

# Annual Miles of Automobile Travel

REPORT NO. 2

# NATIONWIDE PERSONAL TRANSPORTATION SURVEY

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April 1972



# U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

WASHINGTON, D.C. 20591

### INTRODUCTION

Realistic prediction of the future levels of automobile use is important to plan to meet the future demands put on our Nation's streets and highways. Before realistic predictions can be made, the current characteristics and factors affecting use of the automobile must be understood.

The following report presents data compiled from the Nationwide Personal Transportation Survey concerning the use of automobiles by households. These data were used to estimate the average annual mileage per automobile and to relate automobile use to seven selected variables.

## DESCRIPTION OF DATA

Data collected in this survey were used to study the effect of seven selected variables on automobile use expressed in average annual miles per vehicle 1/. These seven variables were: number of cars in the household 2/, age of the automobile by year model, cars purchased new or used, annual income of the household, occupation of the principal operator of the automobile, place of residence of principal operator by incorporated places and unincorporated areas, and size of the Standard Metropolitan Statistical Area.

<sup>1</sup>/ In this survey, people were asked to estimate annual miles for each vehicle in their households. Therefore, data presented represent estimated average annual miles per vehicle.

<sup>2/</sup> For this survey, households were selected to represent the civilian, non-institutionalized population. Therefore, the total number of automobiles will be less than the universe of registered vehicles.

# HIGHLIGHTS

- . Automobiles in two- and three-or-more car households average more miles per vehicle annually than automobiles operated from one-car households.
- . As the average age of the automobile increases, the average annual miles per automobile decreases.
- . The average age for all cars, whether located in a one-, two-, or three-or-more car household, remains relatively constant.
- considering all year-models, automobiles purchased as new appear to have higher average annual miles per vehicle than automobiles purchased as used. However, for any particular year-model, cars purchased new have lesser annual mileage per vehicle than cars purchased used.
- . Approximately 50 percent of cars are purchased new and approximately 50 percent are purchased used.
- . As the annual income of the household increases so does the average annual miles per vehicle.
- . Vehicles operated by residents of incorporated places account for nearly two-thirds of all vehicle miles of travel.
- . Passenger automobiles averaged 11,600 miles annually.

### 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 are 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 offices to clear up inconsistencies and omissions and

later in the Washington office. The data were then coded, put on tapes and mechanically edited. An edited tape for each of the months of the survey was furnished to the Federal Highway Administration for processing.

At the first visit to a selected household, in panel 1 during April, 1969, and in panel 2 during August, 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.

Each of the tables in this report will indicate 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 August. Standard errors of estimates, 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 III.-A.2 and V.-A.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 the 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 TRAVEL

# Vehicle-miles and number of automobiles in the household

Table 1 shows that automobiles in two- and three-or-more car households average more miles annually than automobiles operated in one-car households. While the overall average for annual mileage is 11,600 miles per vehicle, the annual mileage by household increases from 10,800 miles per vehicle for one-car households to 12,000 miles per vehicle for all cars in a two-car household, to a high of 12,800 for all cars in a three-or-more car household.

One-car households drive 39.7 percent of the vehicle-miles and account for 61.0 percent of the car-owning households. Two-car households make up 33.2 percent of all car-owning households. They own about the same percent of vehicles as one-car households (45.4 percent to 42.5 percent, respectively), and account for 47.0 percent of the annual vehicle-miles. Three-or-more car households drive 13.3 percent of the vehicle-miles, while owning 12.1 percent of the vehicles and accounting for 5.8 percent of the car-owning households.

# Vehicle-miles and the age of automobile (year-model)

Generally, as the average age increases, the average annual miles per automobile decreases. Table 1 and figure 1 show that average annual mileage per vehicle ranges from 6,500 miles for year-models of 1959 or older to 17,500 miles for 1969 model cars. It can be seen that this tendency is evident in automobiles whether they are operated by one-, two-, or three-or-more car households. For example, in two-car households, the automobile mileage ranges from 6,800 miles for cars of models 1959 or older to 17,700 miles for 1969 model cars.

Table 2 shows that as mileage decreases, the average age of the vehicles increases. The average age increases from 3.2 years for automobiles driven more than 28,000 miles a year to 7.8 years for automobiles driven less than 500 miles a year. The average age for all mileage classes is 5.1 years.

As the average age of vehicles increases, there is a corresponding change in the median year-model in each mileage class (table 2 and figure 2). The median year-model ranges from 1961 models for automobiles driven less than 500 miles annually to 1967 models for automobiles driven over 28,000 miles. The median year-model for all mileage classes at the time of the survey was 1965.

An interesting relationship can be seen from table 3, average age by mileage class and number of cars in the household. The average age for all cars is 5.1 years whether in a one-, two-, or three-or-more car household. Furthermore, it appears that the average age in each

Table 1.--Estimated average annual miles per automobile (thousands) by year-model and number of cars in the household

	Year-model of newest car	Year of vehicle life	One-car households	Two-car households	Three- or more car households	All households
	1969	1st	17.5	17.7	17.1	17.5
	1968	2nd	14.6	17.4	16.7	16.1
ļ	1967	3rd	12.6	13.5	13.7	13.2
	1966	4th	11.1	11.5	12.9	11.4
Ì	1965	5th	9.6	12.7	16.9	11.7
	1964	6th	9.2	10.1	12.1	10.0
	1963	7 <b>t</b> h	10.5	9.7	12.2	10.3
	1962	8th	8.5	8.9	8.1	8.6
1	1961	9th	9.4	12.8	7.0	10.9
]-	1960	10th	7.7	7.2	12.4	8.0
1	1959 and earlier	ll <sup>th</sup> and older	6.4	6.8	6.3	6.5
	All models	All years	10.8	12.0	12.8	11.6
	Percent of car-owning households	mad Sand	61.0	33.2	5.8	100.0
	Percent of vehicles	1/	42.5	45.4	12.1	100.0
	Percent of vehicle-miles	1/	39.7	47.0	13.3	100.0

<sup>1/</sup> Percentages based on a total number of 66,405,001 vehicles and 2,120,323,000 daily vehicle-miles.

Source: Based upon unpublished tables T-11, T-14 and H-18 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-1970.

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Figure 1 - AVERAGE ANNUAL MILES PER VEHICLE BY YEAR-MODEL OF AUTOMOBILE

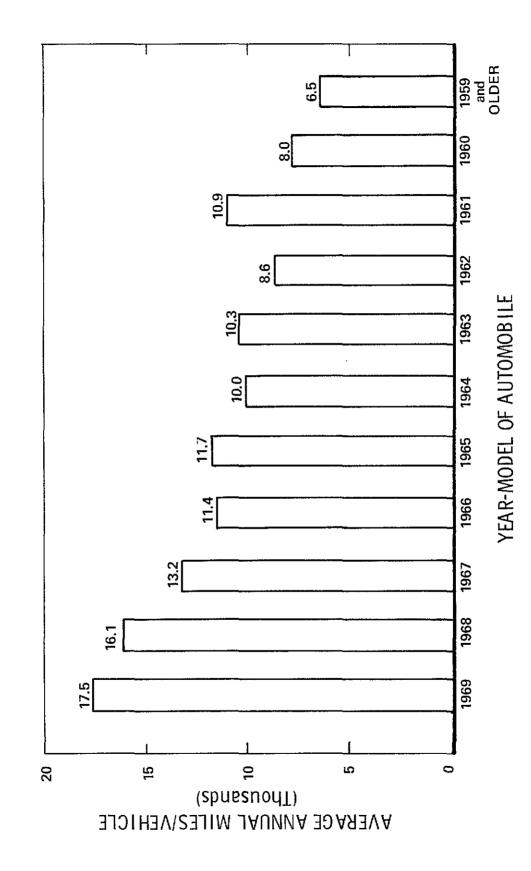


Table 2.--Percentage of automobiles by year-model and mileage class for all car-owning households

Year Ag	e.	* =	Av	Average annual	miles	(thousands)			
model $\frac{1}{2}$	Less than 500 miles	1-2	3-7	8-12	13-17	18-22	23-27	28 and over	Total
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1969	7.8	2.5	5.2	7.5	9.1	11.7	25.6	20.0	8.3
$1968   1\frac{1}{2}$	4.6	4.2	7.8	10.4	18.7	21.2	22.0	27.9	12,2
1967 2½	3.2	5.3	8.4	12.2	15.0	14.2	12.4*	13,9*	10.9
1966 33	3.4.6	5.8	9.5	14.5	14.7*	13.6*	10.7	5.6	11,5
1965 4½	7.6	8.6	11.4	14.6*	11.0	13.6	8.7	5,6	12.1*
1964 5½	4.4	8.4	11.8*	10.5	0.6	6.2	5.6	6.4	9.6
1963 64	5 6.4	10.5	6*6	8.8	8.7	6.1	9*5	6.9	8.7
1962 7½	9.9	11.1*	9*6	7.3	4.5	4.1	3.1	3.2	7.3
1961 8½	*6.9	6.5	6.7	3.8	2.9	2.0	2.1	1.4	4.5
1960 9½	% %	0.6	5.1	3,5	1.3	2.1	2.1	2.2	4.1
1959 & 12	39.1	26.9	14.6	6.9	5.1	5.2	3.1	3.0	10.8
All years	rs 100.0	100.0	100.0	0.001	100.0	0.001	190.0	100.0	100.0
Average age	7.8	7.3	5.9	3,8	4.1	3.8	3.1	3.2	5.1
Total number of vehicles	of 1,716,623	5,592,379	17,976,302	22,679,764	7,291,626	5,038,421	2,528,521	3,581,320	3,581,320 66,405,001

for this reason, average ages of automobiles for the purpose of ownership were assumed to have one-half year values. Year-models of 1959 and over were assumed to have an average age of 12 years. Because the survey was conducted in April and August of 1969, no 1970 models were included. Also,

Source: Based upon unpublished table 7-11 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Pederal Highway Administration, 1969-1970.

<sup>\*</sup> Indicates median year model for each mileage class.

Figure 2 - MEDIAN YEAR-MODEL OF AUTOMOBILE BY MILE CLASS

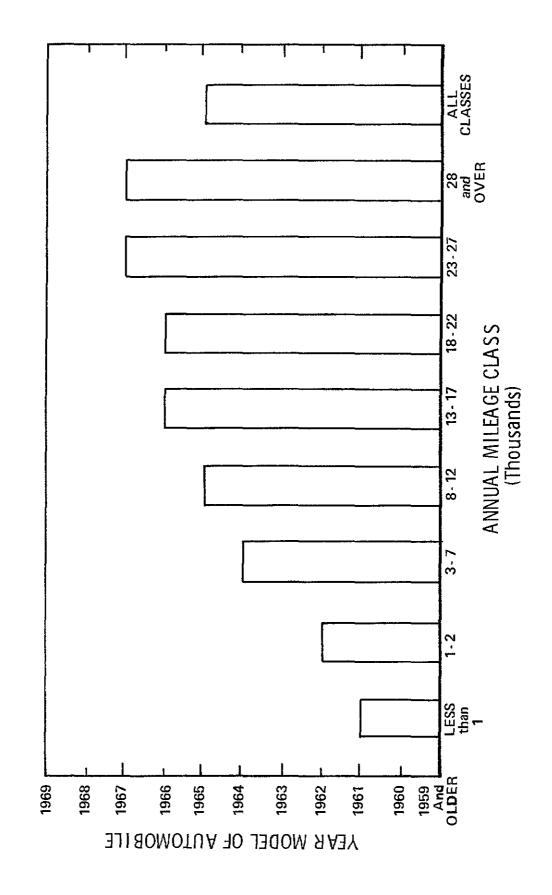


Table 3.--Average  $age_{2}^{1}/$  of automobiles by number of cars in the household and mileage class

Mileage class (thousands)	One-car households	Two-car households	Three-car households	All-car households
Less than 500 miles	7.6	7.6	*	7.8
1 - 2	7.4	7.2	*	7.3
3 - 7	5.7	6.2	5.9	5.9
8 - 12	6.4	4.7	4.8	4.8
13 - 17	4.2	0.4	3.6	7.7
18 - 22	3.6	4.1	3.4	3.8
23 – 27	3.3	2.9	*	3.1
28 and over	3.3	3.0	3.4	3.2
All classes	5.1	5.1	5.1	5.1

# 1/ See footnote 1, table 2.

when fewer than 50 automobiles were included in the sample in a particular Data insufficient for analysis. Data were judged to be insufficient ×

Transportation Survey conducted by the Bureau of the Census for Based upon unpublished table T-11 from the Nationwide Personal the Federal Highway Administration, 1969-1970. Source:

mileage class does not vary with the number of cars in the household. For instance, in the 8-12 thousand annual mileage class, the average age is fairly constant varying only from 4.7 to 4.9 years with an average of 4.8 years.

# Vehicle-miles and automobiles purchased as new or used

Considering all year-models, automobiles purchased as new appear to have higher average annual miles per vehicle than automobiles purchased as used. From table 4 it can be seen that average annual miles for cars purchased as new is 12,500 miles per vehicle and that average annual miles for cars purchased as used is 10,700 miles.

For each particular year-model comparison in table 4, cars purchased new have lesser annual mileage per vehicle than cars purchased used. For instance, of the 1965 model automobiles, cars purchased new averaged only 10,100 miles a year while cars purchased used averaged 12,900 miles a year.

This finding is in agreement with data presented by Bostick and Greenhalgh 1/. When cars were compared for a particular year-model, average odometer readings, taken from the Montana motor-vehicle-use study, 1963-1964, were consistently higher for passenger cars purchased used than for cars purchased new.

The apparent discrepancy with the overall average miles can be explained by the fact that the greater number of cars purchased new were in the newer model years-higher mileage classes, and that the greater number of cars purchased used were in the older-lower mileage classes. This can be seen by the average ages which show that cars purchased as new have an average age of 3.5 years while cars purchased as used have an average age of 6.8 years.

Two other points from table 4 are worthy of note. First, approximately 50 percent of the automobiles, reported in the Nationwide Personal Transportation Survey, were cars purchased new and approximately 50 percent were cars purchased used. Secondly, although annual mileage of cars purchased used generally decreases with age, the pattern fluctuates more than it does for cars purchased new. Annual mileage for cars purchased new, decreases rather uniformly from 18,000 miles per vehicle for 1969 models to 5,000 miles per vehicle for 1959 and older models. For used cars, year-models, 1965, 1964, 1963, and 1962, the average annual miles were 12,900 miles, 10,500 miles, 11,200 miles, and 9,100 miles, respectively.

<sup>1/</sup> Thurley A. Bostick and Helen V. Greenhalgh, "Relationship of Passenger-Car Age and Other Factors to Miles Driven," Highway Research Record 197.

Table 4.--Average annual miles per automobile by yearmodel and whether purchased new or used

	Ave	erage annual miles -	thousands
Year mode1	Automobiles purchased new	Automobiles purchased used	All automobiles (miles in thousands)
1969	18.0	*	17.6
1968	15.8	18.3	16.2
1967	12.6	14.5	13.2
1966	11.2	11.9	11.5
1965	10.1	12.9	11.7
1964	9.2	10.5	10.0
1963	8.7	11.2	10.4
1962	7.2	9.1	8.7
1961	6.5	12.5	10.9
1960	*	7.9	8.0
1959 and earlier	5.0	6.9	6.6
All models	12.5	10.7	11.6
Average age (years) 1/	3.5	6.8	5.1
Percent vehicles	50.6	49.4	100.1
Total number vehicles (000)			66,350

 $<sup>\</sup>underline{1}$ / See footnote 1, table 2.

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, 1969-1970.

<sup>\*</sup> Data insufficient for analysis. Data were judged to be insufficient when fewer than 50 automobiles were included in the sample in a particular cell.

# Vehicle-miles and annual income of the household

As the annual income of the household increases so does the average annual miles per vehicle. From table 5 and figure 3, it can be seen that mileage values range from a low of 6,600 miles per vehicle for incomes of less than \$3,000 to a high value of 15,000 miles per vehicle for incomes greater than \$15,000. It is interesting that the average annual miles hold constant at 12,200 miles per vehicle for household incomes between \$7,500 and \$15,000.

In accordance with the general relationship discussed previously, average age of automobiles increases while the mileage per vehicle decreases. Table 5 shows that average age increases from 4.0 to 7.0 years as annual miles per vehicle is decreasing from 15,000 to 6,600 miles and as household incomes decrease from over \$15,000 to under \$3,000 annually.

# Vehicle-miles and occupation of principal operator

Table 6 shows average annual miles per vehicle by occupation of the principal operator. For principal operators with an occupation, the annual mileage varies from a high of 14,600 miles per vehicle for professional and semi-professional workers to a low of 8,600 miles per vehicle for farmers and farm managers. Vehicles operated by retired household heads, 50 years or older, have an average annual miles per automobile of 6,600 miles.

When the occupations are ranked according to average income, the annual miles per vehicle seems to increase as the average income increases. According to "Population Characteristics," published by the Department of Commerce, Bureau of the Census, July 13, 1970, the rank from highest to lowest average income in 1969 was as follows:

(1) Professional and semi-professional workers; (2) managers, officials, and proprietors except farm; (3) sales workers; (4) craftsmen, foremen, and kindred workers; (5) clerical and kindred workers; (6) operatives and kindred workers; (7) service workers except private household; and (8) unskilled and semiskilled laborers, except farm. In the Nation-wide Personal Transportation Survey clerks and salesmen were grouped together, as were operatives and laborers. The Census ranking by income is directly related to a decrease from 14,600 miles per vehicle for professional and semiprofessional workers to 10,300 miles per vehicle for service workers.

## Use of the newer (est) car by multi-car households

Table 7 shows that both high annual mileage cars and newer(est) cars in multi-car households are used for work trips. Of the automobiles in the 28,000 and over mileage class, 90.1 percent are used for trips to work, while only 51.9 percent in the 1 or 2 thousand mileage class are used for trips to work. For all the newer(est) automobiles

Table 5.--Average annual miles, average automobile age, percent of automobiles, and percent vehicle-miles by annual income of the household

				Annual	income	of the	Annual income of the household	1d		
Automobile characterístics	Under \$3,000	\$3,000 thru \$3,999	\$4,000 thru \$4,999	\$5,000 thru \$5,999	\$6,000 thru \$7,499	\$7,500 thru \$9,999	\$10,000 Ehru \$14,999	Under   \$3,000   \$4,000   \$5,000   \$6,000   \$7,500   \$10,000   \$15,000   Income   \$13,000   \$15,	Income A11 not reported incomes	A11 incomes
Average annual miles per vehicle (thousands)	9*9	7.7	9.2	11,2	11.3	6.6 7.7 9.2 11.2 11.3 12.2 12.2	12.2	15.0	15.0 11.4 11.6	11.6
Average $age_{1}^{1}$	7.0	6.1	6.2	0.9	5.6	7.0 6.1 6.2 6.0 5.6 4.8 4.6	9.4	4.0	4.2	5.1
Percent of vehicle. miles	3.57	3.3	3,8	7.4	11.6	3.3 3.8 7.4 11.6 18.7 26.4	26.4	16.3	0.6	9.0 100.02/
Percent of vehicles	0.9	6.4	4.8	7.6	11,9	6.0 4.9 4.8 7.6 11.9 17.8 25.1	25.1	12.7	9.2	9.2 100.0 <sup>2</sup> /

Percentages based on a total number of 66,843,567 vehicles and 2,129,860,000 daily vehicle-See footnote 1, table number 2.

Based upon unpublished tables T-9 and T-16 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-1970. Source:

Figure 3. AVERAGE ANNUAL MILES PER AUTOMOBILE BY ANNUAL HOUSEHOLD INCOME

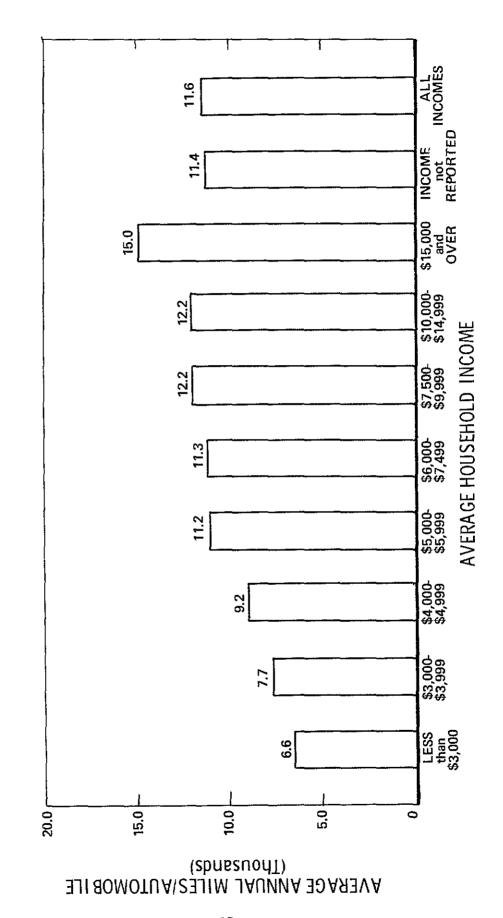


Table 6.--Average annual miles, average automobile age, and percent of automobiles by occupation of principal operator

				000	upation of pr	Occupation of principal operator	1			
Automobile characteristics	Automobile Professionals and semi-	Farmers and farm managers	Proprietors, managers, and officials (except farmers and farm managers)	Store and office clerks and salesmen	Craftsmen, foremen, skilled laborers, etc.	Operatives, semi-skilled and unskilled	Service	Retired household heads, 50 years or older	Not employed, not a retired household head	A11 groups
Average annual miles										., F
(thousands)	14.6	8.6	14.1	13.3	12.0	10.9	10.3	6.6	10.0	11.6
Average age (years)=/	9.4	6.4	4.5	5.0	6.1	6.3	6.1	6.8	5.7	5.1
Percent of automobiles	14.1	1.7	7.4	15.9	11.2	15.2	6.3	8.8	19.4	100.02/

Includes all principal operators who are not employed and not a retired household head. In other words, it would include unemployed wife, school age children, etc., that are principal operators of a car.

Percentages based on a total of 66,460,979 vehicles. Also includes 2.0 percent 'bther' or 'N/A' occupation.

See footnote 1, table number 2.

See footnote 1, table number 2.

Percentages based upon unpublished table T-15 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-1970. 2/ Perc 3/ See Source:

Table 7.--Percentage of the newer(est) cars in each annual mileage and year model class that are driven to work by members of multi-car households

1000	Year of		Ave	erage annua	Average annual miles (thousands)	ousands)				A11
	vehicle life	0	1-2	3-7	8-12	13-17	18-22	23-27	28 and over	classes
			Percent	Percent	Percent		Percent		Percent	Percent
<u>-</u>	1st	*	70.6	79.4	74.1	*	82.2	*	8.06	80.7
•	2nd	*	58.3	54.2	74.1	*	76.6	*	988.6	74.7
	3rd	*	6.59	71.9	69.7	*	81.1	*	84.2	74.6
•	4th	*	52.1	61.6	8.79	*	82.8	*	91.7	70.9
	5th	*	0.0	63,1	60.7	*	75.6	*	84.5	66.7
•	6th	*	61.3	53.6	60,4	*	84.9	*	*	9.79
	7th	*	22.9	39.6	72.6	*	91.3	*	*	6119
	8th	*	41.6	42.1	82,0	*	41.6	*	*	55.4
1961 and earlier	9th and older	*	*	*	*	*	*	*	*	67.0
All Models		*	51.9	61.8	9.69	*	79.0	*	90.1	72.2

\* Data not sufficient for analysis. Data were judged to be insufficient when fewer than 50 automobiles were sampled in a particular cell.

Source: Based upon unpublished table T-12 from the Nationwide Personal Transportation Survey conducted by the Bureau of the Census for the Federal Highway Administration, 1969-1970.

in multi-car households it can be seen that 72.2 percent are used for trips to work. For cars of the 1969 year-model, 80.7 percent are used for work trips and only 61.9 percent of the 1963 model cars are used for trips to work where those models are the newer(est) car in a multicar household.

# Vehicle-miles and unincorporated areas and incorporated places

Generally, automobiles in unincorporated areas have higher average annual miles per vehicle than automobiles in incorporated places. Table 8 shows that average annual miles of vehicles operated by households in incorporated places is 11,200 miles per vehicle. Automobiles of households in unincorporated areas have an annual mileage of 12,600 miles.

While automobiles in unincorporated areas travel more miles a year, they have a higher average age. Automobiles in unincorporated areas have an average age of 5.3 years and cars in incorporated places have an average age of 5.0 years. This is an exception to the general relationship found in a previous section that increasing age corresponds to decreasing average annual miles per vehicle.

# Vehicle-miles and size of the Standard Metropolitan Statistical Area (SMSA)

Table 9 shows no clear relationship between size of the SMSA and average annual miles per vehicle. Although SMSA's with 2 to 3 million people have a high of 14,000 miles per vehicle, the other large SMSA size groups, 1 to 2 million and 3 million and over, do not show a high mileage figure, but rather hover closely to the average for all SMSA's of 11,500 miles a year per vehicle.

Table 8.--Average annual miles, average age, percent vehicles and percent vehicle-miles by place of residence of the principal operator

						Place o	Place of residence	эпсе				
0.5.10	inc	Households in corporated pla	Households in incorporated places	S	unin	Households in corporated ar	Households in unincorporated areas	81	811 g	Households in places and ar	Households in all places and areas	
Automobile characteristics	1-car	2 cars	3 or more cars	A11	1 car	2. cars	1-car 2 cars or more All 1-car 2-cars or more All 1 car 2 cars or more cars	A11	l car	2 cars	3 or more cars	A11
Average annual miles per vehicle 10.4 (thousands)	10.4	11.6	11.6 12.6 11.2 11.8 13.0	11.2	11.8	13.0	13.2 12.6 10.9 12.0	12.6	10.9		12.8	11,6
Average $\frac{1}{2}$ /ge (years)	5.0	5.0	6.9	5.0	5.2 5.3	5.3	5,3	5,3	5.1	5.1 5.1	5.1	5.1
Percent of vehicle-miles	1	t	t	63.9	ı	ı	,	36.1	1		t .	100.02/
Percent of vehicles	1		ı	9.99	t	)	1	33,4	1	1	1	100.02/
											_	

See footnote 1, table number 2. Percentages based on a total number of 66,348,808 vehicles and 2,118,394,000 daily vehicle-[S]

conducted by the Bureau of the Census for the Federal Highway Administration, 1969-1970. Based upon unpublished table T-13 from the Nationwide Personal Transportation Survey Source:

Table 9.--Average annual miles, average automobile age, percent of automobiles and percent of vehicle-walles by size of the SMSA

A		Size	of standard	Size of standard metropolitan statistical area	statistical	area	
characteristics	Less than 250,000	250,000 <del>.</del> 499,999	500,000~ 999,999	500,000- 1,000,000- 999,999 1,999,999	2,000,000-	3,000,000 and over	A11 SMSA's
Average annual miles per vehicle	11.0	10,3	11,3	11,3	14.0	11.5	11.5
Average age <sup>1</sup> / (year)	5.1	5.2	5.2	4.6	4.7	4.7	6.4
Percent of vehicle-miles	15.9	13.1	15,3	19.0	13.7	23.0	100.02/
Percent of automobiles	16.1	14.6	15.5	19.7	11.2	22.9	100.02/

Percentages based on a total number of 44,473,680 vehicles and 1,398,103,000 daily vehicle-See footnote 1, table 2. 121

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, 1969-1970.

### SUMMARY

- 1. Average annual mileage is directly related to the number of cars in the household and the annual income of the household and is inversely related to the age of the car. Furthermore, these three factors show an interrelationship. For example, not only does increasing age of automobile correspond to decreasing annual mileage but also to decreasing number of cars in the household and to decreasing household income.
- 2. Cars operated from single-car households have lower average annual miles than cars operated from multi-car households. For example, the average annual miles per vehicle for one-car households was 10,800 as compared to an average of 12,000 miles per vehicle for cars in two-car households.
- 3. Automobiles operated principally by professional and semiprofessional workers have the greatest average annual mileage. Data further indicate that average annual mileage varies directly with the average income of the occupational group.
- 4. The relationship between annual mileage and automobiles purchased new or used is an interesting one. Cars purchased new tend to have higher average annual mileage than cars purchased used when all year-models are considered. However, for each particular year-model, cars purchased new had lower annual mileage than cars purchased used.
- 5. It was found that over 70 percent of the newer(est) cars in multi-car households were used for trips "to and from work."
- 6. Automobiles operated by households in unincorporated areas had higher average annual mileage than automobiles in incorporated places. However, these automobiles were on the average older than automobiles operated by households in incorporated places.

#### A XIGNAGGA

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 1 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

fication (	at the indivi	ation which would perm dual will be held in str	tet confi-	0		BUI APPRO	OVAL EXP	EAU NO. 41 IRES DECE	-S69011 MBER 1	970	
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(first,	second, et	questions about your c., automobile)						$\overline{}$			
1. laite	wned by so	mebody living here?		1 Y e		o Q. 3)	1	es n (Go to Q,		☐ Ye	<b>s</b> (Go to Q. 3)
20. Was it	purchased	new or used?		1 [ ] No			1   N 2   U		1 2	Ne	
b. In who	at month an ples: 10/6.	d year was it baught? 7, 04/68)		Month	. <b></b>	ear	Month	Yea	, <del> </del>	1onth	Year
3. About	how many	thousand miles was i	•	Miles (1	Thousa	nds)	Miles (	Thousands)		files (T	housands)
driven	auring the	past 12 months?		,							
	sed at leas from home	it ance a week in to work?		1 [ ] Ye 2 [ ] Ye 3 [ ] Ne	es — P	art•way onext or	2 🗀 Y	es Entire es Part-w lo (Go to ne auto or Sec. II)	ay 2	i 🛅 Ye	s - Entire trip is - Part-way (Go to next auto or Sec. II)
5. How r	nony people to work, in	e are usually in the aviculating the driver?	utomobile	Number	<i>→e</i> €€.	,	Number		-   N	Number	550, 177
<u> </u>			KEY	- 1 - Co	mmerci	al park	ing garage o	or tot 5	- On the	e street	
		CODE			ployer nge pa	provide rking	ed space	6 -			rking used
6a. What	type of parl	king facility is usual!	y used								
for th	e trip to wo	ork — the employer's l on the street, or whot	01, 0								
						11	code 6 gc	to next outo	or Sec.	. 11	
b. is the	re a cost fe	or parking?		1 [] Y 2 [] N	o (Go i	to next Sec. II)	l [ ] Y 2 [ ] N	'es lo (Ga to ne uta ar Sec,	xt 3	1 🗀 Y	os Go to next nto or Sec. 11)
c. How		*****		s		Day	\$	1 Day	, ;	s — S	I Day
				<b>-</b>	_ 2 🗔	Week Month		2	k _		- 2   Week 3   Month
d. Does	pay by	putting coins into o	meter?	1 [ ] Y 2 [ ] N			1 [ ] Y		1	· [[] Y	
				Section II -	- SHO!		-				
Nau	we pre inte	ASK for SMSA rested in where peopl		nly - 1 or 2	as sec	ond dig	n of identi	rication cod	e		
(Ask		(1) wife or (2) female		1 [ ] Y	es	- How I	nany timesi	?	(Go	to Q. J	IJ
1. Durin	g the past	3 months has , , , gon t ofprincipal!	ie to the mo y to shop?	in 2 N	o						
2. What	were the re	easons for not shappir	ng there?	1 C.1 G	icods a	vailable	ė	4 🗀 Di	fficulty congest		
(Mark	all baxes	that apply)		2 [ ] ₹	oo far			5 No	automo	bile	
1				7 🗀 D	arking	ıy at		6 [_] Ot	her - S <sub>i</sub>	pecify -	7
publi	c transports	m home to the neares ation line to go to the latrict of		3 [ 3	⊶2 bloc less tha	ck <b>s</b> an ¼ mi ck <b>s</b>		5 📄 No av 6 🗀 Li	public ailable	transpo	

Γ	(3	Section III -	TRAVEL TO WO	RK
1,	Line No.	2. CHECK ITEM  1 This person is 16 years old or older an (Fill in Sec. III, IV, and V as applicable X All others (Fill In Sec. IV and V as applicable).	le)	Control Card question I6b,
	We are intere	ested in where people work y get to work.		What city?
3.	· · · · · · · · · · · · · · · · · · ·	where , , , works located in a city?	2 No 3 Don't know	State?
4,		from home to the place where (Actual travel distance)	(Enter nearest full mile)	1x [ ] No fixed place 2x [ ] At home 3x [ ] Less than ½ mile (5 blocks)
5.	How much tie	me is usually required for to get to e time he leaves until he arrives at work?	Minutes	· · · · · · · · · · · · · · · · · · ·
6.	How does	. usually get to work? propriate boxes)	1 Bus or stree 2 Commuter to elevated, et 3 Automobile persons 4 Automobile 5 Truck	rain, subway, 7 Welk only 3n to (1.100)  - with other a Other - including bloycle - ipecify
7.	How for is it transportatio to get to his	from home to the nearest public on line that uses (could use) place of work?	Less than f	ks (Over ½ mile) (Go to 4 mile) 5 [] None available Q. 10-1
8.	What is the r transportation	reason does not use public on to go to work? se? xes that apply)	1 None availa 2 Not convening to get to 3 Not convening to get with the second of the	irent uncomfortable  7 Takes too long irent to a Need auto for work ork 9 Other - 5, months ive
-	(Ask if eithe	er box 1 or 2 - is marked in Q. 6)	1 No driver's	(Co. +. 10a)  Ficense 7 No driving strain
9.	What is the stransportation	reason uses public on to get to work?	2 No car avail 3 No car pool 4 Cheaper that 5 Safer than a	Plable 6 Faster Plavailable 9 Other - Specify 7 an auto
-	Does we	sons 21 years old or older) ork at same location as 5 years ago? ve at same location as 5 years ago?	t [ ] Yes 2 [ ] No 1 [ ] Yes	3 Nor working 5 years ago (Go to See - IV) 2 No
-	Compared wi	ith the time it took to get to sage, is the time to work:		ame as 5 years ago minutes more
		Section IV - DRIVE	R INFORMATION	٠
1.	About how m	ensed drivers anly) nany thousands of miles did drive ast 12 manths, including driving as part of work?	t [ ] None 2 [ ] Under 5,000 3 [ ] 5,000 = 9 4 [ ] 10,000 = 14	7.999 7 7 25.000 - 29.999
		Section V - TRAY	EL TO SCHOOL	
1.	Now I would transportatio	for persons 5–18 years old) like to ask some questions about in to school. is attending or enrolled in school?	1 [   Yes	2 [] <b>No</b> (2 ot 1 ov 1 VI)
2.	Was It a publ	lic or private school?	1	2 Private
3.	··	ras , attending?		Enter "0" for kindergarten or 1=12-13:
4.	About how m	iany miles was it from home to"s school?	Miles	DF F-12, 1-11
<b>5</b> .	About how Is	ang did it take to get from home to school?	Minutes	
6.		usually get to school?	3 -   School bus -	sportation - No charge  - Charge sportation - Charge le - Driver  - Driver
7.	Was free sch	rool bus or free public transportation available?	1 [   Yes	z [_] No

	.①	Section VI	- TRAY	EL DA	REPO	DRT						
a.L.		mployment : C. C. 16a)	status e	Occupa (C.C. I				f. Retir	:   -	Licens (C.C.		1
	z Female	[ ]Yes 2		<u></u>				(C.C			es 2 [	No
	Now I have some questions on other by motor vehicle or s	obout the tri	ips taken o public tran	n	n. For	trin is example	anytime e, going	ta work	nt from by out	one plac mobile v	e to vauld	
i	be one rith, doing to lanch by	y automobile Frence day is	WILLIO DE C	3860110	1116,101	oming .		, , , , , , , , , , , , , , , , , , , ,	ch woul	ia per a si	ilird trip.	
1.	Did go any place at	1   Yes ~	One or mo	re trips i	not prev	iously	reported	(Fill co	lumns)			
	anytime on	3 [ ] No	<b>3</b>	usiy tep	,	<u>o}"</u>	30 to Q.	140)	7			8
2.	At what time did start the (1st, next) trip he tack	Trip	17		rip 2		ļ	Trip 3		<u> </u>	Trip 4 🗡	<u>'                                    </u>
	en?		1a.m. 2p.m.			] a.m. ] p.m.			] a.m.	:		] a.m. ] p.m.
3.	How far is it from where started to where he went?	0 Less t	Miles :han ½ 5 blocks)	ه الله				ess than			Mi ess than ile (5 bl	
4.	How long did it take to get there?	1 [T] 15 mir less	. or		min. or	7		mın. ol	,		min. or	
	g - 1/10/10/	a [ ] 16-30 3 [ ] 31-45		z [] 16	-30 mir			-30 mii		2 🔲 16	30 mir -45 mir	
		4 1 7 46 mir	und hr.	4 🔲 46	minl	hr.	4 7 46	min1	hr.	4 46	min.~l	hr.
1		5	ang 2 hrs, or more	5 [ B4			5 _   B			5 🗀 B 6 🗀 2	et. I and hrs. or r	ı∠hrs. nore
<u> </u>	CODE KEY			l			ol or chu			sure driv	ing	
}		<ol> <li>Business</li> <li>Shopping</li> </ol>				o docto acation	ir or deni I		I. Othe			
5.	What was the main reason for	<ol> <li>Other fan business</li> </ol>	ally or pers	onal		isit frie slatives				irn home required;		ifica-
	this trip?  (If "return home" enter the main	Trip	1		Trip 2			Trip 3			Trip 4	
	purpose of the outgoing trip(s), plus "R.H.") (Enter one code.)	Code		Code			Code			Code		
6.	In addition to , , , did anyone else living here go on	p [ ] No oti	ners	0[]N	o athers	5	0["]N	o others		0 [ _] N	o others	
	this trip? List line numbers of other household members	Line nu	ımbers	Lin	e numbe	ers	Lin	e numbe	rs	Lin	e numbe	ts
	5 years old or older who went on this trip.f									<u> </u>		
i		1 1	1	۱ i		_			l		1	
<del> </del>	CODE VEV	I Sabari 6	<del></del>	1		irola -			P3 8.4	01055		a hit-
	CODE KEY	1. School bu	s and/or st	reet car	6. T				10. T	otorcycle ruck (inc		
	CODE KEY		s and/or st or subway	reet car	6. T	axi utomobi	ile – Dri ile – Pas			ruck (inc		
	CODE KEY	2. Other but 3. Elevated 4. Other tra	s and/or st or subway in		6. T	axi utomobi	ile Pa		10. T	ruck (Inc		
7.	What means of transportation were used for this trip?	2. Other but 3. Elevated 4. Other tra  Trip Code	s and/or st or subway in	Code	6. T 7. A 9. A Trip 2	axi utomobi utomobi	Code	Trip 3	10. T	ruck (Inc ther Code	Trip 4	ick-up)
7.	What means of transportation	2. Other but 3. Elevated 4. Other tra  Trip Code  (H code go to Q.	s and/or st or subway in 1—5 only	Code (If co	6. T 7. A 8. A Trip 2	axi utomobi utomobi	Cade (If ce	Trip 3  ode 1-5 Q. 13)	10. T	Code (If c	Trip 4  ode 1-5 o O. 13)	only
7.	What means of transportation were used for this trip? (If more than one, care is major means.) Was public transportation for this trip available within 6 blacks	2. Other but 3. Elevated 4. Other tra  Trip Code  /// code go to Q.  1  Yes 2  No	s and/or st or subway in 1 1 1-5 only 131	Code (If code go to	6. T 7. A 8. A Trip 2	axi utomobi utomobi	Cade (If ce go to	Trip 3  ode I = 5 Q. 13)  Ves	only	Code (If c go t	Trip 4  ode 1-5 o Q. 13)  res	only
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	.0	The state of the s					
	ine b. Age	c. Sex	<ol> <li>Employment status (C. C. 16a)</li> </ol>	e. Occupation (C.C. 166)	f. Retired Code	g. Licensed driver (C.C. 18)	
		2 Female	1 Yes 2 No	·	(C.C. 17)	1 Yes 2 No	
	Now I	have some question	s about the trips taken	on A trip	is anytime you went fro		
ļ	be one	rrsp, gaing to lunen	r some form of public tro by automobile would be eference day is from 4:00	a second trip, refurnin	g to work from lunch we	utomobile would ould be a third trip.	
٦.	Did go	any place at	1 [] Yes - One or o	nore trips not previous	y reported (Fili column	s '	
	anytime on _		2 Yes - All prev	lously reported	(Go 11 Q 140)	•	
2.	At what time	did start	Trip 1	Trip 2	Trip 3	Trip 4 P	
	the (1st, nex	(t) trip he took	1 a.m	. 1 🗀 a.m	1 1	1 a.m. 2 p.m.  Miles Less then ½ mile (5 blocks)  1 15 min. or less 2 16-30 min. 3 31-45 min.	
			2 p.m	2 D-m			
3.	How far is it started to wi	t from where . , , here he went?	Miles  O Less than ½	is then 1/2 0 Less than 1/2 0 Less than 1/2 0 Less then 1/2			
			mile (5 blocks)				
4.	How long die	d it take to	1 15 min. or fess	1 5 min. or less	1 [] I5 min. or less		
			2 16-30 min. 3 31-45 min.	2 [ 16-30 min.	z [] 16-30 min. 3 [] 31-45 min.	2 16 <b>30</b> min.	
			4 🔲 46 min.—l hr.	46 min1 hr. 4 46 min1 hr.		3 [ ] 31 –45 min. 4 [ ] 46 min. – i hr.	
			5 Bet, I and 2 hrs 6 2 hrs. or more	5 Bet. I and 2 hr 5 2 hrs. or more	s. 5 Bet. I and 2 hr 5 2 hrs. or more	Bet. I and 2 hrs. 6 2 hrs. or more	
-		CODE KEY	- 1. To work			sasure driving	
	CODE KEY		2. Business, other tha	an to work 6. Ta dac	tor or dentist 10. Oth	er social or recreational	
5.	WI		3. Shopping 4. Other family or per	7, Vacationsonal 8, Visit fr		ier turn home (reclassifica-	
э.	this trip?	main reason for	business Trip !	Trip 2	Trip 3	Trip 4	
	()f ''return he purpose of th	ome" enter the main ne outgoing trip(s),	Code	Code	Code	Code	
6.	In addition to	) (Enter one code.)	<del> </del>		<del></del>	<del></del>	
	anyone else	living here go on st line numbers	a No athers	0 No others	0 No others	0 No others	
	of other hous  5 years old o	ehold members prolder who	Zille ildilibers	Line numbers	Line numbers	Line numbers	
	went on this	trip.)	<del>                                     </del>				
	CODE KEY ———			<u> </u>	1 1	f 1 1	
	(	CODE KEY	- I. School bus	5. Airplane	9 1	fotorcycle or mater by	
	(	CODE KEY ——	2. Other bus and/or si		10. 1	fotorcycle or motor bike ruck (including pick-up)	
	ć	CODE KEY ———		reet car 6. Taxe 7. Automob	• • •	ruck (including pick-up)	
7			2. Other bus and/or st 3. Elevated or subway 4. Other train	reet car 6. Taxe 7. Automot 8. Automot	ide – Oriver II. Code – Passenger	ruck (including pick-up) Other  Trip 4	
7.	What means ;	of transportation this trip?	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip !  Code	7. Automot 8. Automot Trip 2	inte – Oriver II. Corle – Passenger  Trip 3  Code	Truck (including pick-up) ther  Trip 4  Code	
	What means ;	of transportation	2. Other bus and/or st 3. Elevated or subway 4. Other train  Trip!  Code  (If code 1-5 only go to Q. 13)	Trip 2  Code  (If code 1-5 only go to Q, 12)	inte = Oriver II. Conte = Passenger  Trip 3  Code  (If code 1 = 5 only go to Q. 13)	Trin 4  Code (If code 1-5 only go to 2, 13)	
7. 8.	What means a were used for (if more than means) Was public to trip available	of transportation this trip?	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip!  Code  (If code 1-5 only go to Q. 13)  1 Yes 2 No	7. Automot 8. Automot Trip 2 Code	Dile - Oriver II. Cole - Passenger  Trip 3  Code  (If code 1-5 paly	Trin 4  Code (If code 1-5 only go to 2, 13)	
	What means a were used for (if more than means) Was public to trip available (½ mile)?	of transportation this trip? one, circle major ansportation for this within 6 blocks	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip! Code  (If code 1-5 only go to Q. 13)  1  Yes 2  No 3  Don't know	Trip 2   Code	In the Correction of the Corre	Trick (including pick-up) ther  Tria 4  Code  (If cade 1-5 only go to 0, 13)  I Yes 2   No 3   Don't know	
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8.	What means a were used for (If more than means). Was public to trip available (1/2 mile)? (Complete au code 7 or 8 w What automob (Transcribe a number from Who drove the	of transportation rithis trip? one, circle major ansportation for this within 6 blocks estions 9–12 if as entered in Q. 7) tille was used? The protomobile C.C.)	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip I  Code  (If code I - 5 only go to Q. 13)  1 Yes 2 No 3 Don't know  Automobile No.	Trip 2  Code  (If code I – 5 only go to Q, I3)  1 Yes 2 No 3 Don't know  Automobile No.	Inite - Oriver II. Colle - Passenger  Trip 3  Code (If code I - 5 only go to Q. 13)  1 Yes 2 No 3 Don't know  Automobile No.	Tria 4  Code  (If code 1-5 only go to 0, 13)  Types 2 [ ] No 3 [ ] Don't know  Automobile No,	
8. 9.	What means a were used for (if more than means) Was public to trip available (3½ miles) (Complete au code 7 or 8 w What automobile (Transcribe a number from	of transportation rithis trip? one, circle major ansportation for this within 6 blocks estions 9–12 if as entered in Q. 7) tille was used? The protomobile C.C.)	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip I  Code  (If code 1-5 only go to Q. 13)  1	Trip 2  Code  (If code I – 5 only go to Q, 12)  1 Yes 2 No 3 Don't know  Automobile No.	Inite - Oriver II. Colle - Passenger  Trip 3  Code  (If code 1-5 only go to Q. 13)  1 Yes 2 No 3 Don't know  Automobile No.	Trin 4  Code  (If code 1-5 only go to 0, 13)  I Yes 2 No 3 Don't know  Automobile No.	
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9. 10.	What means a were used for (if more than means) Was public to the paralloble (1/2 mile)? (Complete au cade 7 or 8 what automob (Transcribe a number from this trip? Was parking	of transportation r this trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q. 7) iille was used? or combile C.C.J e automobile	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip I  Code  //if code 1-5 on/y go to Q. 13)  1	reet car 6. Tax: 7. Automot 8. Automot 9. Automot Trip 2 Code (If code 1-5 only: go to Q, 13)  1	Inite - Oriver III. Code III. Code III. Code III. Code III. Code III. Code I - 5 only go to Q. 13. III. Yes III. Yes III. Only III. Yes III. Only III.	Trin 4  Code  (If cude 1-5 only go to 0, 13)  I Yes 2 No 3 Don't know  Automobile Na.  ar  9 Not an auto insted on the C,C.  Line No.  9 Not a house-hold member  1 Yes 2 No	
9. 10.	What means a were used for the more than mean's ) Was public to trip available (½ mile)? (*Complete au code 7 or 8 w What automobi (*Transcribe of number from this trip?  Was parking  How many peautomobile in	of transportation rethis trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q. 7) ille was used? outomobile c.C.J. a automobile free for this trip?	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip I  Code  (If code 1-5 only go to Q. 13)  1	reet car 6. Tax: 7. Automot 8. Automot 9. Automot Trip 2 Code  (If code I - 5 only: go to Q, 12)  1 Yes 2 No 3 Don't know Automobile No.  or 9 Not an auto listed on the C.C. Line No. 99 Not a house- hold member  1 Yes 2 No 3 Did not park	Inite - Oriver II. Colle - Passenger  Trip 3  Code  (If code I - 5 only go to Q. 13)  1	Tria 4  Code  (If cude 1-5 only go to Q. )3)  1	
8. 9.	What means a were used for (if more than means ) Was public to trip available (½ mile)? (Complete au code 7 or 8 w What automotion (Transcribe a number from What drove the for this trip? Was parking How many per automobile in (include child non-househol)	of transportation r this trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q, 7) introduction c automobile free for this trip?  ople were in the cluding the driver? item under 5 and d members.)	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip I  Code  (If code 1-5 only go to 0.13)  1	Trip 2  Coda  (If code I - 5 only go to Q, 12)  1 Yes 2 No 3 Don't know  Automobile No.  or 9 Not an auto listed on the C.C.  Line No. 99 Not a house-hold member  1 Yes 2 No 3 Did not park 4 Don't know	Inite - Oriver II. Code - Passenger  Trip 3  Code  (If code I - 5 only go to Q. 1.1)  1	Tris 4  Code  (If cade 1-5 only go to 0, 13)  I Yes 2 No as Don't know  Automobile No.  P Not an auto issed on the C.C.  Line No.  Po Not a household member  I Yes 2 No a Did net park 4 Don't know	
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8. 9.	What means a were used for (if more than means) Was public trip available (in means) Was public trip available (in means) Was public trip? (Complete au code 7 or 8 w What automobile from Who drove the for this trip? Was parking: Was parking: (Include chile in non-househole in non-househole)	of transportation r this trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q, 7) introduction c automobile free for this trip?  ople were in the cluding the driver? item under 5 and d members.)	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip!  Code  (If code 1-5 only go to 0.13)  1	Trip 2  Code  (If code I - 5 only go to Q. 12)  1 Yes 2 No 3 Don't know  Automobile No.  Por Not an auto listed on the C.C.  Line No. 99 Not a house-hold member  1 Yes 2 No 3 Did not park 4 Don't know  Number 0 Don't know  1 Yes - One or more trips not recorded (Go	Inite - Oriver III. Onle - Passenger  Trip 3  Code  (If code I - 5 only go to Q. 13)  I Yes 2 No 3 Don't know  Automobile No.  Or 9 Not an auto histed on the C.C. Line No. 99 Not a house-hold member  I Yes 2 No 3 Did not perk 4 Don't know  Number 0 Don't know  I Yes - One or more trips not recorded (Go	Tria 4  Code  (If cude 1-5 only go to 2, 13)  I Yes 2 No 3 Don't know  Automobile Na.  Automobile Na.  Po Not an auto the C.C.  Line No. Po Not a household member  I Yes 2 No 3 Did not park 4 Don't know  Number  O Don't know  I Yes One or more trips not recorbed (Go	
8. 9.	What means a were used for (if more than means) Was public trip available (in means) Was public trip available (in means) Was public trip? (Complete au code 7 or 8 w What automobile from Who drove the for this trip? Was parking: Was parking: (Include chile in non-househole in non-househole)	of transportation r this trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q, 7) introduction c automobile free for this trip?  ople were in the cluding the driver? item under 5 and d members.)	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip!  Code  (If code 1-5 only go to 0.13)  1	Trip 2  Code  (If code I - 5 only go to Q. 12)  1 Yes 2 No 3 Don't know  Automobile No.  or auto listed an the C.C.  Line No.  9 Not a house-hold member  1 Yes 2 No 3 Don't know  Not a house-hold member  1 Yes 2 No 4 Don't know  Number 0 Don't know  1 Yes - One or more trips not recorded (Go to next column) 2 Yes - So	Inite - Oriver II. Code - Passenger  Trip 3  Code (If code I - 5 only go to Q. 13)  I Yes 2 No 3 Don't know  Automobile No.  I Isted on the C.C.  Line No.  I Not an auto listed on the C.C.  Line No.  Don't know  Not a house-hold member  I Yes 2 No 3 Did not park 4 Don't know  Number 0 Don't know  I Yes - One or meet rips not recorded (Go to next column)  2 Yes - Go	Tris 4  Code  (If cude 1-5 only go to 0.13)  1    Yes 2    No a   Don't know  Automobile Na.  9    Not a house-hold member  1    Yes 2    No a   Don't know  1    Yes 2    No a   Not a house-hold member  1    Yes 2    No a   Don't know  1    Yes 2    No a   Not a house-hold member  1    Yes 2    No a   Not a house-hold member  1    Yes 2    No a   Not a house-hold member  1    Yes 2    No a   Not a house-hold member  1    Yes 2    No a   Not a house-hold member  1    Yes 3    Not a house-hold member  1    Yes 6    Not a house-hold member  1    Yes 6    Not a house-hold member  2    Yes 6    One or mext column)  2    Yes 6    One or mext column)  2    Yes 6    Go	
8. 9.	What means a were used for (if more than means) Was public trip available (in means) Was public trip available (in means) Was public trip? (Complete au code 7 or 8 w What automobile from Who drove the for this trip? Was parking: Was parking: (Include chile in non-househole in non-househole)	of transportation r this trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q, 7) introduction c automobile free for this trip?  ople were in the cluding the driver? item under 5 and d members.)	2. Other bus and/or st 3. Elevated or subway 4. Other train  Trip I  Code  (If code 1-5 only go to 0.13)  1	reet car 6. Taxr 7. Automot 8. Automot 8. Automot 9. Automot Trip 2 Code  (If code I - 5 ontr go to Q, 12)  1	Inite - Oriver II. Code - Passenger  Trip 3  Code (If code I - 5 only go to Q. 13)  I Yes 2 No 3 Don't know  Automobile No.  I Isted on the C.C.  Line No.  I Not an auto listed on the C.C.  Line No.  Don't know  Not a household member  I Yes 2 No 3 Did not perk 4 Don't know  Number 0 Don't know  I Yes - One or meet rips not recorded (Go to next column)  Yes - Go All trips 1 to recorded Q.	Trin 4  Code  (If cude 1-5 only go to 0, 13)  1 Yes 2 No an auto listed on the C.C. Line No. 99 Not an house-hold member  1 Yes 2 No an Don't know  Not a house-hold member  1 Yes 2 No an Don't know  Number 0 Don't know  1 Yes - One or more crothed (Go to mext column) 2 Yes - Go All trips 1 Yes - Go All trips 2 Todon't recorded (Go to mext column) 3 Codon Codo Codo	
9. 110.	What means a were used for (if more than means)  Was public to the partial of the	of transportation rights trip?  one, circle major  ansportation for this within 6 blocks  estions 9-12 if os entered in Q. 7) ille was used?  or automobile  free for this trip?  opple were in the cluding the driver?  fren under 5 and dimembers.)  nywhere else  doys ending (the	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip I  Code  (If code 1-5 only go to 0.13)  1	reet car 6. Tax: 7. Automot 8. Automot 8. Automot 9. Automot  Trip 2  Code  (If code I - 5 onligo to Q. 12)  1 Yes 2 No 3 Don't know  Automobile No.  9 Not an auto isted on the C.C.  Line No. 99 Not a house-hold member  1 Yes 2 No 3 Did not park 4 Don't know  Number 0 Don't know  1 Yes - One or more trips not recorded (Go fo next column) 2 Yes - Ail trips for recorded To reco	Inite - Oriver II. Code  Oriver III. Code  Oriver II. Code  Oriver III. Code  Oriver II. Code  Oriver III. Code  Oriver II. Code  Oriver II. Code  Oriver II. Code  Oriver III.	Tris 4  Code  (If cude 1-5 only go to 0.13)  1 Yes 2 No 3 Don't know  Automobile Na.  9 Not an auto issted on the C.C.  Line No. 99 Not a house-hold member  1 Yes 2 No 3 Don't know  1 Yes 3 No 3 Don't know  1 Yes 6 No 3 Don't know  1 Yes 7 No Bon't know  1 Yes 9 No Bon't know  1 Yes 9 No Bon't know  2 Yes 9 No Bon't know  1 Yes 9 No Bon't know  2 Yes 9 No Bon't know  1 Yes 9 No Bon't know  2 Yes 9 No Bon't know  2 Yes 9 No Bon't know  3 No Bon't know  1 No Bon't know	
9. 110.	What means a were used for (if more than means) Was public tritip available (25 mile)? (Complete au code 7 or 8 w What automot (Transcribe on number from Who drove the for this trip? Was parking How many peautomobile in (include child non-household on on on the control of the child non-household on on the control of the child non-household on on the control of the child non-household on the child non-household	of transportation r this trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q, 7) iils was used? ivtomobile C.C.) c automobile free for this trip?  ople were in the cluding the driver? iren under 5 and d members.) nywhere else adays ending (the avel day) n home from a trip way from home ane	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip!  Code  (If code 1-5 only go to 0.13)  1	Trip 2  Code  (If code I - 5 only go to Q, 12)  1 Yes 2 No 3 Don't know  Automobile No.  or 9 Not an auto itsed on the C.C.  Line No. 99 Not a house-hold member  1 Yes 2 No 3 Did not park 4 Don't know  Number 0 Don't know  1 Yes - One or more trips not recorded (Go fo next column) 2 Yes - Go Ail trips for recorded (Jon fo next column) 2 Yes - Go Ail trips for recorded (Jon fo next column) 3 No	Inite - Oriver II. Code  If code   - Fassenger  Trip 3  Code  (If code   - 5 only go to Q. 13)  I	Tria 4  Code  (If cude 1-5 only go to 0, 13)  I Yes 2 No 3 Don't know  Automobile Na,  P9 Not an auto the CC, Line No. P9 Not a household member  1 Yes 2 No 3 Did not park 4 Don't know  Number 0 Don't know  1 Yes - Number 0 Numb	
8. 9. 110.	What means a were used for (if more than means) Was public to trip available (25 mile)? (Complete au code 7 or 8 w What automot (Transcribe on number from Who drove the for this trip? Was parking Was parking How many pea	of transportation r this trip? one, circle major ansportation for this within 6 blocks estions 9-12 if as entered in Q, 7) iils was used? ivtomobile C.C.) c automobile free for this trip?  ople were in the cluding the driver? iren under 5 and d members.) nywhere else adays ending (the avel day) n home from a trip way from home ane	2. Other bus and/or si 3. Elevated or subway 4. Other train  Trip I  Code  (If code 1-5 only go to 0.13)  1	Trip 2  Code  (If code I - 5 only go to Q, 12)  1 Yes 2 No 3 Don't know  Automobile No.  or 9 Not an auto itsed on the C.C.  Line No. 99 Not a house-hold member  1 Yes 2 No 3 Did not park 4 Don't know  Number 0 Don't know  1 Yes - One or more trips not recorded (Go fo next column) 2 Yes - Go Ail trips for recorded (Jon fo next column) 2 Yes - Go Ail trips for recorded (Jon fo next column) 3 No	Inite - Oriver II. Code  III. Cod	Tria 4  Code  (If cude 1-5 only go to 0, 13)  I Yes 2 No 3 Don't know  Automobile Na,  P9 Not an auto the CC, Line No. P9 Not a household member  1 Yes 2 No 3 Did not park 4 Don't know  Number 0 Don't know  1 Yes - Number 0 Numb	

Estimated standard errors for percentage Table III.A.-2-..for all vehicles and vehicles owned by all persons

Appendix B

Base of percentage	Estimated percentage					
(000)	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.
1,500	1.0	2.1	2.9	3.9	4.2	4.
2,000	.8	1.8	2.5	3.3	3.6	4.
3,000	.7	1.5	2.0	2.7	3.0	3.
5,000	.5	1.2	1.6	2.1	2.3	2.
7,500	.4	.9	1.3	1.7	1.9	2.
10,000	.4	.8	1.1	1.5	1.6	1.
15,000	.3	.7	.9	1.2	1.3	1.
20,000	.3	.6	.8	1.1	1.2	1.
25,000	.2	.5	.7	.9	1.0	1.
30,000	.2	.5	.6	.9	.9	1.
35,000	.2	.4	.6	.8	.9	1.0
50,000	.2	.4	.5	7	.7	
73,000	.1	.3	.4	.6	.6	

These standard errors may be used to evaluate the percentages for vehicles shown in tables 1, 2, 5, 6, 8, and 9.

Appendix B

Table V.-A.2.--Estimated standard errors for percentages of vehicle-miles for one day when single auto is only means

Base of	Estimated percentage						
Percentage (000)	1 or 99%	5 or 95%	10 or 90%	20 or 80%	25 or <b>75</b> %	50%	
20,000	_	_	_	16.9	18.3	21.1	
25,000	_	_	11.3	15.1	16.3	18.9	
50,000	-	5.8	8.0	10.7	11.6	13.3	
75,000	2.2	4.7	6.5	8.7	9.4	10.9	
100,000	1.9	4.1	5.7	7.5	8.2	9.4	
150,000	1.5	3.4	4.6	6.2	6.7	7.7	
250,000	1.2	2.6	3.6	4.8	5 <b>.2</b>	6.0	
500,000	.8	1.8	2.5	3.4	3.6	4.2	
750,000	.7	1.5	2.1	2.8	3.0	3.4	
1,000,000	.6	1.3	1.8	2.4	2.6	3.0	
1,250,000	.5	1.2	1.6	2.1	2.3	2.7	
1,500,000	<b>.</b> 5	1.1	1.5	1.9	2.1	2.4	
1,750,000	.4	1.0	1.4	1.8	2.0	2.2	
2,000,000	.4	.9	1.3	1.7	1.8	2.1	
2,100,000	.4	.9	1.2	1.6	1.8	2.0	
2,380,000	.4	.9	1.2	1.6	1.7	1.9	

These standard errors may be used to evaluate the percentages for vehiclemiles shown in tables 1, 5, 6, 8, and 9.