

## Chapter 3

# All Highway Vehicles and Characteristics

Summary Statistics from Tables in this Chapter

Source		
Table 3.2	U.S. share of world car registrations, 2010	16.8%
Table 3.3	U.S. share of world truck & bus registrations, 2010	39.3%
Table 3.4	Number of U.S. cars, 2010 (thousands)	130,892
Table 3.4	Number of U.S. trucks, 2010 (thousands)	110,322
Table 3.7	Vehicle miles traveled, 2010 (million miles)	2,966,495
	<i>Cars</i>	52.3%
	<i>Two-axle, four-tire trucks</i>	37.0%
	<i>Combination trucks</i>	5.9%
	<i>Other single-unit trucks</i>	3.7%
	<i>Motorcycles</i>	0.6%
	<i>Buses</i>	0.5%
Table 3.10	Average age of vehicles, 2011	
	<i>Cars (years)</i>	11.1
	<i>Light trucks (years)</i>	10.4
	<i>All light vehicles (years)</i>	10.8



*The top countries producing the world's cars and trucks have changed over the last ten years. In 2010, China was the largest producer of cars and trucks. In 2000, Japan produced the most cars and the United States produced the most trucks (includes light trucks).*

**Table 3.1**  
**World Production of Cars and Trucks, 2000 and 2010**  
**(thousands)**

Cars	2000	2010	Percent change 2000-2010
China	605	9,494	1470%
Japan	8,363	8,307	-1%
Germany	5,132	5,552	8%
Brazil	1,362	2,828	108%
U.S.	5,542	2,731	-51%
India	605	2,317	283%
Spain	2,366	1,951	-18%
France	2,880	1,914	-34%
Mexico	1,130	1,386	23%
UK	1,641	1,274	-22%
Russia	969	1,208	25%
Czech Republic	428	1,070	150%
All other countries	10,205	11,006	8%
<b>Total world</b>	<b>41,229</b>	<b>51,040</b>	<b>24%</b>

Trucks <sup>a</sup>	2000	2010	Percent change 2000-2010
China	1,464	8,771	499%
U.S.	7,263	5,012	-31%
South Korea	513	1,480	188%
Japan	1,781	1,319	-26%
India	283	1,237	336%
Canada	1,411	1,101	-22%
Thailand	315	1,091	247%
All other countries	4,685	5,226	12%
<b>Total world</b>	<b>17,717</b>	<b>25,236</b>	<b>42%</b>

**Source:**

Ward's Communications, Ward's World Motor Vehicle Data, 2011 Edition, Southfield, MI, 2010, pp. 265-271 and annual. (Additional resources: [www.wardsauto.com](http://www.wardsauto.com))

<sup>a</sup> Includes all trucks and buses. In the United States, light trucks, such as pickups, vans, and sport-utility vehicles are counted as trucks.



Use caution comparing historical data because of disconnects in data series. Also, the United States is unique in how many light trucks (SUVs, minivans, pickups) are used for personal travel. Those light trucks are not included on this table. The U.S. share of world cars continues to decline. The growth in the World total comes mainly from developing countries, like China, India, and South Korea.

**Table 3.2**  
**Car Registrations for Selected Countries, 1960–2010**  
**(thousands)**

Country	1960	1970	1980	1990	2000	2005	2008	2009	2010	Average annual percentage change 1990-2010
Argentina	474	1,482	3,112	4,284	5,060	5,340	6,244	6,706	7,605	2.9%
Brazil	a	a	a	12,127	15,393	18,370	21,884	23,612	25,500	3.8%
Canada <sup>b</sup>	4,104	6,602	10,256	12,622	16,832	18,124	19,613	19,877	20,121	2.4%
China	a	a	351	1,897	3,750	8,900	18,270	25,301	34,430	15.6%
France	4,950	11,860	18,440	23,550	28,060	30,100	30,850	31,050	31,300	1.4%
India	a	a	a	2,300	5,150	7,654	9,400	12,125	13,300	9.2%
Indonesia	a	a	a	1,200	a	3,850	4,750	10,364	10,800	11.6%
Germany <sup>c</sup>	4,856	14,376	23,236	35,512	43,772	46,090	41,321	41,738	42,302	0.9%
Japan	457	8,779	23,660	34,924	52,437	57,091	57,865	58,020	58,347	2.6%
Malaysia	a	a	a	1,811	4,213	6,402	7,190	8,506	8,900	8.3%
Pakistan	a	a	a	738	375	411	445	1,658	1,726	4.3%
Russia	a	a	a	a	20,353	25,285	32,021	33,187	34,797	a
South Korea	a	a	a	2,075	8,084	11,122	12,484	13,024	13,632	9.9%
United Kingdom	5,650	11,802	15,438	22,528	27,185	30,652	31,252	31,036	31,258	1.7%
United States	61,671	89,244	121,601	143,550	127,721	132,909	135,882	119,292	118,947	-0.4%
U.S. percentage of world	62.7%	46.1%	38.0%	32.3%	23.3%	21.5%	20.4%	17.4%	16.8%	
World total	98,305	193,479	320,390	444,900	548,558	617,914	667,630	684,570	707,764	2.3%

**Source:**

Ward's Communications, *Ward's World Motor Vehicle Data, 2011 Edition*, Southfield, MI, 2011, pp. 287–290 and annual. (Additional resources: [www.wardsauto.com](http://www.wardsauto.com))

<sup>a</sup> Data are not available.

<sup>b</sup> Data from 2000 and later are not comparable to prior data. Canada reclassified autos and trucks prior to 2000.

<sup>c</sup> Data for 1990 and prior include West Germany only. Kraftwagen are included with automobiles.



*The United States totals include SUVs, minivans, and light trucks, many of which are used for personal travel.*

**Table 3.3**  
**Truck and Bus Registrations for Selected Countries, 1960–2010**  
(thousands)

Country	1960	1970	1980	1990	2000	2009	2010	Average annual percentage change 1990-2010
Argentina	392	788	1,217	1,501	1,554	2,249	2,511	2.6%
Brazil	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>	936	3,917	6,031	6,600	10.3%
Canada <sup>b</sup>	1,056	1,481	2,955	3,931	739	915	933	-6.9%
China	<sup>a</sup>	<sup>a</sup>	1,480	4,314	9,650	38,875	43,590	12.3%
France	1,650	1,850	2,550	4,910	5,733	6,388	6,444	1.4%
India	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>	2,050	2,390	6,950	7,480	6.7%
Indonesia	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>	1,391	2,373	7,917	8,100	9.2%
Germany <sup>c</sup>	786	1,228	1,617	2,764	3,534	2,895	2,960	0.3%
Japan	896	8,803	14,197	22,773	20,211	15,789	15,512	-1.9%
Malaysia	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>	616	1,030	1,099	1,150	3.2%
Pakistan	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>	172	385	513	538	5.9%
Russia	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>	7,200	5,041	6,323	6,427	-0.6%
South Korea	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>	1,320	3,956	4,301	4,310	6.1%
United Kingdom	1,534	1,769	1,920	3,774	3,361	4,182	4,220	0.6%
United States	12,186	19,175	34,195	45,106	85,579	119,770	120,865	5.1%
U.S. percentage of world	42.6%	36.2%	37.7%	32.7%	42.1%	40.6%	39.3%	
World total	28,583	52,899	90,592	138,082	203,272	295,115	307,497	4.1%

**Source:**

Ward's Communications, *Ward's World Motor Vehicle Data, 2011 Edition*, Southfield, MI, 2011, pp. 287–290 and annual. (Additional resources: [www.wardsauto.com](http://www.wardsauto.com))

<sup>a</sup> Data are not available.

<sup>b</sup> Data from 2000 and later are not comparable to prior data. Canada reclassified autos and trucks prior to 2000.

<sup>c</sup> Data for 1990 and prior include West Germany only. Kraftwagen are included with automobiles.



## VEHICLES IN USE

Both the Federal Highway Administration (FHWA) and The Polk Company report figures on the car and truck population each year. The two estimates, however, differ by as much as 11.2% (1981). The differences can be attributed to several factors:

- The FHWA data include all vehicles which have been registered at any time throughout the calendar year. Therefore, the data include vehicles which were retired during the year and may double count vehicles which have been registered in different states or the same states to different owners. The Polk Company data include only those vehicles which are registered on July 1 of the given year.
- The classification of mini-vans, station wagons on truck chassis, and utility vehicles as cars or trucks causes important differences in the two estimates. The Polk Company data included passenger vans in the car count until 1980; since 1980 all vans have been counted as trucks. Recently, the Federal Highway Administration adjusted their definition of cars and trucks. Starting in 1993, some minivans and sport utility vehicles that were previously included with cars were included with trucks. This change produced a dramatic change in the individual percentage differences of cars and trucks. The difference in total vehicles has been less than 5% each year since 1990 and does not appear to be significantly affected by the FHWA reclassifications.
- The FHWA data include all non-military Federal vehicles, while The Polk Company data include only those Federal vehicles which are registered within a state. Federal vehicles are not required to have State registrations, and, according to the General Services Administration, most Federal Vehicles are not registered.

According to The Polk Company statistics, the number of cars in use in the United States declined from 1991 to 1992. This is the first decline in vehicle stock since the figures were first reported in 1924. However, the data should be viewed with caution. A redesign of Polk's approach in 1992 allowed a national check for duplicate registrations, which was not possible in earlier years. Polk estimates that, due to processing limitations, its vehicle population counts may have been inflated by as much as 1½ percent. Assuming that percentage is correct, the number of cars in use would have declined from 1991 to 1992 under the previous Polk method. The growing popularity of light trucks being used as passenger vehicles could also have had an impact on these figures.



*In the early 1980's, researchers had to make a conscious choice of which data series to use, since they differed by as much as 11%. In 2009 the two sources differed by about 1%. Both sources show a decline in automobiles from 2008 to 2009 and an increase in trucks. The series, however, seem to be growing further apart.*

**Table 3.4**  
**U.S. Cars and Trucks in Use, 1970–2010**  
**(thousands)**

Year	Automobiles			Trucks			Total		
	FHWA	The Polk Company	Percentage difference	FHWA	The Polk Company	Percentage difference	FHWA	The Polk Company	Percentage difference
1970	89,243	80,448	10.9%	18,797	17,688	6.3%	108,040	98,136	10.1%
1975	106,706	95,241	12.0%	25,781	24,813	3.9%	132,487	120,054	10.4%
1976	110,189	97,818	12.6%	27,876	26,560	5.0%	138,065	124,378	11.0%
1977	112,288	99,904	12.4%	29,314	28,222	3.9%	141,602	128,126	10.5%
1978	116,573	102,957	13.2%	31,336	30,565	2.5%	147,909	133,522	10.8%
1979	118,429	104,677	13.1%	32,914	32,583	1.0%	151,343	137,260	10.3%
1980	121,601	104,564	16.3%	33,667	35,268	-4.5%	155,267	139,832	11.0%
1981	123,098	105,839	16.3%	34,644	36,069	-4.0%	157,743	141,908	11.2%
1982	123,702	106,867	15.8%	35,382	36,987	-4.3%	159,084	143,854	10.6%
1983	126,444	108,961	16.0%	36,723	38,143	-3.7%	163,166	147,104	10.9%
1984	128,158	112,019	14.4%	37,507	40,143	-6.6%	165,665	152,162	8.9%
1985	127,885	114,662	11.5%	43,210	42,387	1.9%	171,095	157,049	8.9%
1986	130,004	117,268	10.9%	45,103	44,826	0.6%	175,106	162,094	8.0%
1987	131,482	119,849	9.7%	46,826	47,344	-1.1%	178,308	167,193	6.6%
1988	133,836	121,519	10.1%	49,941	50,221	-0.6%	183,777	171,740	7.0%
1989	134,559	122,758	9.6%	52,172	53,202	-1.9%	186,731	175,960	6.1%
1990	133,700	123,276	8.5%	54,470	56,023	-2.8%	188,171	179,299	4.9%
1991	128,300	123,268	4.1%	59,206	58,179	1.8%	187,505	181,447	3.3%
1992	126,581	120,347	5.2%	63,136	61,172	3.2%	189,717	181,519	4.5%
1993	127,327	121,055	5.2%	66,082	65,260	1.3%	193,409	186,315	3.8%
1994	127,883	121,997	4.8%	69,491	66,717	4.2%	197,375	188,714	4.6%
1995	128,387	123,242	4.2%	72,458	70,199	3.2%	200,845	193,441	3.8%
1996	129,728	124,613	4.1%	75,940	73,681	3.1%	205,669	198,294	3.7%
1997	129,749	124,673	4.1%	77,307	76,398	1.2%	207,056	201,071	3.0%
1998	131,839	125,966	4.7%	79,062	79,077	0.0%	210,901	205,043	2.9%
1999	132,432	126,869	4.4%	83,148	82,640	0.6%	215,580	209,509	2.9%
2000	133,621	127,721	4.6%	87,108	85,579	1.8%	220,729	213,300	3.5%
2001	137,633	128,714	6.9%	92,045	87,969	4.6%	229,678	216,683	6.0%
2002	135,921	129,907	4.6%	92,939	91,120	2.0%	228,860	221,027	3.5%
2003	135,670	131,072	3.5%	94,944	94,810	0.1%	230,614	225,882	2.1%
2004	136,431	132,469	3.0%	100,016	99,698	0.3%	236,447	232,167	1.8%
2005	136,568	132,909	2.8%	103,819	105,475	-1.6%	240,387	238,384	0.8%
2006	135,400	135,047	0.3%	107,944	109,596	-1.5%	243,344	244,643	-0.5%
2007	135,933	135,222	0.5%	110,498	113,479	-2.6%	246,431	248,701	-0.9%
2008	137,080	135,882	0.9%	110,242	114,357	-3.6%	247,322	250,239	-1.2%
2009	134,880	132,424	1.9%	110,561	116,036	-4.7%	245,441	248,460	-1.2%
2010	130,892	<sup>a</sup>	<sup>a</sup>	110,322	<sup>a</sup>	<sup>a</sup>	241,214	<sup>a</sup>	<sup>a</sup>

**Source:**

FHWA - U.S. Department of Transportation, Federal Highway Administration, 1970–2008, *Highway Statistics 2008*, Washington, DC, 2009, Table VM-1 and annual. 2009–2010 data from tables MV-1 and MV-9. (Additional resources: [www.fhwa.dot.gov](http://www.fhwa.dot.gov))

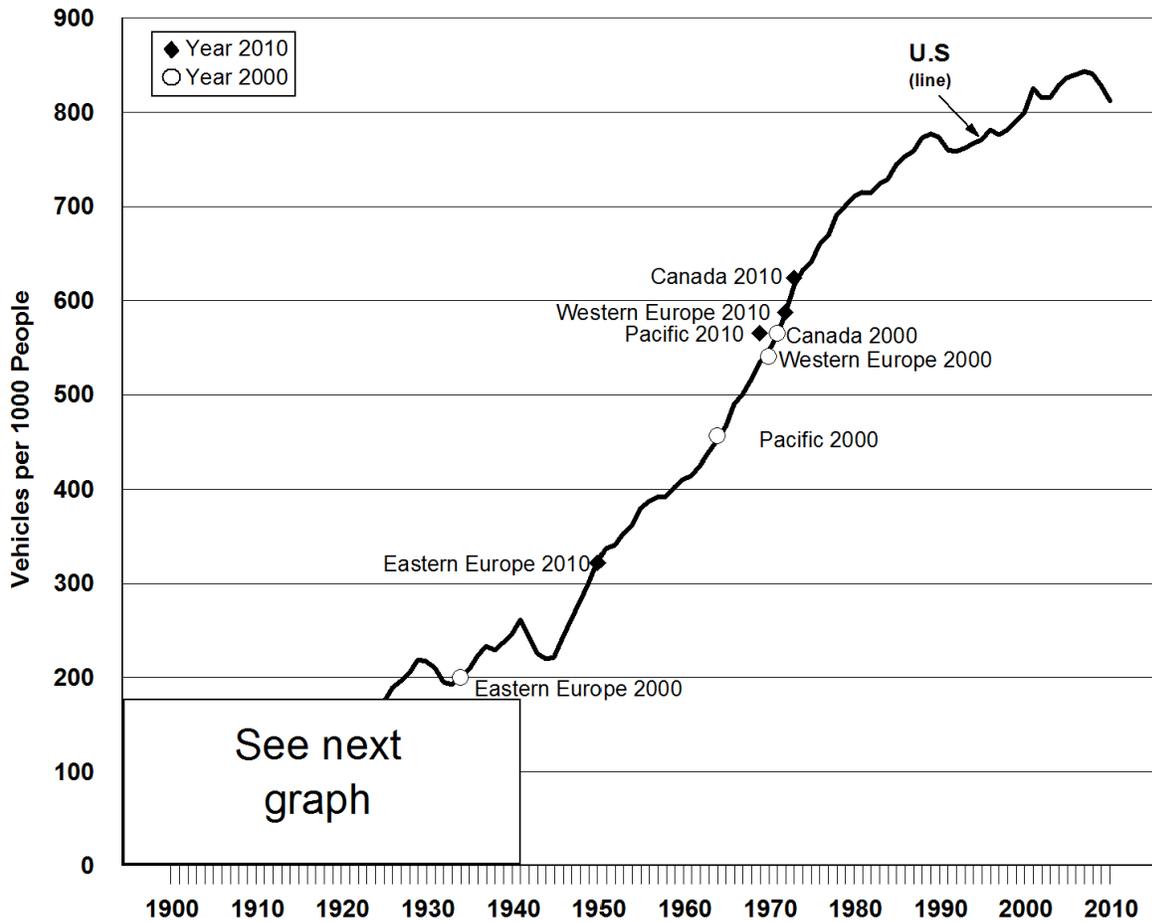
Polk - The Polk Company, Detroit, Michigan. **FURTHER REPRODUCTION PROHIBITED.** (Additional resources: [www.polk.com](http://www.polk.com))

<sup>a</sup> Data are not available.



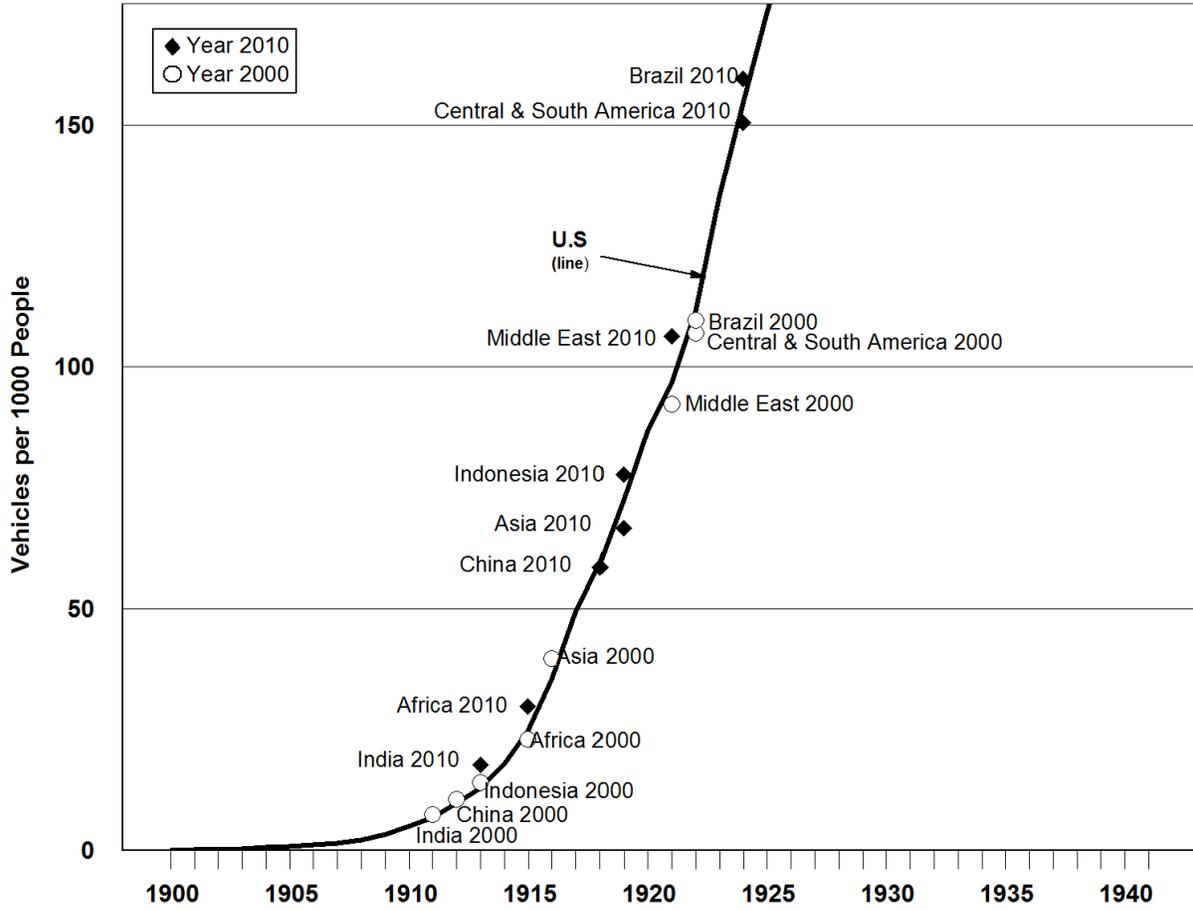
The graphs below show the number of motor vehicles per thousand people for various countries. The data for the United States are displayed in the line which goes from 1900 to 2010. The points labeled on that line show data for the other countries/regions around the world and how their vehicles per thousand people compare to the United States at two different points in time, 2000 and 2010. For instance, the graph shows that in 2000, Western Europe's vehicles per thousand people was about where the United States was in 1970, but by 2010 it is about where the United States was in 1972. The lower part of the graph (1900-1940) is shown enlarged on the facing page.

**Figure 3.1. Vehicles per Thousand People: U.S. (Over Time) Compared to Other Countries (in 2000 and 2010)**



See next graph





**Source:**  
See Tables 3.4 and 3.5.



*Though some countries are listed separately in this table, those countries are also included in the regional total. For instance, China is listed separately, but is also included in the Asia, Far East region.*

**Table 3.5**  
**Vehicles per Thousand People in Other Countries, 2000 and 2010**

Country/Region	Vehicles per 1,000 people	
	2000	2010
Africa	23.1	29.9
Asia, Far East	39.8	66.7
Asia, Middle East	92.2	106.2
Brazil	109.5	159.6
Canada	565.0	623.6
Central & South America	107.0	150.4
China	10.6	58.7
Europe, East	200.7	321.8
Europe, West	540.7	587.2
India	7.5	17.7
Indonesia	14.1	77.8
Pacific	456.0	565.3

**Sources:**

Population – (2010) U.S. Census Bureau, Population Division, International Data Base (IDB) World, April 18, 2012. (Additional resources: <http://www.census.gov/population/international>)

Vehicles – (2010) U.S.: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2010*, Washington, DC, 2012. All others: Ward’s Communications, Ward’s Motor Vehicle Data 2011, pp. 287–290. (Additional resources: [www.fhwa.dot.gov](http://www.fhwa.dot.gov), [www.wardsauto.com](http://www.wardsauto.com))



The number of vehicles per thousand people in the United States has grown significantly from 1900 to 2007. In 2008 to 2010, however, the number decreased from a high of 843.57 in 2007.

**Table 3.6**  
**Vehicles per Thousand People in the United States, 1990–2010**

Year	U.S. vehicles per 1,000 people								
1900	0.11	1923	134.90	1946	243.11	1969	533.37	1992	757.96
1901	0.19	1924	154.35	1947	262.56	1970	545.35	1993	761.94
1902	0.29	1925	173.26	1948	280.20	1971	562.45	1994	766.94
1903	0.41	1926	189.10	1949	299.56	1972	585.60	1995	770.99
1904	0.67	1927	195.77	1950	323.71	1973	615.19	1996	781.16
1905	0.94	1928	204.87	1951	337.14	1974	632.32	1997	776.02
1906	1.27	1929	219.31	1952	340.57	1975	640.07	1998	781.20
1907	1.65	1930	217.34	1953	353.67	1976	659.47	1999	790.07
1908	2.24	1931	210.37	1954	361.40	1977	669.03	2000	800.30
1909	3.45	1932	195.38	1955	379.77	1978	690.17	2001	825.49
1910	5.07	1933	192.38	1956	387.58	1979	700.42	2002	815.22
1911	6.81	1934	199.90	1957	392.11	1980	710.71	2003	815.50
1912	9.90	1935	208.61	1958	392.17	1981	715.22	2004	829.26
1913	12.94	1936	222.62	1959	402.83	1982	713.95	2005	836.58
1914	17.79	1937	233.33	1960	410.37	1983	724.30	2006	840.09
1915	24.77	1938	229.65	1961	415.11	1984	728.20	2007	843.57
1916	35.48	1939	236.93	1962	426.06	1985	744.50	2008	840.80
1917	49.57	1940	245.63	1963	438.75	1986	753.33	2009	828.04
1918	59.69	1941	261.57	1964	451.57	1987	758.58	2010	811.83
1919	72.50	1942	244.73	1965	466.90	1988	772.92		
1920	86.78	1943	225.89	1966	489.34	1989	776.99		
1921	96.68	1944	220.23	1967	500.66	1990	773.40		
1922	111.53	1945	221.80	1968	516.49	1991	760.19		

**Sources:**

Population – (2010) U.S. Census Bureau, Population Division, International Data Base (IDB) World, April 18, 2012. (Additional resources: <http://www.census.gov/ipc/www/idb/>)

Vehicles – (2010) U.S.: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2010*, Washington, DC, 2012. All others: Ward’s Communications, Ward’s Motor Vehicle Data 2010, pp. 287–290. (Additional resources: [www.fhwa.dot.gov](http://www.fhwa.dot.gov), [www.wardsauto.com](http://www.wardsauto.com))



Total vehicle-miles traveled increased slightly from 2009 to 2010. The trend of using two-axle, four-tire trucks, such as pickups, vans, and sport-utility vehicles, for personal travel is evident in these data; two-axle, four-tire trucks account for 25.8% more travel in 2010 than in 1970, and cars account for 30.3% less travel in that time period.

**Table 3.7**  
**Shares of Highway Vehicle-Miles Traveled by Vehicle Type, 1970–2010**

Year	Cars	Motorcycles	Two-axle, four-tire trucks	Other single-unit trucks	Combination trucks	Buses	Total vehicle-miles traveled (million miles)
1970	82.6%	0.3%	11.1%	2.4%	3.2%	0.4%	1,109,724
1975	77.9%	0.4%	15.1%	2.6%	3.5%	0.5%	1,327,664
1976	76.9%	0.4%	16.1%	2.6%	3.5%	0.4%	1,402,380
1977	75.6%	0.4%	17.1%	2.7%	3.8%	0.4%	1,467,027
1978	74.2%	0.5%	18.1%	2.8%	4.1%	0.4%	1,544,704
1979	72.8%	0.6%	19.1%	2.7%	4.4%	0.4%	1,529,133
1980	72.8%	0.7%	19.0%	2.6%	4.5%	0.4%	1,527,295
1981	72.9%	0.7%	19.1%	2.5%	4.4%	0.4%	1,555,308
1982	72.8%	0.6%	19.2%	2.5%	4.4%	0.4%	1,595,010
1983	72.3%	0.5%	19.8%	2.6%	4.5%	0.3%	1,652,788
1984	71.3%	0.5%	20.8%	2.6%	4.5%	0.3%	1,720,269
1985	70.2%	0.5%	22.0%	2.6%	4.4%	0.3%	1,774,826
1986	69.2%	0.5%	23.1%	2.5%	4.4%	0.3%	1,834,872
1987	68.5%	0.5%	23.8%	2.5%	4.5%	0.3%	1,921,204
1988	67.6%	0.5%	24.8%	2.4%	4.4%	0.3%	2,025,962
1989	66.8%	0.5%	25.6%	2.4%	4.4%	0.3%	2,096,487
1990	65.7%	0.4%	26.8%	2.4%	4.4%	0.3%	2,144,362
1991	62.5%	0.4%	29.9%	2.4%	4.4%	0.3%	2,172,050
1992	61.0%	0.4%	31.5%	2.4%	4.4%	0.3%	2,247,151
1993	59.9%	0.4%	32.5%	2.5%	4.5%	0.3%	2,296,378
1994	59.6%	0.4%	32.4%	2.6%	4.6%	0.3%	2,357,588
1995	59.4%	0.4%	32.6%	2.6%	4.8%	0.3%	2,422,696
1996	59.1%	0.4%	32.8%	2.6%	4.8%	0.3%	2,485,848
1997	58.7%	0.4%	33.2%	2.6%	4.9%	0.3%	2,561,695
1998	58.9%	0.4%	33.0%	2.6%	4.9%	0.3%	2,631,522
1999	58.3%	0.4%	33.5%	2.6%	4.9%	0.3%	2,691,056
2000	58.3%	0.4%	33.6%	2.6%	4.9%	0.3%	2,746,925
2001	58.4%	0.3%	33.6%	2.6%	4.9%	0.3%	2,790,372
2002	58.1%	0.3%	33.8%	2.7%	4.9%	0.2%	2,855,508
2003	57.8%	0.3%	34.0%	2.7%	4.8%	0.2%	2,890,450
2004	57.3%	0.3%	34.6%	2.6%	4.8%	0.2%	2,964,788
2005	57.1%	0.3%	34.8%	2.6%	4.8%	0.2%	2,989,430
2006	56.1%	0.4%	35.9%	2.7%	4.7%	0.2%	3,014,369 <sup>a</sup>
2007	53.5%	0.7%	35.6%	3.8%	5.9%	0.5%	3,124,828
2008	52.6%	0.7%	36.1%	4.1%	6.0%	0.5%	3,070,268
2009	52.8%	0.7%	36.2%	4.1%	5.7%	0.5%	2,956,764
2010	52.3%	0.6%	37.0%	3.7%	5.9%	0.5%	2,966,495
<i>Average annual percentage change</i>							
1970–2010							2.5%
2000–2010							0.8%

**Source:**

U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2010*, Washington, DC, 2012, Table VM-1 and annual. (Additional resources: [www.fhwa.dot.gov](http://www.fhwa.dot.gov)). 2009-2010 cars and 2-axle 4-tire trucks – see Appendix A for car and light truck 2009-2010 estimations.

<sup>a</sup> Due to FHWA methodology changes, data from 2007-on are not comparable with previous data.



*Due to data restrictions, the 2001 data are the latest that can be published.*

**Table 3.8**  
**Cars in Operation and Vehicle Travel by Age, 1970 and 2001**

Age (years)	1970			2001			2001 Estimated vehicle travel		Average annual miles per vehicle
	Vehicles (thousands)	Percentage	Cumulative percentage	Vehicles (thousands)	Percentage	Cumulative percentage	Percentage	Cumulative percentage	
Under 1 <sup>a</sup>	6,288	7.8%	7.8%	6,183	4.8%	4.8%	6.9%	6.9%	15,000
1	9,299	11.6%	19.4%	8,882	6.9%	11.7%	9.4%	16.3%	14,300
2	8,816	11.0%	30.3%	8,093	6.3%	18.0%	8.2%	24.6%	13,700
3	7,878	9.8%	40.1%	7,555	5.9%	23.9%	7.2%	31.8%	12,900
4	8,538	10.6%	50.8%	7,860	6.1%	30.0%	7.2%	39.1%	12,400
5	8,506	10.6%	61.3%	7,337	5.7%	35.7%	6.5%	45.6%	12,000
6	7,116	8.8%	70.2%	8,555	6.6%	42.3%	7.4%	53.1%	11,700
7	6,268	7.8%	78.0%	7,471	5.8%	48.1%	6.3%	59.4%	11,400
8	5,058	6.3%	84.3%	7,420	5.8%	53.9%	6.1%	65.5%	11,100
9	3,267	4.1%	88.3%	6,807	5.3%	59.2%	5.4%	71.0%	10,700
10	2,776	3.5%	91.8%	6,810	5.3%	64.5%	5.0%	76.0%	9,900
11	1,692	2.1%	93.9%	6,692	5.2%	69.7%	4.5%	80.5%	9,000
12	799	1.0%	94.9%	6,742	5.2%	74.9%	4.7%	85.2%	9,400
13	996	1.2%	96.1%	6,189	4.8%	79.7%	3.8%	88.9%	8,200
14	794	1.0%	97.1%	5,345	4.2%	83.9%	2.9%	91.8%	7,200
15 and older	2,336	2.9%	100.0%	20,773	16.1%	100.0%	8.2%	100.0%	5,300
<b>Subtotal</b>	<b>80,427</b>	<b>100.0%</b>		<b>128,714</b>	<b>100.0%</b>		<b>100.0%</b>		
Age not given	<u>22</u>			<u>0</u>					
<b>Total</b>	<b>80,449</b>			<b>128,714</b>					
Average age			5.6			9.3			
Median age			4.9			8.1			

**Source:**

The Polk Company, Detroit, MI. **FURTHER REPRODUCTION PROHIBITED.**

Vehicle travel—Average annual miles per auto by age were multiplied by the number of vehicles in operation by age to estimate the vehicle travel. Average annual miles per auto by age - generated by ORNL from the National Household Travel Survey Web site: [nhts.ornl.gov](http://nhts.ornl.gov). (Additional resources: [www.polk.com](http://www.polk.com), [nhts.ornl.gov](http://nhts.ornl.gov))

<sup>a</sup> Includes cars from model year 2002 and 2001 which were sold prior to July 1, 2002, and similarly, model years 1971 and 1970 sold prior to July 1, 1970.



Due to data restrictions, the 2001 data are the latest that can be published.

**Table 3.9**  
**Trucks in Operation and Vehicle Travel by Age, 1970 and 2001**

Age (years)	1970			2001			2001 Estimated vehicle travel		Average annual miles per vehicle
	Vehicles (thousands)	Percentage	Cumulative percentage	Vehicles (thousands)	Percentage	Cumulative percentage	Percentage	Cumulative percentage	
Under 1 <sup>a</sup>	1,262	7.1%	7.1%	6,213	7.1%	7.1%	8.5%	8.5%	17,500
1	1,881	10.6%	17.8%	7,958	9.0%	16.1%	12.0%	20.6%	19,200
2	1,536	8.7%	26.5%	7,522	8.6%	24.7%	11.7%	32.3%	19,800
3	1,428	8.1%	34.6%	6,398	7.3%	31.9%	9.0%	41.3%	17,900
4	1,483	8.4%	43.0%	6,109	6.9%	38.9%	8.4%	49.7%	17,500
5	1,339	7.6%	50.5%	5,122	5.8%	44.7%	6.8%	56.6%	17,000
6	1,154	6.5%	57.1%	5,574	6.3%	51.0%	6.8%	63.4%	15,600
7	975	5.5%	62.6%	5,042	5.7%	56.8%	6.1%	69.5%	15,400
8	826	4.7%	67.3%	4,148	4.7%	61.5%	4.9%	74.4%	15,100
9	621	3.5%	70.8%	3,395	3.9%	65.3%	3.5%	77.9%	13,200
10	658	3.7%	74.5%	3,221	3.7%	69.0%	2.3%	80.3%	9,200
11	583	3.3%	77.8%	3,039	3.5%	72.5%	2.2%	82.5%	9,200
12	383	2.2%	80.0%	3,345	3.8%	76.3%	2.4%	84.9%	9,200
13	417	2.4%	82.3%	3,112	3.5%	79.8%	2.3%	89.1%	9,200
14	414	2.3%	84.7%	2,544	2.9%	82.7%	1.8%	89.0%	9,200
15 and older	2,710	15.3%	100.0%	15,227	17.3%	100.0%	11.0%	100.0%	9,200
<b>Subtotal</b>	<b>17,670</b>	<b>100.0%</b>		<b>87,969</b>	<b>100.0%</b>		<b>100.0%</b>		
Age not given	<b>15</b>			<b>0</b>					
<b>Total</b>	<b>17,685</b>			<b>87,969</b>					
Average age		7.3			7.9				
Median age		5.9			6.8				

**Source:**

The Polk Company, Detroit, MI. **FURTHER REPRODUCTION PROHIBITED.**

Vehicle travel—The average annual vehicle-miles per truck by age were multiplied by the number of trucks in operation by age to estimate the vehicle travel. Average annual miles per truck by age were generated by ORNL from the *1997 Truck Inventory and Use Survey* public use tape provided by U.S. Department of Commerce, Bureau of the Census, Washington, DC, 2000. (Additional resources: [www.polk.com](http://www.polk.com), [www.census.gov](http://www.census.gov))

<sup>a</sup> Includes trucks from model year 2002 and 2001 which were sold prior to July 1, 2002, and similarly, model years 1971 and 1970 sold prior to July 1, 1970.



**Table 3.10**  
**U.S. Average Vehicle Age, 1995–2011**

	Passenger cars	Light trucks	All light vehicles
1995	8.4	8.3	8.4
1996	8.5	8.3	8.5
1997	8.7	8.5	8.6
1998	8.9	8.5	8.8
1999	9.1	8.5	8.8
2000	9.1	8.4	8.9
2001	9.3	8.4	8.9
2002	9.4	8.4	9.0
2003	9.6	8.5	9.1
2004	9.8	8.6	9.4
2005	10.1	8.7	9.5
2006	10.3	8.9	9.7
2007	10.4	9.0	9.8
2008	10.6	9.3	10.0
2009	10.8	9.8	10.3
2010	11.0	10.1	10.6
2011	11.1	10.4	10.8

**Source:**

The Polk Company, Detroit, MI. **FURTHER REPRODUCTION PROHIBITED.** (Additional resources: [www.polk.com](http://www.polk.com))



**Table 3.11**  
**New Retail Vehicle Sales, 1970–2011**  
**(thousands)**

Calendar Year	Cars	Light Trucks	Subtotal Light Vehicles	Heavy Trucks	Total Vehicle Sales
1970	8,400	1,457	9,857	334	10,191
1971	10,242	1,673	11,915	340	12,255
1972	10,940	2,097	13,037	438	13,475
1973	11,424	2,512	13,936	497	14,433
1974	8,853	2,163	11,016	424	11,440
1975	8,624	2,053	10,677	298	10,975
1976	10,110	2,719	12,829	324	13,153
1977	11,183	3,109	14,292	376	14,668
1978	11,314	3,474	14,788	441	15,229
1979	10,673	2,845	13,518	391	13,909
1980	8,949	1,960	10,909	265	11,174
1981	8,489	1,746	10,235	235	10,470
1982	7,956	2,063	10,019	183	10,202
1983	9,148	2,521	11,669	189	11,858
1984	10,324	3,255	13,579	277	13,856
1985	10,979	3,688	14,667	285	14,952
1986	11,404	4,594	15,998	265	16,263
1987	10,192	4,610	14,802	287	15,089
1988	10,547	4,800	15,347	334	15,681
1989	9,779	4,610	14,389	312	14,700
1990	9,303	4,548	13,851	277	14,129
1991	8,185	4,122	12,307	221	12,528
1992	8,213	4,629	12,842	249	13,091
1993	8,518	5,351	13,869	303	14,172
1994	8,991	6,033	15,024	353	15,376
1995	8,620	6,053	14,673	388	15,061
1996	8,479	6,519	14,998	359	15,356
1997	8,217	6,797	15,014	376	15,391
1998	8,085	7,299	15,384	424	15,808
1999	8,638	8,073	16,711	521	17,232
2000	8,778	8,386	17,164	462	17,626
2001	8,352	8,598	16,950	350	17,300
2002	8,042	8,633	16,675	322	16,998
2003	7,556	8,938	16,494	328	16,822
2004	7,483	9,254	16,737	432	17,168
2005	7,660	9,114	16,774	497	17,271
2006	7,762	8,574	16,336	545	16,880
2007	7,562	8,305	15,867	371	16,238
2008	6,769	6,246	13,015	298	13,314
2009	5,401	4,834	10,235	200	10,435
2010	5,635	5,758	11,393	218	11,611
2011	6,089	6,449	12,538	306	12,845
		<i>Average annual percentage change</i>			
1970-2011	-0.8%	3.8%	0.6%	-0.2%	0.6%
2001-2011	-3.1%	-2.8%	-3.0%	-1.3%	-2.9%

**Source:**

1970-2011: Ward's Communications, www.wardsauto.com.



Using current registration data and a scrappage model by Greenspan and Cohen, [1996 paper: <http://www.federalreserve.gov/pubs/feds/1996/199640/199640pap.pdf>], ORNL calculated car scrappage rates for 1970, 1980, and 1990. These data are fitted model values which assume constant economic conditions. Using 1977-2002 data, the Federal Highway Administration completed a separate survivability study in 2006.

**Table 3.12**  
**Car Scrappage and Survival Rates**  
**1970, 1980 and 1990 Model Years**

Vehicle age <sup>a</sup> (years)	1970 model year		1980 model year		1990 model year		2002 Survival rate
	Survival rate <sup>b</sup>	Scrappage rate <sup>c</sup>	Survival rate <sup>b</sup>	Scrappage rate <sup>c</sup>	Survival rate <sup>b</sup>	Scrappage rate <sup>c</sup>	
4	99.0	1.0	100.0	0.0	100.0	0.0	95.9
5	94.1	5.0	96.3	3.7	100.0	0.0	94.1
6	88.4	6.1	91.3	5.1	99.4	0.6	91.9
7	82.0	7.2	85.7	6.1	96.3	3.2	89.2
8	75.2	8.3	79.7	7.1	92.7	3.7	86.0
9	68.1	9.5	73.3	8.1	88.7	4.3	82.5
10	60.9	10.6	66.6	9.0	84.4	4.9	78.7
11	53.8	11.7	60.0	10.0	79.8	5.5	71.7
12	46.9	12.8	53.3	11.0	75.0	6.1	61.3
13	40.3	14.0	46.9	12.0	70.0	6.7	50.9
14	34.2	15.1	40.8	13.0	64.9	7.3	41.4
15	28.7	16.2	35.1	14.0	59.7	7.9	33.1
16	23.7	17.4	29.8	15.0	54.6	8.6	26.0
17	19.3	18.5	25.0	16.1	49.5	9.3	20.3
18	15.5	19.6	20.8	17.1	44.6	9.9	15.7
19	12.3	20.8	17.0	18.1	39.9	10.6	12.0
20	9.6	21.9	13.8	19.1	35.4	11.3	9.2
21	7.4	23.0	11.0	20.1	31.1	12.0	7.0
22	5.6	24.2	8.7	21.2	27.2	12.7	5.3
23	4.2	25.3	6.7	22.2	23.5	13.5	4.0
24	3.1	26.4	5.2	23.2	20.2	14.2	3.0
25	2.2	27.5	3.9	24.2	17.1	15.0	2.3
26	1.6	28.6	2.9	25.3	14.5	15.7	<sup>d</sup>
27	1.1	29.7	2.2	26.3	12.1	16.5	<sup>d</sup>
28	0.8	30.8	1.6	27.3	10.0	17.2	<sup>d</sup>
29	0.5	31.9	1.1	28.4	8.2	18.0	<sup>d</sup>
30	0.4	33.0	0.8	29.4	6.6	18.8	<sup>d</sup>
Median lifetime	11.5 years		12.5 years		16.9 years		152,137 Lifetime miles

**Sources:**

Schmoyer, Richard L., unpublished study on scrappage rates, Oak Ridge National Laboratory, Oak Ridge, TN, 2001.

U.S. Department of Transportation, National Highway Traffic Safety Administration, *Vehicle Survivability and Travel Mileage Schedules*, January 2006.

<sup>a</sup> It was assumed that scrappage for vehicles less than 4 years old is 0.

<sup>b</sup> The percentage of automobiles which will be in use at the end of the year.

<sup>c</sup> The percentage of automobiles which will be retired from use during the year.

<sup>d</sup> Data are not available.



Using current registration data and a scrappage model by Greenspan and Cohen [1996 paper: <http://www.federalreserve.gov/pubs/feds/1996/199640/199640pap.pdf>], ORNL calculated light truck scrappage rates for 1970, 1980, and 1990. These data are fitted model values which assume constant economic conditions. Using 1977-2002 data, the Federal Highway Administration completed a separate survivability study in 2006.

**Table 3.13**  
**Light Truck<sup>a</sup> Scrappage and Survival Rates**  
**1970, 1980 and 1990 Model Years**

Vehicle age <sup>b</sup> (years)	1970 model year		1980 model year		1990 model year		2002 Survival rate <sup>c</sup>
	Survival rate <sup>c</sup>	Scrappage rate <sup>d</sup>	Survival rate <sup>c</sup>	Scrappage rate <sup>d</sup>	Survival rate <sup>c</sup>	Scrappage rate <sup>d</sup>	
4	99.7	0.3	99.1	0.9	99.3	0.7	91.9
5	97.5	2.2	96.6	2.5	96.9	2.4	89.1
6	94.9	2.7	93.7	3.1	94.1	3.0	85.9
7	91.8	3.2	90.2	3.7	90.7	3.6	82.3
8	88.3	3.8	86.3	4.3	86.9	4.2	78.3
9	84.4	4.4	82.0	5.0	82.7	4.8	74.0
10	80.2	5.0	77.3	5.7	78.2	5.5	69.6
11	75.7	5.6	72.4	6.4	73.4	6.1	65.0
12	70.9	6.3	67.3	7.1	68.4	6.8	60.4
13	66.0	6.9	62.1	7.8	63.3	7.5	55.2
14	61.0	7.6	56.8	8.5	58.0	8.2	50.1
15	55.9	8.3	51.5	9.3	52.8	9.0	45.2
16	50.8	9.0	46.3	10.1	47.7	9.7	40.6
17	45.9	9.8	41.3	10.8	42.7	10.5	36.3
18	41.1	10.5	36.5	11.6	37.9	11.3	32.4
19	36.4	11.3	32.0	12.4	33.3	12.1	28.7
20	32.1	12.0	27.7	13.3	29.0	12.9	25.4
21	28.0	12.8	23.8	14.1	25.0	13.7	22.4
22	24.2	13.6	20.3	14.9	21.4	14.5	19.8
23	20.7	14.4	17.1	15.8	18.1	15.4	17.4
24	17.5	15.2	14.2	16.7	15.2	16.2	15.2
25	14.7	16.1	11.7	17.5	12.6	17.1	13.3
26	12.2	16.9	9.6	18.4	10.3	18.0	11.7
27	10.1	17.8	7.7	19.3	8.4	18.8	10.2
28	8.2	18.6	6.2	20.2	6.7	19.7	8.9
29	6.6	19.5	4.9	21.1	5.3	20.6	7.7
30	5.2	20.4	3.8	22.1	4.2	21.5	6.7
Median lifetime	16.2 years		15.3 years		15.5 years		179,954 Lifetime miles

**Sources:**

Schmoyer, Richard L., unpublished study on scrappage rates, Oak Ridge National Laboratory, Oak Ridge, TN, 2001.

U.S. Department of Transportation, National Highway Traffic Safety Administration, *Vehicle Survivability and Travel Mileage Schedules*, January 2006.

<sup>a</sup> Light trucks are trucks less than 10,000 lbs. gross vehicle weight.

<sup>b</sup> It was assumed that scrappage for vehicles less than 4 years old is 0.

<sup>c</sup> The percentage of light trucks which will be in use during the year.

<sup>d</sup> The percentage of light trucks which will be retired from use at the end of the year.



Using current registration data and a scrappage model by Greenspan and Cohen [1996 paper: <http://www.federalreserve.gov/pubs/feds/1996/199640/199640pap.pdf>], ORNL calculated heavy truck (trucks over 26,000 lbs. gross vehicle weight) scrappage rates. The expected median lifetime for a 1990 model year heavy truck is 29 years. These data are fitted model values which assume constant economic conditions.

**Table 3.14**  
**Heavy Truck<sup>a</sup> Scrappage and Survival Rates**  
**1970, 1980 and 1990 Model Years**

Vehicle age <sup>b</sup> (years)	1970 model year		1980 model year		1990 model year	
	Survival rate <sup>c</sup>	Scrappage rate <sup>d</sup>	Survival rate <sup>c</sup>	Scrappage rate <sup>d</sup>	Survival rate <sup>c</sup>	Scrappage rate <sup>d</sup>
4	98.8	1.2	98.5	1.5	99.4	0.6
5	97.2	1.6	96.7	1.9	98.6	0.8
6	95.3	1.9	94.5	2.3	97.6	1.0
7	93.2	2.3	92.0	2.7	96.5	1.2
8	90.7	2.6	89.1	3.1	95.2	1.3
9	88.1	3.0	86.0	3.5	93.8	1.5
10	85.2	3.3	82.7	3.9	92.2	1.7
11	82.1	3.6	79.1	4.3	90.5	1.9
12	78.8	4.0	75.4	4.7	88.6	2.0
13	75.4	4.3	71.6	5.1	86.7	2.2
14	71.9	4.7	67.7	5.5	84.6	2.4
15	68.3	5.0	63.7	5.9	82.4	2.6
16	64.6	5.3	59.7	6.3	80.2	2.7
17	61.0	5.7	55.7	6.7	77.9	2.9
18	57.3	6.0	51.8	7.1	75.5	3.1
19	53.7	6.3	47.9	7.4	73.0	3.3
20	50.1	6.7	44.2	7.8	70.5	3.4
21	46.6	7.0	40.6	8.2	68.0	3.6
22	43.2	7.3	37.1	8.6	65.4	3.8
23	39.9	7.6	33.7	9.0	62.8	3.9
24	36.7	8.0	30.6	9.4	60.3	4.1
25	33.7	8.3	27.6	9.7	57.7	4.3
26	30.8	8.6	24.8	10.1	55.1	4.5
27	28.0	8.9	22.2	10.5	52.6	4.6
28	25.4	9.3	19.8	10.9	50.0	4.8
29	23.0	9.6	17.6	11.2	47.6	5.0
30	20.7	9.9	15.5	11.6	45.1	5.1
Median lifetime	20.0 years		18.5 years		28.0 years	

**Source:**

Schmoyer, Richard L., unpublished study on scrappage rates, Oak Ridge National Laboratory, Oak Ridge, TN, 2001.

<sup>a</sup> Heavy trucks are trucks over 26,000 lbs. gross vehicle weight.

<sup>b</sup> It was assumed that scrappage for vehicles less than 4 years old is 0.

<sup>c</sup> The percentage of heavy trucks which will be in use at the end of the year.

<sup>d</sup> The percentage of heavy trucks which will be retired from use during the year.

