

## 2. Trends in Household Vehicle Stock

The 1991 RTECS counted more than 150 million vehicles in use by U.S. households. This chapter examines recent trends in the vehicle stock, as measured by the RTECS and other reputable vehicle surveys. It also provides some details on the type and model year of the household vehicle stock, and identifies regional differences in vehicle stock. Because vehicles are continuously being bought and sold, this chapter also reports findings relating to turnover of the vehicle stock in 1991. Finally, it examines the average vehicle stock in 1991 (which takes into account the acquisition and disposal of household vehicles over the course of the year) and identifies variations in the average number of household vehicles based on differences in household characteristics.

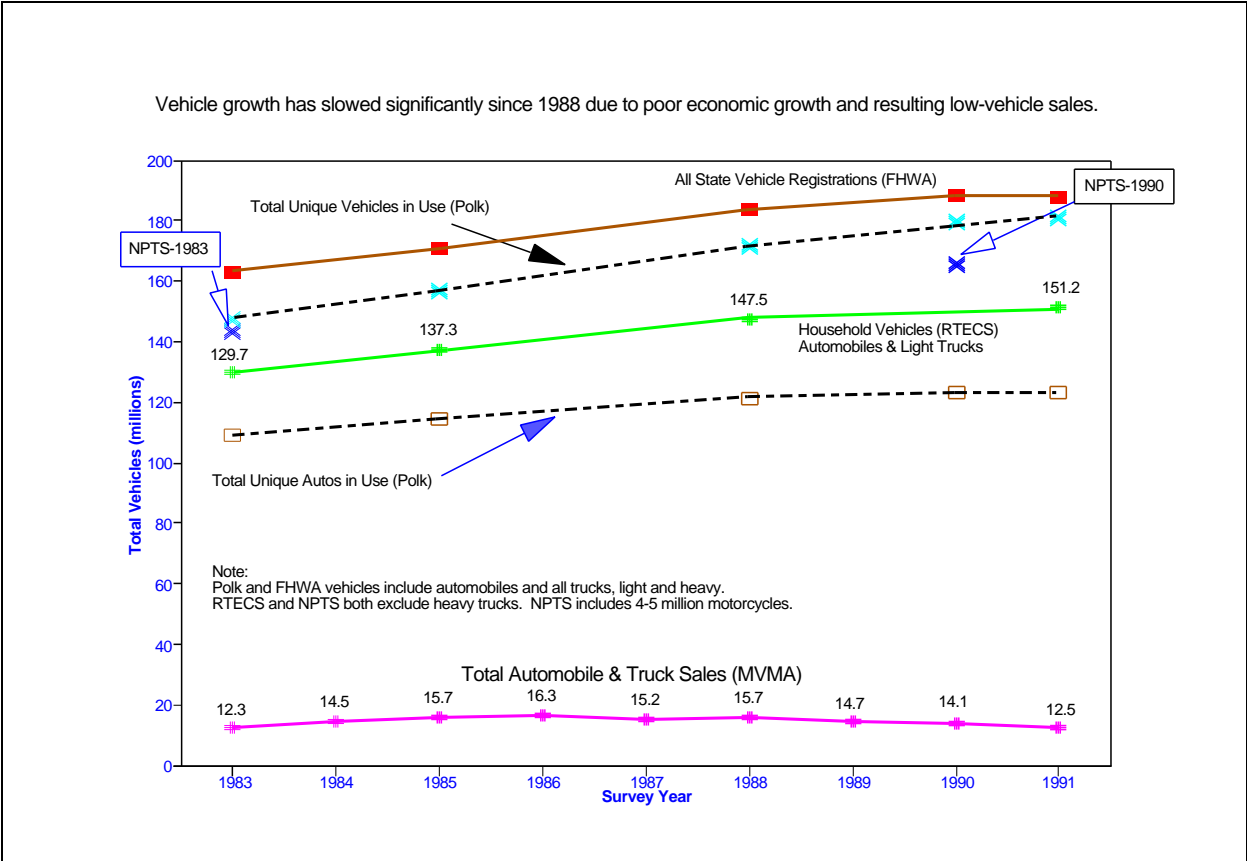
### Number of Household Vehicles

Over the past 8 years, the stock of household vehicles has increased at about the same pace as the number of households with vehicles (17 percent). Recently, the increase in vehicle stock slowed considerably, increasing by only 3.7 million vehicles (about 2.5 percent) between 1988 and 1991 according to RTECS counts. This increase represents the net gain from the excess of vehicle sales over vehicle retirements, and is consistent with the decline in total sales of new vehicles due to slow economic growth (Figure 1).

#### Figure 1. RTECS and Other Estimates of Households and Total Vehicles

Sources: Federal Highway Administration, *Highway Statistics 1991*, Table MV-1, October 1992; Department of Energy, *Transportation Energy Data Book*, March 1993, R. L. Polk and Company data (data not to be further reproduced); Motor Vehicle Manufacturers Association, 1992.

Between 1983 and 1991, the total number of vehicles in use (based on the Polk data) increased by 23 percent, from 147 million to 181 million vehicles, while the number of vehicles used strictly for household purposes (based on the RTECS data) increased by 17 percent (from about 130 million to over 150 million vehicles). Nevertheless, household vehicles continue to represent the largest share of all vehicles on the road. The remaining vehicles included in total vehicles are either commercial fleet automobiles or commercial trucks (See Table 1).



The 1991 RTECS count includes vehicles that were owned or used on a regular basis by 84.6 million households (about 89 percent of the total 94.6 million households). The number of households without vehicles (households that do not own or use a vehicle on a regular basis as defined by RTECS) has remained nearly constant at 10 million households since 1983. As a percentage of total households in the RTECS, however, households without vehicles have declined from 14 percent of all RTECS households in 1983 to 12 percent in 1991. In 1991, households without vehicles were principally one- or two-person white households with no children, living in urban neighborhoods in the Northeast or Midwest and earning below \$15,000 (per household).

**Table 1. Comparison of Household and Total Vehicle Stock (Million Vehicles)**

Vehicle Comparison	1983	1985	1988	1990	1991
Automobiles, FHWA . . . . .	126.4	131.9	141.3	143.5	143.0
Trucks, FHWA . . . . .	36.7	39.2	42.5	44.7	44.8
Total, FHWA . . . . .	163.2	171.1	183.8	188.2	187.7
Household Vehicles RTECS . . . . .	129.7	137.3	147.5	NS	151.2
Household Vehicles NPTS . . . . .	143.7	NS	NS	165.2	NS
Autos in Use, Polk . . . . .	109.0	114.7	121.5	123.3	123.3

## Vehicle Counts

In addition to the RTECS survey, other sources of information on vehicle stock include the Nationwide Personal Transportation Survey (NPTS), Federal Highway Administration (FHWA) estimates of total registered vehicles, and an estimate of actual "vehicles in use" from R.L. Polk & Company. The range of estimates (Figure 1) make data comparisons among these sources difficult: (1) Only the RTECS and NPTS estimates represent actual household vehicle stock; (2) The FHWA estimated total vehicle registrations (automobile plus light and heavy trucks) includes duplicate registrations of some vehicles in different states; and (3) The proprietary data from R.L. Polk & Company eliminates these duplicate registrations, but counts only those vehicles in use on a particular date.

Because the FHWA and Polk estimates do not distinguish between household and other vehicles, the only direct estimates of the household vehicle stock are from the RTECS and the NPTS. The RTECS survey:

- Includes automobiles, station wagons, passenger and cargo vans, motor homes, pickup trucks, and sport-utility vehicles used for personal transportation on a regular basis by members of a household.
- Includes vehicles that are owned by the household, vehicles that are rented or leased by the household for a period of 1 month or longer, and company cars and other business vehicles that are not owned by the household but are available regularly for the personal use of household members.
- Excludes motorcycles, bicycles, all-terrain vehicles (ATV's), and other related vehicles.

The NPTS estimates of household vehicles are systematically higher than the RTECS estimates (see Chapter 3) because they include motorcycles and more commercial fleet vehicles used by households.

The vehicle count for the RTECS and the Polk estimates is taken at a single point in time (July 1 of each survey year), as opposed to the FHWA and NPTS estimates, which are based on a cumulative count over the year. The FHWA count of all types of vehicles has risen at about the same rate as the count of RTECS vehicles used for personal transportation, even though the aggregate FHWA estimates include some double counting.

Trucks in Use, Polk . . . . .	38.1	42.4	50.2	56.0	58.2
Total in Use, Polk . . . . .	147.1	157.0	171.7	179.3	181.4
Auto Sales MVMA . . . . .	9.2	11.0	10.5	9.3	8.3
Truck Sales MVMA . . . . .	2.6	4.7	5.1	4.8	4.1
Total Sales . . . . .	11.7	15.7	15.7	14.1	12.5

NS = No survey that year.

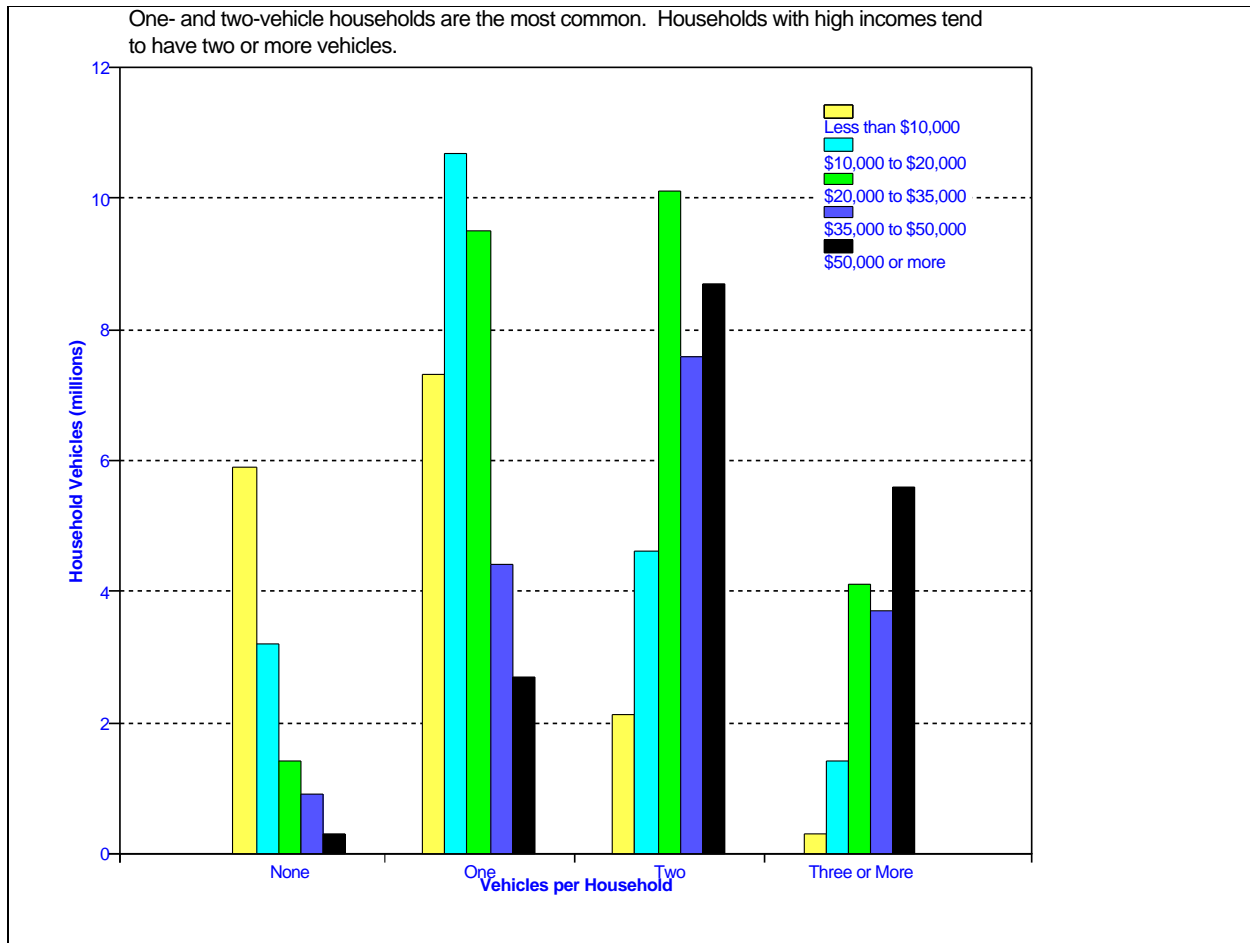
Note: Because of rounding, data may not sum to totals.

Sources: Federal Highway Administration, *Highway Statistics 1991*, Table MV-1, October 1992; Department of Energy, *Transportation Energy Data Book*, March 1993, R. L. Polk and Company data (data not to be further reproduced); Motor Vehicle Manufacturers Association, 1992.

In July 1991, most RTECS households had either one or two vehicles. About 37 percent owned or used only one

vehicle, 35 percent had two vehicles, 16 percent had three or more vehicles, and 12 percent did not own or use a vehicle on a regular basis (Figure 2). The number of vehicles in RTECS households varied substantially by the level of family income. Of the 15.6 million households with annual family incomes below \$10,000, 38 percent did not own or have regular use of a vehicle, and 47 percent had only one vehicle. In contrast, about one-third of the 17.3 million households earning at least \$50,000 per year had three or more vehicles (Table 2). Only 2 percent of the higher income group did not have any vehicles, and 16 percent had only one vehicle.

**Figure 2. Total Household Vehicle Ownership, and Ownership by Income**



Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey.

**Table 2. Households by Number of Vehicles and 1990 Family Income, July 1991**

1990 Annual Family Income	Total Households (million)	Number of Vehicles			
		None	One	Two	Three or More
<b>Total</b> . . . . .	94.6	11.7	34.6	33.1	15.1
Less than \$5,000 . . . . .	5.2	2.6	1.9	0.6	0.1
\$5,000 to \$9,999 . . . . .	10.4	3.3	5.4	1.5	0.2
\$10,000 to \$19,999 . . . . .	19.8	3.2	10.7	4.6	1.4
\$20,000 to \$34,999 . . . . .	25.1	1.4	9.5	10.1	4.1
\$35,000 to \$49,999 . . . . .	16.7	0.9	4.4	7.6	3.7
\$50,000 or More . . . . .	17.3	0.3	2.7	8.7	5.6

Note: Because of rounding, data may not sum to totals.  
Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey.

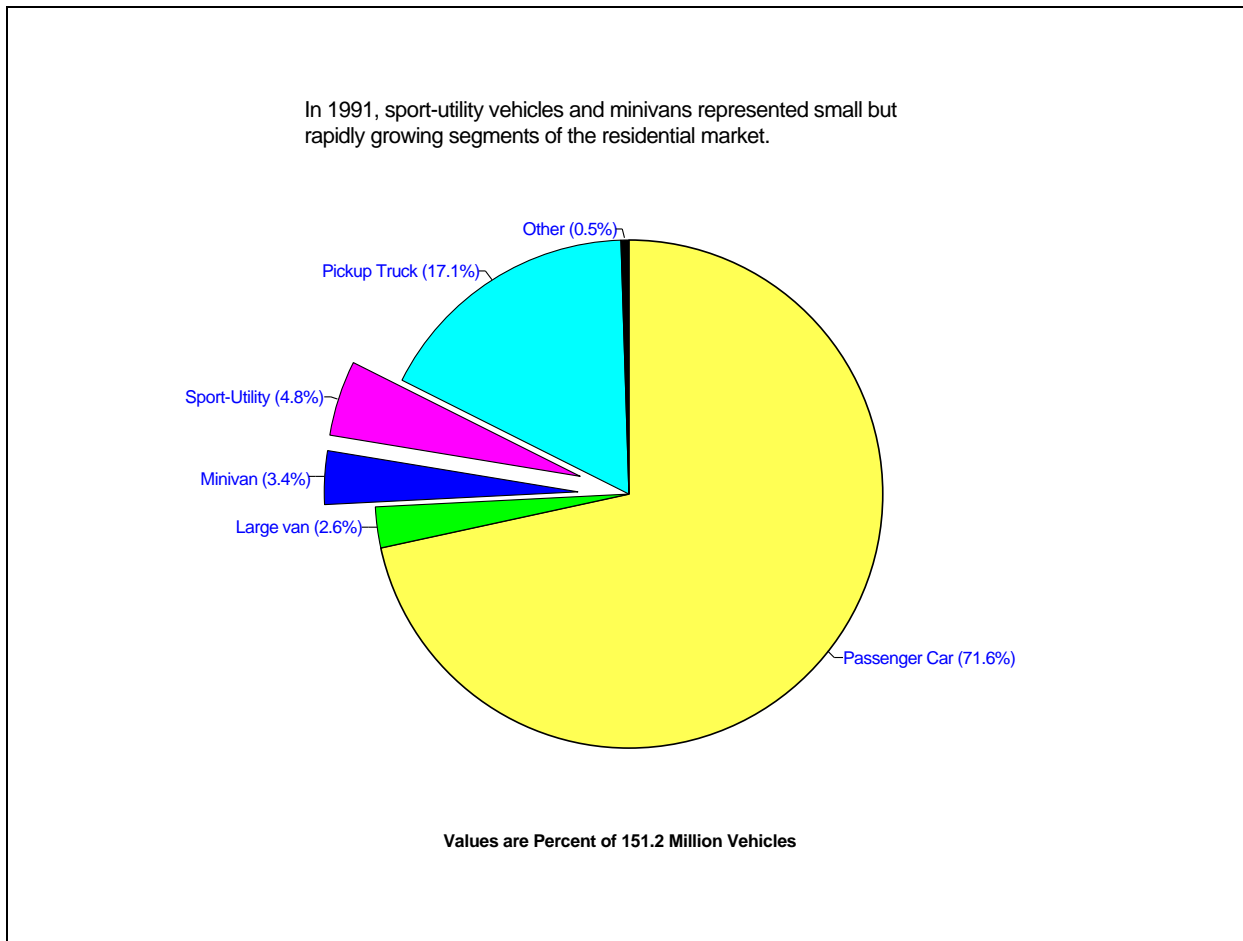
# Vehicle Stock Composition

## Vehicle Type

Despite low overall sales of vehicles, minivans and sport-utility vehicles continued to make large gains in their market share of the U.S. fleet in the 1988 to 1991 period. Minivans and sport-utility vehicles increased their share of the household vehicle stock from 4.7 percent in 1988 to 8.2 percent in 1991. The total number of these vehicles reached 12.4 million in 1991, an increase of 77 percent since 1988, compared with an the overall increase of only 2.5 percent for all residential vehicles (Figure 3).

Meanwhile, the total number of passenger cars, including station wagons, changed from 109.3 million in 1988 to 108.3 million in 1991; the number of pickup trucks remained the same. Both, however, decreased as a percentage of the total residential fleet. Large vans continued their decline in both absolute numbers (from 4.7 million in 1988 to 3.9 million in 1991) and percentage of the total fleet.

**Figure 3. Household Vehicle Composition, 1991**



Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey.





## Vehicle Model Year

In 1991, the newest vehicles (model years 1989-1992) made up about 19 percent of the total household vehicle stock while the oldest vehicles (pre-1977 models) made up 12 percent. Nearly half (46 percent) of all vehicles were from model years 1983-1988. The remaining 23 percent of the household vehicles were from model years 1977-1982.

About one-third of the oldest vehicles (pre-1977 models) were in the West (Table 3 and Figure 4). Pre-1977 vehicles accounted for a larger share of vehicles in the West than in any other region (about 18 percent compared to only 6 percent in the Northeast).

**Table 3. Number of Vehicles by Model Year and Census Region, 1991**

Vehicle Model	U.S. Total	Northeast	Midwest	South	West
<b>Total Vehicles</b> (million) . . . . .	151.2	27.0	38.4	52.7	33.2
1991 to 1992 . . . . .	5.5	1.0	1.3	2.0	1.2
1990 . . . . .	10.5	2.3	2.7	3.6	1.9
1989 . . . . .	12.5	2.8	3.0	4.4	2.3
1986 to 1988 . . . . .	39.0	8.8	9.6	12.7	7.8
1983 to 1985 . . . . .	31.1	5.8	8.2	11.0	6.1
1980 to 1982 . . . . .	17.5	3.0	4.3	6.5	3.8
1977 to 1979 . . . . .	16.7	1.8	4.8	6.2	3.9
1976 or Earlier . . . . .	18.4	1.5	4.4	6.3	6.1

Note: Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey.

## Change in Vehicle Stock

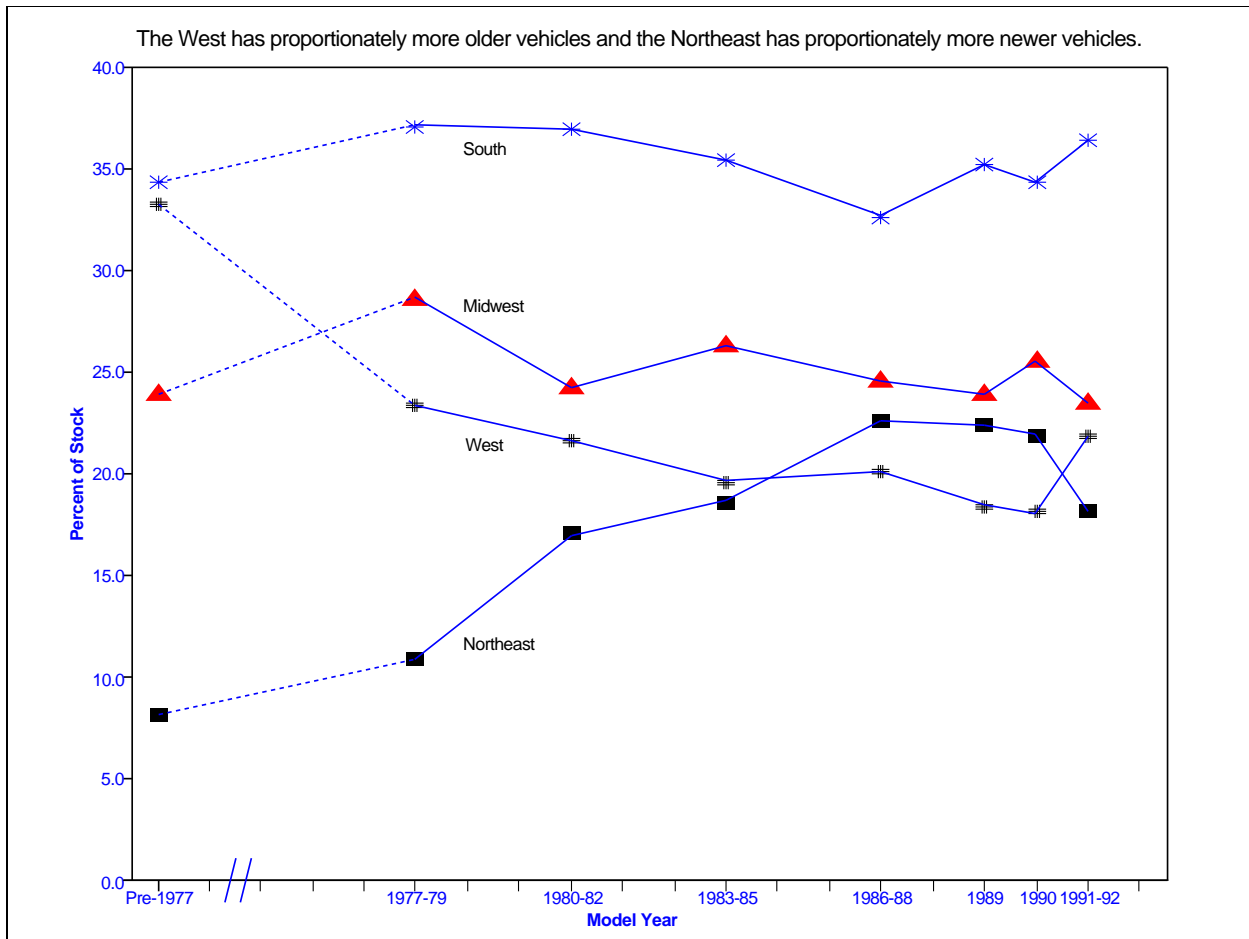
In 1991, about one-third of all RTECS households (31 million households) made some type of change in their vehicle stock (Table 4). Of the households that made a change in vehicle stock during 1991:

- 20 percent acquired one or more vehicles without disposing of any.
- 35 percent disposed of one or more vehicles without acquiring any.
- 45 percent acquired and disposed of at least one vehicle.

Some of the acquisitions and disposals reported in the first two categories may actually be part of a two-step vehicle replacement transaction, but were not reported in the third category because the corresponding transaction did not occur during the time period covered by the RTECS.

The households most likely to make a change were those households with the greater number of vehicles. The 63.6 million households that did not change their vehicle stock in 1991 included the 10 million households that did not own or have available a vehicle in 1991. Forty percent had one vehicle and 44 percent had two or more vehicles.

**Figure 4. Vehicle Stock Composition**



Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey.

**Table 4. Changes in Vehicle Stock by Selected Household Characteristics, 1991**

Household Characteristics	Households not Changing Vehicles		Households Changing Vehicles	
	(million)	(percent)	(million)	(percent)
<b>Household Composition</b>	63.6	100.0	31.0	100.0
With Children .....	21.7	34.1	14.1	45.5
Without Children .....	41.8	65.7	16.9	54.5
<b>Number of Drivers</b>	63.6	100.0	31.0	100.0
None .....	8.1	12.7	.5	1.6
One .....	23.7	37.3	7.4	23.9
Two .....	27.1	42.6	17.1	55.2
Three or More .....	4.7	7.4	6.1	19.7
<b>Household Size</b>	63.6	100.0	31.0	100.0
One .....	19.9	31.3	3.9	12.6
Two .....	20.0	31.4	10.4	33.5
Three or More .....	23.7	37.3	16.7	53.9

Note: Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey.

### Average Number of Vehicles

In 1991, RTECS households with vehicles averaged 1.8 vehicles each. This has not changed since the 1988 RTECS (and is only slightly higher than in the 1983 and 1985 RTECS), because the increase in the number of households has kept pace with the increase in the number of household vehicles (Figure 5). The number of vehicles per household varies, however, depending on differences in household characteristics such as household income and household size.

#### Average Number of Vehicles

In contrast to the vehicle count (which is based on the number of vehicles on July 1), the average number of vehicles is measured over a period of time to account for the significant turnover in vehicle ownership. It represents the effective number of vehicles owned or used by a household on a regular basis for a full year. For example, a household that had two vehicles--one each for 6 months during the year--would be considered to have had one vehicle on average for the entire year. A household that had two vehicles--one for the full year and one for 6 months--would be considered to have had 1.5 vehicles on average for the entire year. Estimates of the average number of vehicles by selected household and vehicle characteristics are provided in "Detailed Tables." (See "Glossary" for the definition of Vehicle and Vehicle Stock.) Unless otherwise stated, all statistics such as vehicle miles traveled and vehicle fuel consumption and expenditures are based on the average number of vehicles, rather than at one preferred point-in-time.

A plausible relationship exists among household income, the number of drivers, and the number of vehicles in the household. Households may acquire vehicles partly for materialistic reasons (such as a perceived boost in their social status). In such a case, higher income households would acquire more vehicles independent of the number of drivers in the households. Alternatively, households may acquire vehicles primarily for practical reasons (as a means of

personal transportation). In this case, both household income and the number of drivers would be related to the number of vehicles in the household. Particularly, if a household member requires a vehicle to get to work, ownership of a vehicle would add to the total income of the household (since the household member would be unemployed without the vehicle). Likewise the more workers in a household, the more likelihood of more drivers and vehicles to journey to work and a higher family income.

## **Family Income**

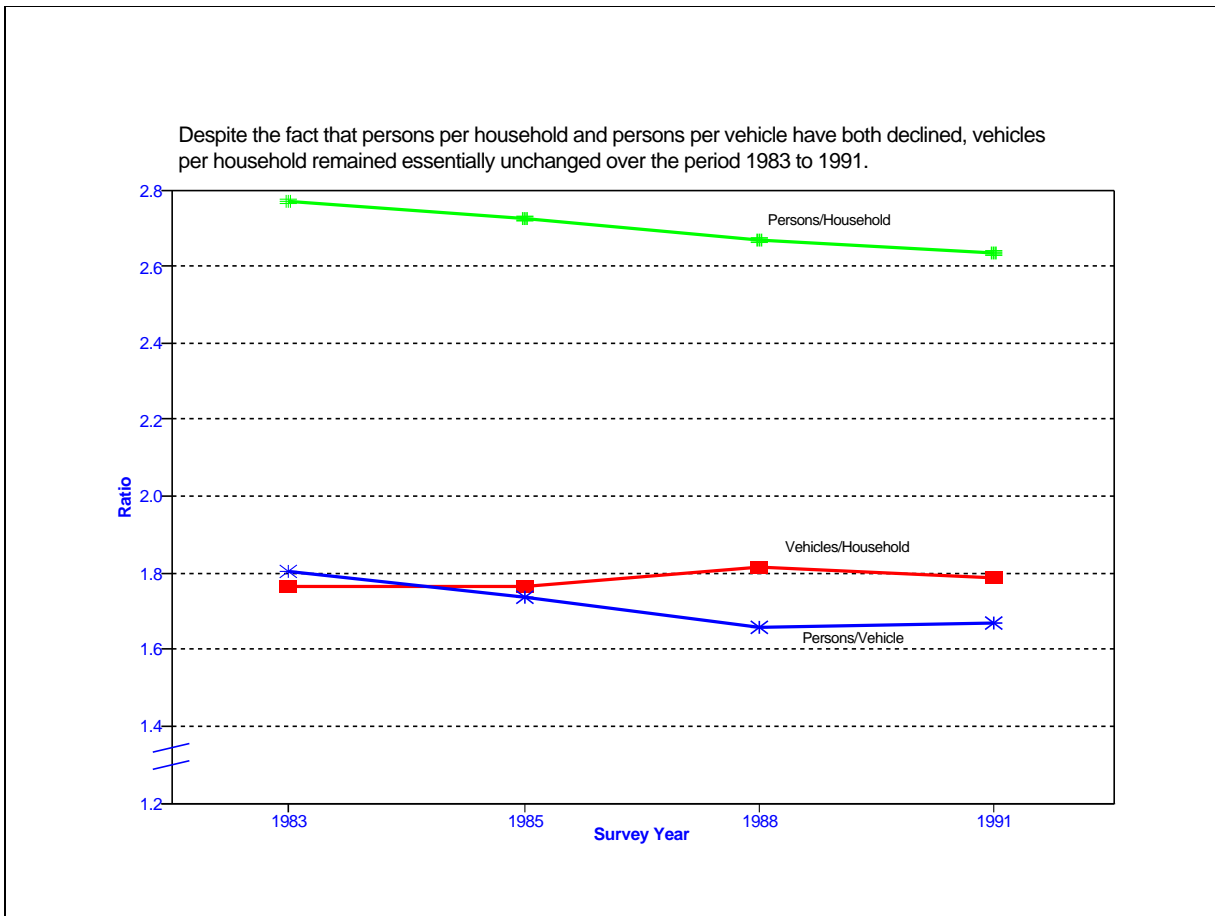
As family income increases, the average number of vehicles in the household increases. Households with annual family incomes of less than \$10,000 had the fewest vehicles on average (1.3 vehicles per household). The average number of vehicles rises with each progressively higher income category, from 1.6 vehicles in households earning \$10,000-\$35,000 per year to 2.1 vehicles in households earning more than \$35,000. Not surprisingly, households with the highest family incomes (\$75,000 or more) have the largest number of vehicles on average (2.4 vehicles).

## **Number of Drivers**

As the number of drivers in the household increases, the average number of vehicles in the household also increases. Households with only two drivers had 2.0 vehicles per household, compared with 3.1 vehicles in households with four or more drivers. In 1991, about 3 percent of RTECS households had four or more drivers, down from 5 percent in 1988.

### **Figure 5. Trends in Vehicles and Population Ratios**

Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey.



## Household Composition

The presence of children and the age of the primary driver play a significant role in the number of vehicles per household:

- Households with children old enough to drive (16 or 17 years old) had the most vehicles on average, 2.4 per household. In a traditional nuclear family where both parents drive, such households would usually have a total of three or more drivers.
- Households with children who are not old enough to drive (all under 15 years old) tend to have fewer vehicles than average (1.8 to 1.9 vehicles per household).
- Two-adult households without children, where the householder was between 35 and 59 years old, had 2.2 vehicles per household.
- Householders over 60 years of age and living alone had the least number of vehicles per household.