3	59.0	51.2	38.3	45.4
Three-or-more	0.5	5.0	39.8	56.3	12.1
Total	100.0	100.0	100.0	100.0	100.0
Distribution of automobiles	22.8	53.8	17.2	6.2	100.0 ^{1/}

^{1/} 72.5 million automobiles

SOURCE: Data obtained from a special tabulation of the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Automobile ownership rates

Place of residence

All areas and places

The average number of automobiles per household by place of residence of head of household is shown in table 13 below. Nationally, the number of cars owned per household averages 1.2: 1.3 cars in unincorporated areas and 1.1 cars in incorporated places. The automobile ownership rate for unincorporated areas and incorporated places of less than 100,000 was very similar. For place of 100,000-999,999, the ownership rate averaged 1.0 automobile per household; for households in places of 1,000,000 and greater, the average ownership rate was 0.7 automobile per household.

Table 13. Average number of automobiles owned per household by place of residence - in all areas and places

<u>Place of residence</u>	<u>Average number of automobiles per household</u>
Unincorporated areas	1.3
Incorporated places	
Under 5,000	1.2
5,000-24,999	1.3
25,000-49,999	1.3
50,000-99,999	1.2
100,000-999,999	1.0
1,000,000 and over	0.7
Subtotal	1.1
All areas and places	1.2

SOURCE: Based on unpublished tables H-18 and T-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

SMSA's

Automobile ownership rates in SMSA's showed little variation among the different population size-groups (table 14). Automobile ownership rates in the SMSA's averaged 1.2 cars per household, ranging from 1.3 automobiles in SMSA's of less than 2,000,000 population to 1.2 and 1.0 in SMSA's of 2,000,000 - 2,999,999 and 3,000,000 and over respectively.

Table 14. Average number of automobiles owned per household by SMSA population size-groups.

<u>SMSA population size-groups</u>	<u>Average number of automo- biles per household</u>
Less than 250,000	1.3
250,000-999,999	1.3
1,000,000-1,999,999	1.3
2,000,000-2,999,999	1.2
3,000,000 and over	1.0
All	1.2

SOURCE: Based on unpublished tables H-18 and T-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Household income

The number of automobiles per household increases as income increases (table 15). While three out of five households with incomes of under \$3,000 do not own an automobile (translating to 0.4 cars per household), households with incomes of \$15,000 and over average almost two (1.9) automobiles per household.

Table 15. Average number of automobiles owned per household by household income size-groups

<u>Household income size-groups</u>	<u>Average number of automobiles per household</u>
Under \$3,000	0.4
\$3,000 - 3,999	0.8
\$4,000 - 4,999	0.9
\$5,000 - 5,999	1.0
\$6,000 - 7,499	1.2
\$7,500 - 9,999	1.3
\$10,000 - 14,999	1.6
\$15,000 and over	1.9
All households	1.2

SOURCE: Based upon unpublished tables H-18 and T-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

III. Automobile Ownership and Characteristics of Trips
Miles of Travel

Vehicle trips and vehicle-miles of travel

Place of residence

All areas and places

As indicated previously, approximately one-fifth (20.6 percent) of all households in the U.S. do not own a car and these households generate less than 4 (3.6) percent of all trips. Understandably, households with a car generate 96.4 percent of all vehicle trips. One and two-car households each generate 42.3 and 43.8 percent of the trips respectively, while three-or-more car households make only 10.3 percent of all trips (table 16).

One-car households make the smallest percent (33.2) of total trips in places of 25,000 - 49,999, and the largest (54.5 percent) in places of 1,000,000 and over. The reverse pattern is true for two-car household trips. Specifically, the percent of trips (32.8) is lowest in places of 1,000,000 and over and highest (52.8 percent) in places of 25,000 - 49,999. For three-or-more car households, the percent of trips decreases as size of place increases and they make 6.2 percent of all trips in places of 1,000,000 and over, compared to 12.1 percent of all trips in places of less than 5,000.

Vehicle-miles of travel by car ownership show some pattern by the different population size-groups (table 17). In places of 1,000,000 and over, one-car households travel a greater percent of vehicle-miles (62.8 percent), while two (26.7 percent) and three-or-more (5.5 percent) car households each travel a smaller percent of vehicle-miles than in all other population size-groups.

Table 16. Percent of vehicle trips by household automobile ownership and place of residence in all areas and places

Automobile ownership per household	Population size-groups										All areas & places	
	Unincorporated Areas	Incorporated places					1,000,000 over	All incorporated places				
		Under 5,000	5,000-24,999	25,000-49,999	50,000-99,999	100,000-999,999						
		Within population size-groups										
One	42.8	39.1	39.2	33.2	43.3	46.3	54.5	42.0	42.3		42.3	
Two	43.6	45.0	45.4	52.8	41.9	42.0	32.8	44.0	43.8		43.8	
Three-or-more	10.7	12.1	12.1	11.6	10.9	6.5	6.5	10.1	10.3		10.3	
Subtotal	97.1	96.2	96.7	97.6	96.1	94.8	93.8	96.1	96.4		96.4	
None	2.9	3.8	3.3	2.4	3.9	5.2	6.2	3.9	3.6		3.6	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0	
		By population size-groups										
One	34.8	6.8	20.7	5.5	7.9	18.1	6.2	65.2	100.0		100.0	
Two	34.1	7.6	23.1	8.4	7.4	15.8	3.6	65.9	100.0		100.0	
Three-or-more	35.6	8.8	26.3	7.9	8.5	8.2	4.7	64.4	100.0		100.0	
Subtotal	34.5	7.4	22.4	7.1	7.7	16.2	4.7	65.5	100.0		100.0	
None	27.5	7.9	20.5	4.8	8.6	22.5	8.2	72.5	100.0		100.0	
Total	34.3	7.4	22.3	7.0	7.7	16.5	4.8	65.7	100.0 ^{1/}		100.0 ^{1/}	

^{1/} 87.3 billion vehicle trips

SOURCE: Based upon unpublished table T-4 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 17. Percent of vehicle-miles of travel by household car ownership and place of residence in all areas and places

Automobile ownership per household	Population size-groups										All areas and places
	Unincorporated areas	Incorporated places					1,000,000 and over	All incorporated places	1,000,000 and over	All areas and places	
		Under 5,000	5,000-24,999	25,000-49,999	50,000-99,999	100,000-999,999					
		Within population size-groups									
One	39.7	40.0	33.5	33.2	44.7	43.5	62.8	40.9	40.4		
Two	46.1	48.0	48.0	52.8	42.8	44.2	26.7	45.1	45.5		
Three-or-more	12.2	8.4	15.6	11.6	9.4	8.3	5.5	10.6	11.2		
Subtotal	98.0	96.4	97.1	97.6	96.9	96.0	95.0	96.6	97.1		
None	2.0	3.6	2.9	2.4	3.1	4.0	5.0	3.4	2.9		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ^{1/}		
		By population size-groups									
One	37.2	8.6	16.4	5.0	7.7	15.2	9.9	62.8	100.0		
Two	38.4	9.2	20.8	7.6	6.6	13.7	3.7	61.6	100.0		
Three-or-more	41.2	6.6	27.6	5.2	5.9	10.4	3.1	58.8	100.0		
Subtotal	38.2	8.6	19.7	6.2	7.1	13.9	6.3	61.8	100.0		
None	26.8	10.6	19.9	4.4	7.7	19.7	10.9	73.2	100.0		
Total	37.9	8.7	19.7	6.2	7.0	14.1	6.4	62.1	100.0 ^{1/}		

^{1/} 775.8 billion vehicle-miles of travel

Source: Based on unpublished table T-4 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

SMSA's

Vehicle trips in SMSA's show great variation by household car ownership and population size-groups (table 18). One and two-car households each contribute an almost equal percent (approximately 44 percent) of vehicle trips in SMSA's of 100,00 - 249,999 and 2,000,000 - 2,999,999; in SMSA's of 500,000 - 999,999, one-car households contribute the greatest percent (47.6 percent) of vehicle trips while two-car households make the greatest contribution in all other population size-groups. Households with three-or-more cars make the smallest contribution to total trips regardless of SMSA size.

One and two-car households travel an almost equal percent (approximately 43 percent) of vehicle-miles in SMSA's of 500,000-999,999 and 2,000,000 and over; and two-car households make the greatest contribution of vehicle-miles of travel (almost half) in all other SMSA's (table 19). Three-or-more car households contribute 5.3 percent of vehicle-miles of travel in SMSA's of 100,000 - 249,999 and from 10.1 - 11.9 percent in all other SMSA's.

Occupation of head of household

As shown in tables 20 and 21, persons in four occupational groups: store and office clerks and salesmen, professionals and semi-professionals, operators, semi-skilled and unskilled workers and laborers, and craftsmen, firemen, skilled laborers, etc., generated more than half (59.7 percent) of all vehicle trips and 65.0 percent of all vehicle-miles of travel. These four occupational groups dominated at all levels of car ownership.

Table 18. Percent of vehicle trips^{1/} by household automobile ownership and SMSA population size-groups

Automobile ownership per household	Population size-groups								All SMSA's				
	100,000-249,999		250,000-499,999		500,000-999,999		1,000,000-1,999,999			2,000,000-2,999,999		3,000,000-& over	
	Within population size-groups												
One	44.1	36.7	47.6	36.8	44.5	37.6	40.7						
Two	43.2	47.4	38.4	47.0	43.0	45.5	44.3						
Three-or-more	4.6	9.3	7.3	12.0	8.3	11.4	9.0						
Subtotal	91.9	93.4	93.3	95.8	95.8	94.5	94.0						
None	8.1	6.6	6.7	4.2	4.2	5.5	6.0						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ^{1/}						
	By population size-groups												
One	19.0	14.9	18.5	15.6	10.5	21.5	100.0						
Two	17.1	17.6	13.7	18.3	9.3	24.0	100.0						
Three-or-more	8.8	17.0	12.8	22.9	8.9	29.6	100.0						
Subtotal	15.7	16.2	14.9	17.4	9.2	26.6	100.0						
None	14.6	15.1	18.0	17.9	4.3	30.1	100.0						
Total	15.7	16.2	14.9	17.4	9.1	26.7	100.0 ^{1/}						

^{1/} 60.5 billion vehicle trips

SOURCE: Based on unpublished table T-4 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 19. Percent of vehicle-miles of travel by household automobile ownership and SMSA population size-groups

Automobile ownership per household	Population size-groups								All SMSA's		
	100,000-249,999		250,000-499,999		500,000-999,999		1,000,000-2,999,999			3,000,000 & over	
	Within population size-groups										
One	42.6	33.2	43.1	35.2	43.0	42.5	39.9				
Two	48.2	50.9	40.9	49.2	44.9	40.9	45.5				
Three-or-more	5.3	11.9	10.8	11.2	10.1	11.9	10.4				
Subtotal	96.1	96.0	94.8	95.6	98.0	95.3	95.8				
None	3.9	4.0	5.2	4.4	2.0	4.7	4.2 ^{1/}				
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0 ^{1/}				
	By population size-groups										
One	16.8	13.5	16.0	15.4	9.8	28.5	100.0				
Two	16.6	18.1	13.4	18.9	9.0	24.0	100.0				
Three-or-more	8.0	18.5	15.4	18.8	8.9	30.4	100.0				
Subtotal	15.7	16.2	14.8	17.4	9.2	26.7	100.0				
None	14.6	15.1	18.0	17.9	4.3	30.1	100.0				
Total	15.7	16.2	14.9	17.4	9.1	26.7	100.0 ^{1/}				

^{1/} 526.2 billion vehicle-miles of travel

SOURCE: Based on unpublished table T-4 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 20. Percent of vehicle trips by household automobile ownership and occupation of head of household

Automobile ownership per household	Occupation of head of household											Total	
	Professionals and semi-professionals	Proprietors, farmers, and farm managers	Other proprietors, managers and officials	Store and office clerks and salesmen	Craftsmen, firemen, skilled laborers, etc.	Operators, semi-skilled workers & laborers	Protective service workers	Personal services	Occupation N/A	Retired household head	Unemployed		Employment status N/A
One	33.3	49.9	33.0	40.4	46.8	48.8	54.8	48.7	39.2	83.2	35.6	43.4	42.3
Two	57.5	30.6	54.9	46.4	40.5	41.0	36.2	36.5	40.9	15.4	53.7	45.5	43.8
Three-or-more	9.0	19.5	11.7	12.9	11.6	9.5	9.0	14.6	18.9	1.4	9.7	11.4	10.3
Subtotal	99.8	100.0	99.6	99.7	98.9	99.3	100.0	99.8	99.0	100.0	99.0	100.0	96.4
None	0.2	0.0	0.4	0.3	1.1	0.7	0.0	0.2	1.0	0.0	1.0	0.0	3.6
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	100.0 ^{1/}
	By occupational groups												
One	11.5	1.9	5.9	16.9	12.4	18.1	3.3	5.5	0.9	7.8	15.6	0.2	100.0
Two	18.8	1.1	9.0	17.8	9.8	13.9	2.0	3.8	0.8	1.3	21.5	0.2	100.0
Three-or-more	14.1	2.9	8.3	21.2	12.1	13.9	2.1	6.5	1.6	0.6	16.5	0.2	100.0
Subtotal	15.3	1.6	7.6	17.7	11.2	15.7	2.6	4.8	0.9	4.0	18.4	0.2	100.0
None	4.7	0.0	5.4	9.2	22.1	21.1	0.0	2.1	1.6	0.0	33.8	0.0	100.0
Total	15.1	1.6	7.7	17.6	11.3	15.7	2.6	4.8	0.9	4.0	18.5	0.2	100.0 ^{1/}

^{1/} 87.3 billion vehicle trips

SOURCE: Based upon unpublished table T-6 from the Nationwide Personal Transportation Study conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 21. Percent of vehicle-miles of travel by household automobile ownership and occupation of head of household

Automobile ownership per household	Occupation of head of household											Total	
	Professionals and semi-professionals	Proprietors, farmers, and farm managers	Other proprietors, managers and officials	Store and office clerks and salesmen	Craftsmen, firemen, skilled laborers, etc.	Operators, semi-skilled & unskilled workers & laborers	Protective service workers	Personal services	Occupation N/A	Retired household head	Unemployed		Employment status N/A
One	30.7	52.3	30.5	35.2	43.1	43.1	48.0	45.6	41.5	79.4	35.8	68.9	39.9
Two	58.2	38.0	55.0	50.8	44.6	43.0	39.2	39.7	41.3	19.4	51.1	29.7	45.5
Three-or-more	10.7	9.7	13.5	14.0	11.9	12.2	12.7	14.5	17.2	1.2	12.4	1.4	10.4
Subtotal	99.6	100.0	99.0	100.0	99.6	98.3	99.9	99.8	100.0	100.0	99.3	100.0	95.8
None	0.4	0.0	1.0	0.0	0.4	1.7	0.1	0.2	0.0	0.0	0.7	0.0	4.2
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 ^{1/}
	By occupational groups												
One	13.9	2.7	8.1	16.2	15.2	17.2	3.3	4.4	0.8	6.5	11.2	0.5	100.0
Two	21.2	1.6	11.6	18.8	12.6	14.1	2.2	3.0	0.6	1.3	12.8	0.2	100.0
Three-or-more	15.6	1.7	11.4	20.8	13.6	15.6	2.9	4.5	1.0	0.3	12.5	0.1	100.0
Subtotal	17.7	2.1	10.2	18.0	13.8	15.5	2.7	3.8	0.7	3.2	12.1	0.2	100.0
None	15.7	0.0	22.8	4.6	14.3	23.8	0.0	1.3	0.0	0.0	17.5	0.0	100.0
Total	17.7	2.0	10.2	18.0	13.8	15.5	2.7	3.7	0.8	3.2	12.1	0.3	100.0 ^{1/}

^{1/} 775.8 billion vehicle-miles of travel.

SOURCE: Based on unpublished table T-6 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Daily number of vehicle trips and vehicle-miles of travel
per household by place of residence

All areas and places

The average number of trips for one, two, and three-or-more car households shows little variation by the different population size-groups; however, in places of 1,000,000 and over, three-or-more car households average 11.1 vehicle trips daily as compared to the average of 8.5 vehicle trips for all population size-groups (table 22).

Vehicle-miles of travel show greater variation. One-car households travel almost 15 miles more in places of 1,000,000 and over (34.7 vehicle-miles) than in places of 25,000-49,999 (20.9 vehicle-miles). Two-car households travel an average of 45.6 vehicle-miles daily in places of 50,000-99,999 compared to 66.0 vehicle-miles in unincorporated places. Households with three-or-more cars show the greatest variation, traveling more than twice as many vehicle-miles (108.6 vehicle-miles) in places of 1,000,000 and over than in places of 25,000-49,999 (48.8 miles).

SMSA's

The average number of daily vehicle trips per household in SMSA's shows little variation by population size-groups for one- and two-car households (table 23). However, some variation is noted for three-or-more car households in SMSA's of 3,000,000 and over, where 13.1 vehicle trips per household are made daily, compared to the average of 8.3 trips made for all three-or-more car households.

Vehicle-miles of travel per household by car ownership show the same pattern. That is, very little variation is noted in daily vehicle-miles traveled by one and two-car households; however, three-or-more car households in SMSA's of 3,000,000 and over travel 134.2 vehicle-miles daily compared to 82.5 for all three-or-more car households.

Table 22. Average daily vehicle trips and vehicle-miles of travel per household by automobile ownership and place of residence in all areas and places

Automobile ownership per household.	Population size-groups										All areas & places	
	Unincorporated	Incorporated places				1,000,000 and over	All incorporated places					
		Less than 5,000	5,000-24,999	25,000-49,999	50,000-99,999			100,000-999,999				
		Daily vehicle trips										
One	3.5	2.3	4.4	2.7	3.4	3.3	2.6	3.3	3.3	3.3	3.3	3.3
Two	6.4	4.5	7.7	7.2	5.6	6.3	6.0	6.4	6.4	6.3	6.4	6.3
Three-or-more	8.7	7.9	9.7	7.7	7.4	7.5	11.1	8.5	8.5	8.5	8.5	8.5
Subtotal	4.8	3.4	6.0	4.6	4.4	4.4	3.5	4.6	4.6	4.6	4.6	4.7
None	1.0	0.6	1.0	0.7	0.7	0.6	0.3	0.6	0.6	0.6	0.6	0.7
Total	4.3	2.9	5.1	4.1	3.7	3.4	1.9	3.6	3.6	3.6	3.6	3.8
		Daily vehicle-miles of travel										
One	31.7	24.8	29.4	20.9	28.3	23.6	34.7	26.8	26.8	26.8	26.8	28.5
Two	66.0	49.3	63.5	59.1	45.6	50.4	57.5	54.8	54.8	54.8	54.8	58.6
Three-or-more	96.7	57.3	97.5	48.8	50.9	72.8	108.6	74.3	74.3	74.3	74.3	82.1
Subtotal	49.0	35.3	47.2	36.3	35.8	33.8	40.8	38.8	38.8	38.8	38.8	41.6
None	6.9	6.0	6.8	4.7	4.8	3.9	2.3	4.3	4.3	4.3	4.3	4.8
Total	42.1	30.1	40.2	31.8	29.7	25.8	22.5	30.4	30.4	30.4	30.4	34.0

SOURCE: Based on unpublished tables T-5 and H-18 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Table 23. Average daily vehicle trips and vehicle-miles of travel per household by automobile ownership and SMSA population size-groups

	SMSA population size-groups						All SMSA's
	100,000-249,999	250,000-499,999	500,000-999,999	1,000,000-1,999,999	2,000,000-2,999,999	3,000,000 & over	
Automobile ownership per household							
One	4.5	4.3	3.5	3.1	3.1	3.1	3.5
Two	6.4	7.9	6.5	7.0	5.6	6.8	6.8
Three-or-more	4.5	7.4	9.1	7.7	7.7	13.1	8.3
Subtotal	5.2	5.9	4.6	4.7	4.1	4.8	4.9
None	1.3	0.8	0.7	0.5	0.4	0.3	0.6
Total	4.7	4.9	3.9	4.0	3.4	3.5	4.0
	Daily vehicle trips per household						
One	33.6	33.1	26.1	25.7	24.3	34.5	29.8
Two	55.4	72.2	56.6	64.0	47.0	59.6	59.7
Three-or-more	40.6	79.7	109.3	62.9	76.5	134.2	82.5
Subtotal	42.4	51.7	38.3	41.2	34.5	47.5	43.1
None	5.0	4.0	4.2	1.0	1.5	2.9	3.6
Total	36.9	41.7	31.6	35.1	28.1	34.5	34.8
	Daily vehicle-miles per household						
One	33.6	33.1	26.1	25.7	24.3	34.5	29.8
Two	55.4	72.2	56.6	64.0	47.0	59.6	59.7
Three-or-more	40.6	79.7	109.3	62.9	76.5	134.2	82.5
Subtotal	42.4	51.7	38.3	41.2	34.5	47.5	43.1
None	5.0	4.0	4.2	1.0	1.5	2.9	3.6
Total	36.9	41.7	31.6	35.1	28.1	34.5	34.8

SOURCE: Based on unpublished tables T-5 and H-18 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Person trips and person-miles of travel

Distribution

The distribution of person trips and person-miles of travel by car ownership is shown below in table 24. One-car households make the greatest percent of person trips by automobile (45.5 percent). Person-miles of travel are almost equally divided between one (42.7 percent) and two-car (43.8) households. Three-or-more car households contribute the smallest percent of person trips and person-miles of travel.

Table 24. Percent of person trips and person-miles of travel by household automobile ownership.

Automobile ownership per household	Person trips	Person-miles of travel
One	45.5	42.7
Two	40.1	43.8
Three-or-more	8.8	9.0
Subtotal	94.4	95.5
None	5.6	4.5
All	100.0	100.0

Source: Based on unpublished table P-8 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Number of household occupants

As shown in table 25, person trips by automobile increase as car ownership increases. Specifically, while the average household makes 6.2 person trips daily by automobile, households without a car make only 1.7 person trips by automobile per day compared to 5.9 person trips for one-car households and 12.4 person trips for three-or-more car households.

At any level of car ownership, the number of household occupants influences the number of person trips by automobile. For all households, an increase in number of occupants results in an increase in the number of daily household person trips, from 1.6 for a one-person household to 10.2 for a household with four-or-more persons. However, although the aggregate number of person trips by automobile increases as the size of the household increases, per capita trip production generally levels off especially for households with more than two occupants.

Person-miles of travel show the same pattern, increasing from 16.7 person-miles to 97.5 person-miles for one and four-or-more occupant households, respectively; the average household travels 60.6 person-miles daily by automobile.

Table 25. Average daily person trips and person-miles of travel per household by automobile ownership and number of household occupants.

Automobile ownership per household	Number of household occupants ^{1/}				All households
	One	Two	Three	Four-or-more	
	Person trips per household				
One	2.7	4.3	6.1	9.3	5.9
Two	4.8	5.6	7.6	11.7	9.1
Three-or-more	6.0	8.3	8.6	14.2	12.4
None	0.7	1.9	2.6	4.2	1.7
All	1.6	4.3	6.5	10.2	6.2
	Person-miles of travel per household				
One	27.0 ^{2/}	43.5	55.7	80.5	54.2
Two	96.3 ^{2/}	62.6	81.9	122.2	96.6
Three-or-more	8.0 ^{2/}	75.1	87.8	141.5	123.8
None	7.4	16.2	17.9	27.5	13.4
All	16.7	44.1	63.6	97.5	60.6

^{1/} Includes only those household occupants 5 years of age and older

^{2/} Due to limited size of sample

SOURCE: Based on unpublished tables T-5 and H-19 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Household income

As shown in table 26, person trip generation rates per household are influenced by differences in car ownership as well as income. Specifically, daily person trips per household increased from 2.2 person trips for households with income of less than \$3,000 to 9.5 person trips for households with incomes of \$15,000 and over. In addition, at each level of car ownership, an increase in the household income generally resulted in increased trip production, although exceptions were noted. For example, in one-car households, the average daily number of person trips per household increased from 3.5 person trips for households with incomes of less than \$3,000 to a peak of 7.3 person trips for households with incomes from \$7,500-9,999; trip generation rates for one-car households with incomes of greater than \$10,000 generally tended to level off. In two-car households, daily person trips per household increased from 5.5 (households with incomes of less than \$3,000) to 10.5 (households with incomes of \$15,000 and over). In three-or-more car households, daily person trips per household showed little variation by income class (figure 4).

Given a constant income, increased car ownership results in increased trip generation. For households with income from \$7,500-\$9,999, the average number of daily person trips per household increased from 7.3 to 12.8 for one and three-or-more car households, respectively.

The effect of car ownership and income on daily person-miles of travel per household is about the same as for person trips. Households with incomes of \$15,000 and over generally travel almost 6 times further (102.9 miles daily) than households with incomes of less than \$3,000 (17.8 miles). At each level of car ownership, person-miles of travel generally increased as income increased, although there were exceptions. In each income class beginning with \$6,000 and over, increased car ownership resulted in increased person-miles of travel per household (figure 5).

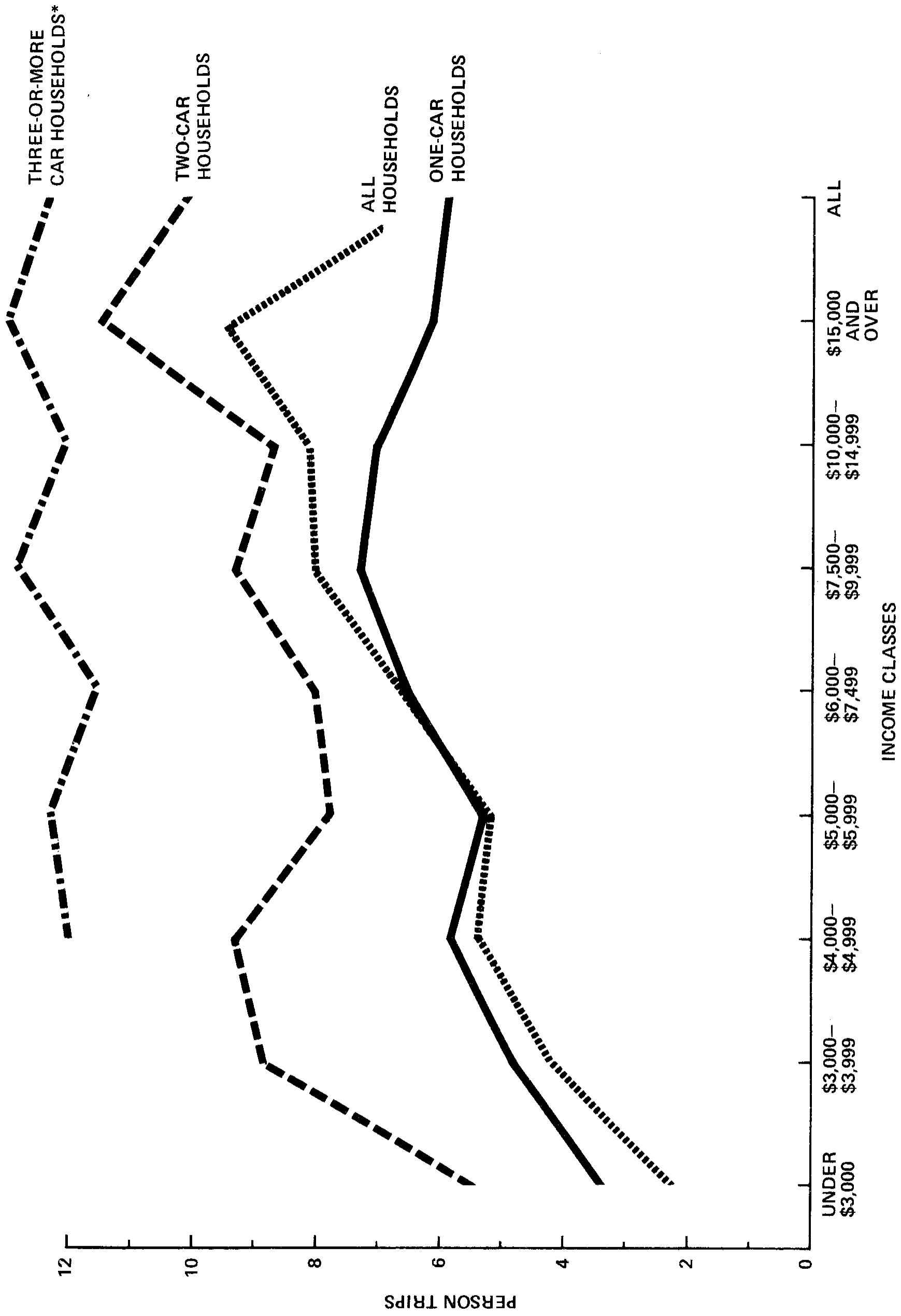
Table 26. Average daily person trips and person-miles of travel per household by car ownership and income groups.

Automobile ownership per household	Income classes										All income classes	
	Under \$3,000	\$3,000-3,999	\$4,000-4,999	\$5,000-5,999	\$6,000-7,499	\$7,500-9,999	\$10,000-14,999	\$15,000- & over				
	Daily person trips per household											
One	3.5	4.8	5.8	5.3	6.5	7.3	7.0	6.1	Daily person-miles of travel per household			5.9
Two	5.5	8.9	9.3	7.8	8.0	9.3	8.7	10.5				9.1
Three-or-more	NA	NA	12.0	12.3	10.6	12.8	12.1	13.0				12.4
None	1.1	2.2	2.2	2.4	2.9	3.2	2.8	3.3				1.7
Total	2.2	4.2	5.4	5.2	6.6	8.0	8.1	9.5				6.2
One	27.9	43.2	40.2	44.2	61.5	70.8	68.2	71.0				54.2
Two	64.9	82.8	93.3	79.5	68.3	102.2	98.1	113.0				96.6
Three-or-more	NA	NA	88.1	108.0	84.9	137.2	109.5	129.5				123.8
None	9.2	19.4	14.6	22.3	14.3	15.8	22.5	43.2				13.4
Total	17.8	34.0	41.3	46.6	55.8	81.0	84.2	102.9				60.6

NA - not applicable

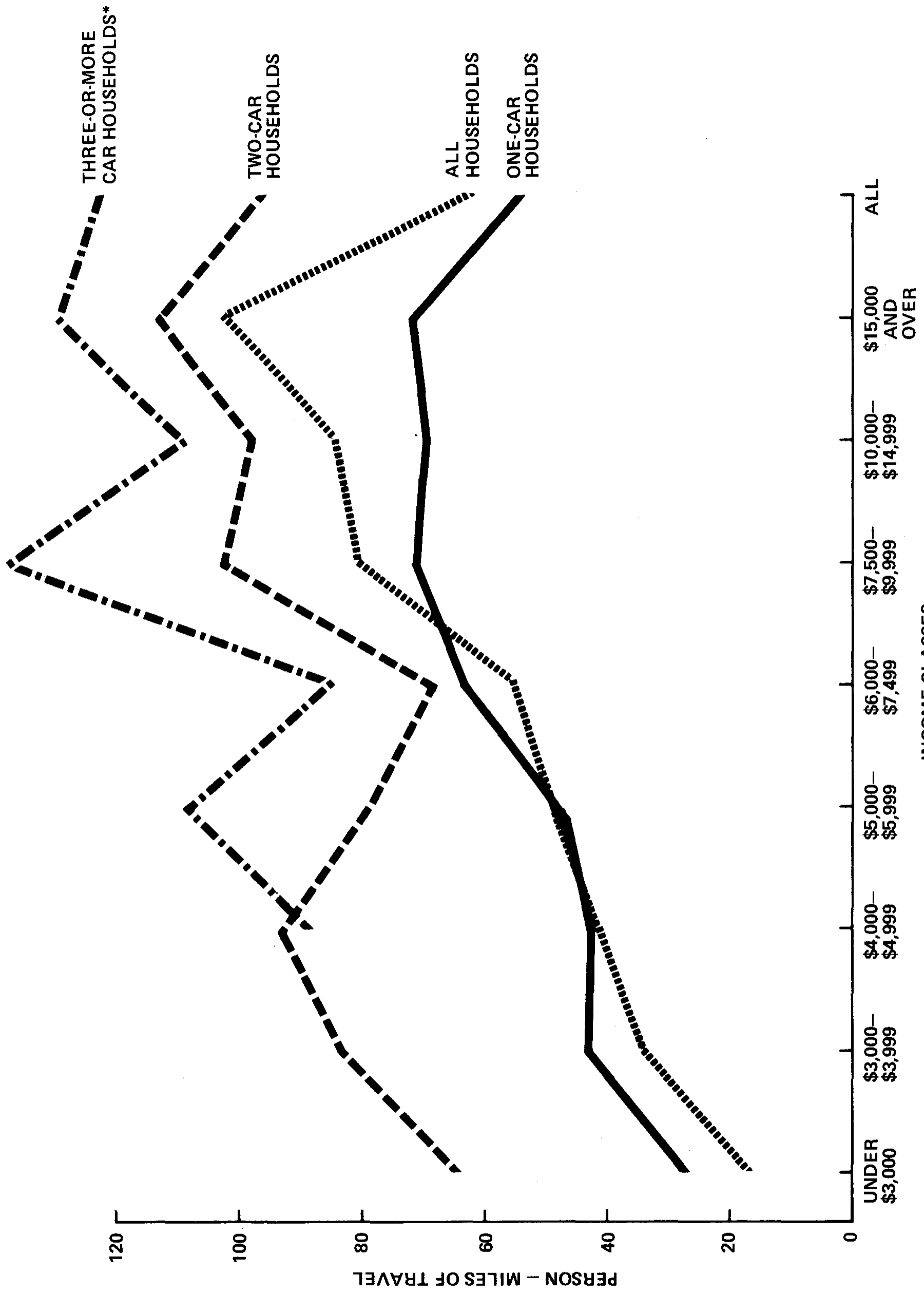
Source: Based upon unpublished tables T-5 and H-19 from the Nationwide Personal Transportation Study conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

FIGURE 4. AVERAGE DAILY PERSON TRIPS PER HOUSEHOLD BY CAR OWNERSHIP AND INCOME CLASSES



*DATA INSUFFICIENT FOR INCOMES OF LESS THAN \$4,000.

**FIGURE 5. AVERAGE DAILY PERSON-MILES OF TRAVEL PER HOUSEHOLD
BY CAR OWNERSHIP AND INCOME CLASSES**



*DATA INSUFFICIENT FOR INCOMES OF LESS THAN \$4,000.

Season of the year

Person trips and person-miles of travel vary by car ownership and season of the year (table 27). For one-car households, daily person trips (6.6 trips) are highest in the spring, while person-miles of travel (62 miles) are highest in the summer. Two-car households make the greatest number of daily person trips (10.0 trips) and person-miles of travel (125 miles) during the summer. Three-or-more car households prefer the fall for person trips (14.5 trips) and person-miles of travel (162 miles). For all households, person trips (6.6 trips) are highest in the spring but person-miles of travel (72 miles) per household are highest in the summer. (Figure 6)

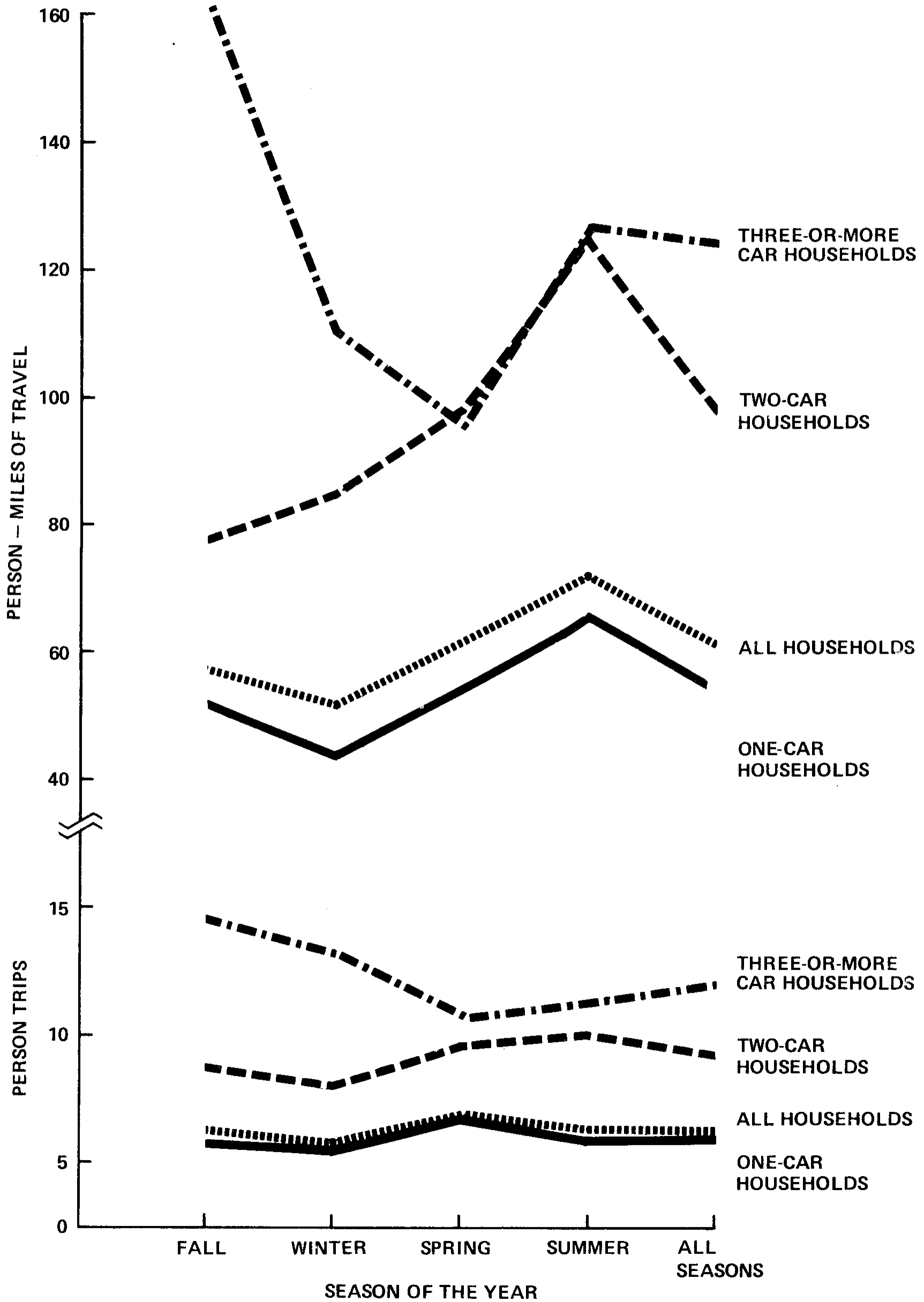
For each season of the year, daily person trips per household increase with increased car ownership; however person-miles of travel increase with increased car ownership only in the fall and winter; person-miles of travel during spring and summer tend to remain the same for two and three-or-more car households.

Table 27. Average daily person trips and person-miles of travel per household by automobile ownership and season of the year.

Automobile ownership per household	Season of the year				All seasons
	Fall	Winter	Spring	Summer	
			Person trips		
One	5.6	5.5	6.6	5.8	5.9
Two	8.7	8.0	9.5	10.0	9.1
Three-or-more	14.5	13.1	10.9	11.2	12.4
Subtotal	7.2	6.8	7.8	7.6	7.3
None	1.8	1.8	1.8	1.5	1.7
All	6.1	5.7	6.6	6.3	6.2
			Person-miles of travel		
One	52	44	58	62	54
Two	78	85	98	125	97
Three-or-more	162	111	96	127	124
Subtotal	67	62	74	88	73
None	17	14	12	10	13
All	57	52	62	72	61

SOURCE: Based upon unpublished table P-9 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

FIGURE 6. AVERAGE DAILY PERSON TRIPS AND PERSON-MILES OF TRAVEL PER HOUSEHOLD BY CAR OWNERSHIP AND SEASON OF THE YEAR



Summary

1. Almost 80 (79.4) percent) of all households in the United States have one-or-more cars: 48.4 percent have one car, 26.4 percent have two cars and 4.6 percent have three-or-more cars; the remaining 20.6 percent do not own a car. The percent of car-owning households is greatest in unincorporated areas and lowest in incorporated places of 1,000,000 and over, where almost half the households (47.6 percent) do not own a car.

2. The incidence of car ownership increases as household income increases. Approximately 36.9 percent of households with incomes of less than \$3,000 annually own a car compared to 98.8 percent of households with income of \$15,000 and over. More than half (50.2 percent) of all car-owning households had incomes of \$7,500 and over; more than half (52.4 percent) of households without a car earned less than \$3,000 annually.

3. The number of automobiles in a household is directly related to the number of adults (person 16 years of age and older) in a household . Approximately 43.8 percent of one-adult households own a car compared to 91.8 percent of three-or-more adult households.

4. The number of licensed drivers in the household is directly related to the number of automobiles in the household. Approximately 79.1 percent of single-driver households have only one car and 80.9 percent of all three-driver households have two-or-more cars.

5. As income increases, the average age of the automobile decreases; this is true regardless of the number of automobiles owned. Within each income level, as the number of cars owned increases, the average age of the cars increases somewhat.

6. The percent of late-model cars increases slightly as the number of cars per household increases.

7. Average annual miles per vehicle for all model-years combined, are higher for automobiles purchased as new than for automobiles purchased as used. However, for any given model-year except 1960, the reverse is true.

8. The distribution of automobiles is, almost equally divided between one (42.5) and two (45.4) car households; 12.1 percent of all automobiles are in households with three-or-more cars.

9. Nationally, the number of cars owned per household averaged 1.2, with a low of 0.7 cars per household in places of 1,000,000 and over. While three-out-of-five households with incomes of under \$3,000 do not own a car (translating to 0.4 cars per household), households with incomes of \$15,000 and over average almost two (1.9) cars per household

10. One and two-car households each generate 42.3 and 43.8 percent of all vehicle trips respectively, while three-or-more car households make only 10.3 percent of all trips; households without a car generate the remaining 3.6 percent of all vehicle trips.

11. The average number of vehicle trips made daily per household increases with increased car ownership; however, not proportionately. While one-car households make 3.4 vehicle trips daily, two-car households make 6.4 trips and three-or-more car households make 8.6 vehicle trips daily. The average number of daily vehicle trips per household is slightly higher in unincorporated areas (4.3 trips per household) than in incorporated places (3.7 trips per household). Places of 1,000,000 and over averaged the fewest number of daily trips (1.9 trips per household) due to the large preponderance of "car-less" households.

12. The number of household occupants influences the number of daily person trips made by automobile. Person trips increase from 1.6 daily for one-occupant households to 10.2 person trips for four-or-more occupant households.

13. Daily person trips are influenced by income as well as car ownership. Daily person trips per household increase from 2.2 person trips for households with incomes of less than \$3,000 to 9.5 person trips for households with incomes of \$15,000 and over. In addition, at each level of car ownership, an increase in household income generally results in increased trip production, although exceptions are noted.

14. One-car households make the greatest number of person trips during the spring but travel the greatest number of person-miles during the summer. Two-car households make the greatest number of person trips and person-miles of travel during the summer. Three-or-more car households prefer the fall for person trips and person-miles of travel. For all households, person trips are highest in the spring, but person-miles of travel per household are highest in the summer.

APPENDIX A

Sample base for Nationwide Personal Transportation Survey

The following are the major series of tables and the sample base for tables developed from the survey. Each of the tables in any of these reports will indicate a reference source from which the sample base can be determined.

1. H-series, E-series, and T-9 through T-16

These tables relate to data collected in Sections I through V of the questionnaire. The tables are based upon a sample of approximately 6,000 households, approximately 3,000 from panel 1 interviewed in April 1969, and approximately 3,000 from panel 2 interviewed in August 1969. Each of these panels were expanded to national estimates. For purposes of all tables referred to in any of these reports, the expanded data from the two panels were averaged.

2. P-series and T-1 through T-8

These tables relate to data collected in Section VI. Data from four interviews at the identical households in panel 1, (approximately 3,000 households were interviewed in April, July, October 1969, and January 1970) were combined and expanded to represent annual estimates of trips and travel by automobile or other forms of public transportation.

APPENDIX A

Major sections of questionnaire

The following are the main sections of the questionnaire:

1. The data reported in items a through t above Section 1 of the questionnaire form were transcribed from the control card.
2. Section I - Automobile Record.
3. Section II - Shopping and nearness to public transportation to main business district by residents of Standard Metropolitan Statistical Areas.
4. Section III - Travel to work for all employed persons 16 years or older.
5. Section IV - Driver information or estimated annual miles driven by licensed drivers.
6. Section V - Travel to school for persons between 5 and 18 years of age and attending school. For panel 2 of the households interviewed in August 1969, the interviewer asked for the travel to school information for the preceding May.
7. Section VI - Travel day report. All one-way trips by motor vehicle or some form of public transportation taken by persons 5 years of age or older were reported for a pre-assigned reference day. The reference days were all in a one-week period in each of the months of interviewing and all weekdays and weekends were represented. Generally, the interviewer visited all households the first weekday after the reference day in order to minimize memory errors.
8. Section VII - Overnight travel record of all trips lasting one or more nights during the 7 days ending the day before the preassigned travel day. Insufficient data were collected in this section to permit detailed analyses.

Appendix A

NOTICE - All information which would permit identification of the individual will be held in strict confidence, will be used only by persons engaged in and for the purposes of the survey, and will not be disclosed or released to others for any purposes.				① BUDGET BUREAU NO. 41-S69011 APPROVAL EXPIRES DECEMBER 1970							
FORM NPT-2 (7-10-69) U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS ACTING AS COLLECTING AGENT FOR THE U.S. DEPARTMENT OF TRANSPORTATION HOUSEHOLD QUESTIONNAIRE - AUGUST 1969 NATIONWIDE PERSONAL TRANSPORTATION SURVEY				a. Ident. Code	b. Household No.	c. Control No.					
						PSU	Rot.	Segment	Serial	Str.	
				d. Type of structure		e. Race		f. SMSA	g. Place	h. State	
i. Subsample		j. Designated travel day		k. No. of hhld. members (all ages)		l. Number of automobiles					
		Day of week		Mo./day							
m. Automobile				n. Principal user Line No.		o. (If no automobile) 1 <input type="checkbox"/> Auto available 2 <input type="checkbox"/> Not available		p. Income		r. OFFICE USE	
								q. Interviewer's code			
Auto No.	Year	Make	Office use								
s. Date of interview		t. Noninterview reason		3 <input type="checkbox"/> Ref.		4 <input type="checkbox"/> Other Type A		5 <input type="checkbox"/> Other type - Specify →			
		1 <input type="checkbox"/> NOH 2 <input type="checkbox"/> TA									
(Fill a, b, c, f, g, h, i, j, q.)											
Section I - AUTOMOBILE RECORD											
Now I have some questions about your - - (first, second, etc., automobile)				Auto No.	Auto No. ← ②	Auto No.					
1. Is it owned by somebody living here?				1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No (Go to Q. 3)	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No (Go to Q. 3)	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No (Go to Q. 3)					
2a. Was it purchased new or used?				1 <input type="checkbox"/> New 2 <input type="checkbox"/> Used	1 <input type="checkbox"/> New 2 <input type="checkbox"/> Used	1 <input type="checkbox"/> New 2 <input type="checkbox"/> Used					
b. In what month and year was it bought? (Examples: 10/67, 04/68)				Month Year	Month Year	Month Year					
3. About how many thousand miles was it driven during the past 12 months?				Miles (Thousands)	Miles (Thousands)	Miles (Thousands)					
4. Is it used at least once a week in going from home to work?				1 <input type="checkbox"/> Yes - Entire trip 2 <input type="checkbox"/> Yes - Part-way 3 <input type="checkbox"/> No (Go to next auto or Sec. II)	1 <input type="checkbox"/> Yes - Entire trip 2 <input type="checkbox"/> Yes - Part-way 3 <input type="checkbox"/> No (Go to next auto or Sec. II)	1 <input type="checkbox"/> Yes - Entire trip 2 <input type="checkbox"/> Yes - Part-way 3 <input type="checkbox"/> No (Go to next auto or Sec. II)					
5. How many people are usually in the automobile going to work, including the driver?				Number	Number	Number					
6a. What type of parking facility is usually used for the trip to work - the employer's lot, a commercial lot, on the street, or what?				CODE KEY → 1 - Commercial parking garage or lot 5 - On the street 2 - Employer provided space 6 - No all day parking used 3 - Fringe parking 7 - Other 4 - Other lot or garage							
				If code 6 go to next auto or Sec. II							
b. Is there a cost for parking?				1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No (Go to next auto or Sec. II)	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No (Go to next auto or Sec. II)	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No (Go to next auto or Sec. II)					
c. How much?				\$ 1 <input type="checkbox"/> Day 2 <input type="checkbox"/> Week 3 <input type="checkbox"/> Month	\$ 1 <input type="checkbox"/> Day 2 <input type="checkbox"/> Week 3 <input type="checkbox"/> Month	\$ 1 <input type="checkbox"/> Day 2 <input type="checkbox"/> Week 3 <input type="checkbox"/> Month					
d. Does . . . pay by putting coins into a meter?				1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					
Section II - SHOPPING ASK for SMSA residents only - 1 or 2 as second digit of identification code											
Now we are interested in where people shop - (Ask 1 and 2 for (1) wife or (2) female head or (3) male head)				1 <input type="checkbox"/> Yes → How many times? _____ (Go to Q. 3) 2 <input type="checkbox"/> No							
1. During the past 3 months has . . . gone to the main business district of _____ principally to shop?											
2. What were the reasons for not shopping there? (Mark all boxes that apply)				1 <input type="checkbox"/> Goods available locally		4 <input type="checkbox"/> Difficulty of driving in congested area					
				2 <input type="checkbox"/> Too far away		5 <input type="checkbox"/> No automobile					
				3 <input type="checkbox"/> Difficulty of parking		6 <input type="checkbox"/> Other - Specify →					
3. How far is it from home to the nearest public transportation line to go to the main business district of _____?				1 <input type="checkbox"/> Less than one block		4 <input type="checkbox"/> Over 6 blocks (over 1/2 mile)					
				2 <input type="checkbox"/> 1-2 blocks (less than 1/4 mile)		5 <input type="checkbox"/> No public transportation available					
				3 <input type="checkbox"/> 3-6 blocks (1/4 - 1/2 mile)		6 <input type="checkbox"/> Lives in main business district					

Note: Fill remaining pages for household members 5 years old or over.

3 Section III - TRAVEL TO WORK	
1. Line No.	2. CHECK ITEM <input type="checkbox"/> This person is 16 years old or older and has an entry in Control Card question 16b. <i>(Fill in Sec. III, IV, and V as applicable)</i> <input checked="" type="checkbox"/> All others <i>(Fill in Sec. IV and V as applicable)</i>
3. We are interested in where people work and how they get to work. Is the place where . . . works located in a city?	1 <input type="checkbox"/> Yes —> What city? _____ 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know State? _____
4. How far is it from home to the place where . . . works? (Actual travel distance)	Miles (Enter nearest full mile) 1X <input type="checkbox"/> No fixed place } (Go to Sec. IV) 2X <input type="checkbox"/> At home 3X <input type="checkbox"/> Less than 1/2 mile (5 blocks)
5. How much time is usually required for . . . to get to work from the time he leaves until he arrives at work?	Minutes
6. How does . . . usually get to work? <i>(Mark all appropriate boxes)</i>	1 <input type="checkbox"/> Bus or street car 2 <input type="checkbox"/> Commuter train, subway, elevated, etc. 3 <input type="checkbox"/> Automobile -- with other persons 4 <input type="checkbox"/> Automobile -- alone 5 <input type="checkbox"/> Truck 6 <input type="checkbox"/> Motorcycle 7 <input type="checkbox"/> Walk only <i>(Go to Q. 10a)</i> 8 <input type="checkbox"/> Other -- including bicycle -- Specify _____
7. How far is it from home to the nearest public transportation line that . . . uses (could use) to get to his place of work?	1 <input type="checkbox"/> Less than 1 block 2 <input type="checkbox"/> 1 to 2 blocks (less than 1/4 mile) 3 <input type="checkbox"/> 3 to 6 blocks (1/4 to 1/2 mile) 4 <input type="checkbox"/> Over 6 blocks (over 1/2 mile) 5 <input type="checkbox"/> None available } (Go to Q. 10a)
8. What is the reason . . . does not use public transportation to go to work? Anything else? <i>(Mark all boxes that apply)</i>	1 <input type="checkbox"/> None available 2 <input type="checkbox"/> Not convenient to get to 3 <input type="checkbox"/> Not convenient to place of work 4 <input type="checkbox"/> Too many transfers 5 <input type="checkbox"/> Too expensive 6 <input type="checkbox"/> Too crowded or uncomfortable 7 <input type="checkbox"/> Takes too long 8 <input type="checkbox"/> Need auto for work 9 <input type="checkbox"/> Other -- Specify _____ <i>(Go to 10a)</i>
9. What is the reason . . . uses public transportation to get to work? Anything else? <i>(Mark all boxes that apply)</i>	1 <input type="checkbox"/> No driver's license 2 <input type="checkbox"/> No car available 3 <input type="checkbox"/> No car pool available 4 <input type="checkbox"/> Cheaper than auto 5 <input type="checkbox"/> Safer than auto 6 <input type="checkbox"/> No parking problems 7 <input type="checkbox"/> No driving strain 8 <input type="checkbox"/> Faster 9 <input type="checkbox"/> Other -- Specify _____
10a. Does . . . work at same location as 5 years ago? <i>(Ask for persons 21 years old or older)</i>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Not working 5 years ago <i>(Go to Sec. IV)</i>
b. Does . . . live at same location as 5 years ago?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
c. Compared with the time it took . . . to get to work 5 years ago, is the time to work:	1 <input type="checkbox"/> About the same as 5 years ago 2 <input type="checkbox"/> At least 10 minutes more 3 <input type="checkbox"/> At least 10 minutes less
Section IV - DRIVER INFORMATION	
1. About how many thousands of miles did . . . drive during the past 12 months, including driving as part of work? <i>(Ask for licensed drivers only)</i>	1 <input type="checkbox"/> None 2 <input type="checkbox"/> Under 5,000 3 <input type="checkbox"/> 5,000 - 9,999 4 <input type="checkbox"/> 10,000 - 14,999 5 <input type="checkbox"/> 15,000 - 19,999 6 <input type="checkbox"/> 20,000 - 24,999 7 <input type="checkbox"/> 25,000 - 29,999 8 <input type="checkbox"/> 30,000 and over
Section V - TRAVEL TO SCHOOL	
<i>(Ask Sec. V for persons 5-18 years old)</i> Now I would like to ask some questions about transportation to school.	
1. Last May was . . . attending or enrolled in school?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No <i>(Go to Sec. VI)</i>
2. Was it a public or private school?	1 <input type="checkbox"/> Public 2 <input type="checkbox"/> Private
3. What grade was . . . attending?	Grade Enter "0" for kindergarten or 1-12, 13+
4. About how many miles was it from home to . . . 's school? <i>(If less than one mile enter "0")</i>	Miles
5. About how long did it take . . . to get from home to school?	Minutes
6. How did . . . usually get to school? <i>(Mark only one box)</i>	1 <input type="checkbox"/> School bus - No charge 2 <input type="checkbox"/> Public transportation - No charge } (Go to Sec. VI) 3 <input type="checkbox"/> School bus - Charge 4 <input type="checkbox"/> Public transportation - Charge } 5 <input type="checkbox"/> Walk, bicycle 6 <input type="checkbox"/> Automobile - Driver 7 <input type="checkbox"/> Automobile - Passenger } (Go to Q. 7) 8 <input type="checkbox"/> Motorcycle 9 <input type="checkbox"/> Other
7. Was free school bus or free public transportation available?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No

Appendix A

Section VII - OVERNIGHT TRAVEL			
OUTBOUND TRIP	Trip 1	Trip 2	Trip 3
	Line No. 9	Line No. 10	Line No. 11
1. How many miles is it from home to where . . . went? (To farthest point)	Miles	Miles	Miles
2. How much time did . . . spend getting there? (Total time from home to farthest point, not just travel time) (Enter nearest full hour or day)	1 <input type="checkbox"/> Hours 2 <input type="checkbox"/> Days	1 <input type="checkbox"/> Hours 2 <input type="checkbox"/> Days	1 <input type="checkbox"/> Hours 2 <input type="checkbox"/> Days
3. What time of day did the trip start?	1 <input type="checkbox"/> a.m. 2 <input type="checkbox"/> p.m.	1 <input type="checkbox"/> a.m. 2 <input type="checkbox"/> p.m.	1 <input type="checkbox"/> a.m. 2 <input type="checkbox"/> p.m.
4. On what day of the week did the trip start?	1 <input type="checkbox"/> Sun. 5 <input type="checkbox"/> Thurs. 2 <input type="checkbox"/> Mon. 6 <input type="checkbox"/> Fri. 3 <input type="checkbox"/> Tues. 7 <input type="checkbox"/> Sat. 4 <input type="checkbox"/> Wed.	1 <input type="checkbox"/> Sun. 5 <input type="checkbox"/> Thurs. 2 <input type="checkbox"/> Mon. 6 <input type="checkbox"/> Fri. 3 <input type="checkbox"/> Tues. 7 <input type="checkbox"/> Sat. 4 <input type="checkbox"/> Wed.	1 <input type="checkbox"/> Sun. 5 <input type="checkbox"/> Thurs. 2 <input type="checkbox"/> Mon. 6 <input type="checkbox"/> Fri. 3 <input type="checkbox"/> Tues. 7 <input type="checkbox"/> Sat. 4 <input type="checkbox"/> Wed.
5. What was the main reason for the trip? (Enter code)	Code Key →		
	1. To work 2. Business - Other than to work 3. Shopping 4. Other family or personal business 5. To school or church 6. To doctor or dentist 7. Vacation 8. Visit friends or relatives 9. Pleasure driving 10. Other social or recreational 11. Other		
6. What means of transportation were used? (Enter codes) <i>(Include all means such as transportation to and from terminals as well as major means, circle major means.)</i>	Code Key →		
	1. School bus 2. Other bus and/or street car 3. Elevated or subway 4. Other train 5. Airplane 6. Taxi 7. Automobile - Driver 8. Automobile - Passenger 9. Motorcycle or motorbike 10. Truck (including pick-up) 11. Other		
7. What automobile was used? <i>(Transcribe automobile number from C.C.)</i>	Auto No.	Auto No.	Auto No.
	or 9 <input type="checkbox"/> Not an auto listed on the C.C.	or 9 <input type="checkbox"/> Not an auto listed on the C.C.	or 9 <input type="checkbox"/> Not an auto listed on the C.C.
8. Who drove the automobile? <i>(If more than one driver, enter the line number of the person who drove the most miles)</i>	Driver Line No.	Driver Line No.	Driver Line No.
	or 99 <input type="checkbox"/> Not a household member	or 99 <input type="checkbox"/> Not a household member	or 99 <input type="checkbox"/> Not a household member
9. How many people were in the automobile, including the driver? <i>(Include children under 5 and non-household members)</i>	Number	Number	Number
RETURN TRIP	Trip 1	Trip 2	Trip 3
10. How many nights were you away from home?	Number	Number	Number
11. How much time did . . . spend on the return trip? (Enter nearest full hour or day)	1 <input type="checkbox"/> Hours 2 <input type="checkbox"/> Days	1 <input type="checkbox"/> Hours 2 <input type="checkbox"/> Days	1 <input type="checkbox"/> Hours 2 <input type="checkbox"/> Days
12. What time of day did . . . start on the return trip?	1 <input type="checkbox"/> a.m. 2 <input type="checkbox"/> p.m.	1 <input type="checkbox"/> a.m. 2 <input type="checkbox"/> p.m.	1 <input type="checkbox"/> a.m. 2 <input type="checkbox"/> p.m.
13. On what day of the week did . . . start on the return trip?	1 <input type="checkbox"/> Sun. 5 <input type="checkbox"/> Thurs. 2 <input type="checkbox"/> Mon. 6 <input type="checkbox"/> Fri. 3 <input type="checkbox"/> Tues. 7 <input type="checkbox"/> Sat. 4 <input type="checkbox"/> Wed.	1 <input type="checkbox"/> Sun. 5 <input type="checkbox"/> Thurs. 2 <input type="checkbox"/> Mon. 6 <input type="checkbox"/> Fri. 3 <input type="checkbox"/> Tues. 7 <input type="checkbox"/> Sat. 4 <input type="checkbox"/> Wed.	1 <input type="checkbox"/> Sun. 5 <input type="checkbox"/> Thurs. 2 <input type="checkbox"/> Mon. 6 <input type="checkbox"/> Fri. 3 <input type="checkbox"/> Tues. 7 <input type="checkbox"/> Sat. 4 <input type="checkbox"/> Wed.
14. What means of transportation were used? (Enter codes) <i>(Include all means such as transportation to and from terminals as well as major means, circle major means.)</i>	Code Key →		
	1. School bus 2. Other bus and/or street car 3. Elevated or subway 4. Other train 5. Airplane 6. Taxi 7. Automobile - Driver 8. Automobile - Passenger 9. Motorcycle or motorbike 10. Truck (including pick-up) 11. Other		
15. Who drove the automobile? <i>(If more than one driver, enter the Line No. of the person who drove the most miles)</i>	Driver Line No.	Driver Line No.	Driver Line No.
	or 9 <input type="checkbox"/> Not a household member	or 9 <input type="checkbox"/> Not a household member	or 9 <input type="checkbox"/> Not a household member
16. How many people were in the automobile on the return trip, including the driver? <i>(Include children under 5 and nonhousehold members)</i>	Number	Number	Number
17. In addition to . . . , did anyone else living here go on this trip both outbound and return? <i>(If outbound or return only, enter the trip in a separate column)</i> <i>(List line numbers of other household members 5 years old or older who went on this round trip)</i>	0 <input type="checkbox"/> No others		
	Line Numbers	Line Numbers	Line Numbers

APPENDIX B

NATIONWIDE PERSONAL TRAVEL SURVEY

Table I.B.-1. -- Estimated Standard Errors for Estimates for All Persons or White Persons 5 Years or Older

Estimated Total (000)	Estimated Standard Error (1 sigma) (000)
100	68
150	83
200	96
250	107
300	118
500	152
750	185
1,000	214
1,500	261
2,000	300
4,000	420
5,000	466
6,000	507
7,500	562
10,000	638
12,500	702
15,000	755
20,000	840
25,000	903
35,000	975
50,000	976

APPENDIX B

Table I.B.-2. -- Estimated Standard Errors for Percentages For
All Persons or White Persons 5 Years or Older

Base of Percentage (000)	1 or 99%	5 or 95%	10 or 90%	20 or 80%	25 or 75%	50%
300	-	-	-	15.7	17.0	19.6
500	-	-	9.1	12.2	13.2	15.2
750	-	5.4	7.4	9.9	10.7	12.4
1,000	-	4.7	6.4	8.6	9.3	10.7
1,500	1.7	3.8	5.3	7.0	7.6	8.8
2,000	1.5	3.3	4.6	6.1	6.6	7.8
4,000	1.1	2.3	3.2	4.3	4.7	5.4
5,000	1.0	2.1	2.9	3.8	4.2	4.8
6,000	.9	1.9	2.6	3.5	3.8	4.4
7,500	.8	1.7	2.4	3.1	3.4	3.9
10,000	.7	1.5	2.0	2.7	2.9	3.4
12,500	.6	1.3	1.8	2.4	2.6	3.0
15,000	.6	1.2	1.7	2.2	2.1	2.8
20,000	.5	1.0	1.4	1.9	1.9	2.4
25,000	.4	.9	1.3	1.7	1.3	2.1
50,000	.3	.7	.9	1.2	1.1	1.5
75,000	.2	.5	.7	1.0	.9	1.2
100,000	.2	.5	.6	.9	.8	1.1
125,000	.2	.4	.6	.8	.8	1.0
150,000	.2	.4	.5	.7	.7	.9
179,000	.2	.4	.5	.6		.8

Table II.B.-1. -- Estimated Standard Errors For Estimates For Households

Estimated Total (000)	Estimated Standard Error (1 sigma) (000)
25	25
50	29
100	40
150	49
200	57
250	64
300	70
500	90
750	110
1,000	127
1,500	155
2,000	178
3,000	217
5,000	276
7,500	333
10,000	378
15,000	447
20,000	496
25,000	532
30,000	556
35,000	571

Table II.B.-2. -- Estimated Standard Errors For Percentages
For Households

Base of Percentage (000)	Estimated Percentage					
	1 or 99%	5 or 95%	10 or 90%	20 or 80%	25 or 75%	50%
100	-	-	-	16.1	17.5	20.2
150	-	-	9.9	13.2	14.3	16.5
200	-	-	8.6	11.4	12.4	14.3
250	-	5.6	7.6	10.2	11.0	12.8
300	-	5.1	7.0	9.3	10.1	11.6
500	1.8	3.9	5.4	7.2	7.8	9.0
750	1.5	3.2	4.4	5.9	6.4	7.4
1,000	1.3	2.8	3.8	5.1	5.5	6.4
1,500	1.0	2.3	3.1	4.2	4.5	5.2
2,000	.9	2.0	2.7	3.6	3.9	4.5
3,000	.7	1.6	2.2	2.9	3.2	3.7
5,000	.6	1.2	1.7	2.3	2.5	2.8
7,500	.5	1.0	1.4	1.9	2.0	2.3
10,000	.4	.9	1.2	1.6	1.7	2.0
15,000	.3	.7	1.0	1.3	1.4	1.6
20,000	.3	.6	.9	1.1	1.2	1.4
25,000	.3	.6	.8	1.0	1.1	1.3
30,000	.2	.5	.7	.9	1.0	1.2
35,000	.2	.5	.6	.9	.9	1.1
50,000	.2	.4	.5	.7	.8	.9
63,000	.2	.4	.5	.6	.7	.8

Table III.B.-1. -- Estimated Standard Errors for Estimates
for All Vehicles and Vehicles Owned by Persons

Estimated Total (000)	Estimated Standard Error (1 Sigma) (000)
25	19
50	26
100	37
150	46
200	53
250	59
300	65
500	84
750	102
1,000	118
1,500	144
2,000	166
3,000	203
5,000	261
7,500	318
10,000	365
15,000	442
20,000	505
25,000	557
30,000	603
35,000	643
50,000	737
73,000	830

Table III.B.-2. -- Estimated Standard Errors for Percentages
For All Vehicles and Vehicles Owned by All
Persons

Base of Percentage (000)	Estimated Percentage					
	1 or 99%	5 or 95%	10 or 90%	20 or 80%	25 or 75%	50%
100	-	-	11.2	15.0	16.2	18.7
150	-	-	9.2	12.2	13.2	15.3
200	-	5.8	7.9	10.6	11.1	13.2
250	-	5.1	7.1	9.4	10.2	11.8
300	-	4.7	6.5	8.6	9.3	10.8
500	1.7	3.6	5.0	6.7	7.2	8.4
750	1.4	3.0	4.1	5.5	5.9	6.8
1,000	1.2	2.6	3.5	4.7	5.1	5.9
1,500	1.0	2.1	2.9	3.9	4.2	4.8
2,000	.8	1.8	2.5	3.3	3.6	4.2
3,000	.7	1.5	2.0	2.7	3.0	3.4
5,000	.5	1.2	1.6	2.1	2.3	2.6
7,500	.4	.9	1.3	1.7	1.9	2.2
10,000	.4	.8	1.1	1.5	1.6	1.9
15,000	.3	.7	.9	1.2	1.3	1.5
20,000	.3	.6	.8	1.1	1.2	1.3
25,000	.2	.5	.7	.9	1.0	1.2
30,000	.2	.5	.6	.9	.9	1.1
35,000	.2	.4	.6	.8	.9	1.0
50,000	.2	.4	.5	.7	.7	.8
73,000	.1	.3	.4	.6	.6	.7

Table IV-1A. -- Estimated Standard Errors for Number of
 Vehicle Trips for One Day When Single Auto is
 Only Means

Estimated Total (000)	Estimated Standard Error (1 sigma) (000)
100	95
250	150
500	213
750	261
1,000	302
2,500	479
5,000	683
10,000	982
15,000	1,222
25,000	1,625
50,000	2,459
75,000	3,197
100,000	3,893
125,000	4,567
150,000	5,228
175,000	5,879
200,000	6,524
225,000	7,164
235,000	7,420
255,000	7,802

Table VI.-A.1. -- Estimated Standard Errors for Number of Total Person Trips for One Day

Estimated Total (000)	Estimated Standard Error (1 sigma) (000)
150	140
200	163
250	182
500	257
750	315
1,000	363
1,500	445
2,500	574
5,000	812
7,500	995
10,000	1,150
25,000	1,815
50,000	2,564
75,000	3,137
100,000	3,618
150,000	4,421
200,000	5,094
250,000	5,683
300,000	6,211
350,000	6,694
400,000	7,140
450,000	7,577

Table VI.-A.2. -- Estimated Standard Errors for Percentages of Total Person Trips for One Day

Base of Percentage (000)	Estimated Percentage					
	1 or 99%	5 or 95%	10 or 90%	20 or 80%	25 or 75%	50%
500	-	-	-	20.6	22.2	25.7
750	-	-	12.6	16.8	18.1	21.0
1,000	-	7.9	10.9	14.5	15.7	18.2
1,500	-	6.5	8.9	11.9	12.8	14.8
2,500	2.3	5.0	6.9	9.2	10.0	11.5
5,000	1.6	3.5	4.9	6.5	7.0	8.1
7,500	1.3	2.9	4.0	5.3	5.7	6.6
10,000	1.1	2.5	3.4	4.6	5.0	5.7
25,000	.7	1.6	2.2	2.9	3.1	3.6
50,000	.5	1.1	1.5	2.1	2.2	2.6
75,000	.4	.9	1.3	1.7	1.8	2.1
100,000	.4	.8	1.1	1.5	1.6	1.8
150,000	.3	.6	.9	1.2	1.3	1.5
200,000	.3	.6	.8	1.0	1.1	1.3
250,000	.2	.5	.7	.9	1.0	1.1
300,000	.2	.5	.6	.8	.9	1.0
350,000	.2	.4	.6	.8	.8	1.0
400,000	.2	.4	.5	.7	.8	.9
450,000	.2	.4	.5	.7	.8	.9

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3. Seasonal Variations of Automobile Trips and Travel
4. Transportation Characteristics of School Children
5. Availability of Public Transportation and Shopping Characteristics of SMSA Households
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