Chapter 6

Highway Vehicles and Characteristics

Summary Statistics from Tables in this Chapter

Source		
Table 6.1	U.S. share of world automobile registrations, 1999	26.9%
Table 6.2	U.S. share of world truck & bus registrations, 1999	43.7%
Table 6.3	Number of automobiles, 1999 (Polk - in thousands)	126,869
Table 6.3	Number of trucks, 1999 (Polk - in thousands)	82,640
Table 6.5	Vehicle miles traveled, 1999 (million miles)	2,691,335
	Automobiles	*58.3%*
	Motorcycles	*0.4%*
	Two-axle, four-tire trucks	*33.5%*
	Other single-unit trucks	*2.6%*
	Combination trucks	*4.9%*
	Buses	*0.3%*
Table 6.8	Average age of vehicles, 1999	(years)
	Automobiles	*8.9*
	Trucks	*8.2*
	Median lifetime of vehicles	(years)
Table 6.9	*Automobiles*	*14.0*
Table 6.10	*Light trucks*	*15.2*

The 1997 data in this series were never published. Use caution comparing historical data because of disconnects in data series, such as China in 1998. Also, the U.S. is unique in how many light trucks (SUVs, minivans, pickups) are used for personal travel. Those light trucks are not included on this table.

Table 6.1
Automobile Registrations for Selected Countries, 1950–99
(thousands)

Year	China	India	Japan	France	United Kingdom	Germany[a]	Canada[b]	United States[c]	U.S. percentage of world[c]	World total
1950	[d]	[d]	43	[d]	2,307	[d]	1,913	40,339	76.0%	53,051
1955	[d]	[d]	153	[d]	360	[d]	2,961	52,145	71.4%	73,036
1960	[d]	[d]	457	4,950	5,650	4,856	4,104	61,671	62.7%	98,305
1965	[d]	[d]	2,181	8,320	9,131	9,719	5,279	75,258	53.8%	139,776
1970	[d]	[d]	8,779	11,860	11,802	14,376	6,602	89,244	46.1%	193,479
1975	[d]	[d]	17,236	15,180	14,061	18,161	8,870	106,706	41.0%	260,201
1980	351	[d]	23,660	18,440	15,438	23,236	10,256	121,601	38.0%	320,390
1985	795	1,607	27,845	20,800	18,953	26,099	11,118	127,885	34.5%	370,504
1990	1,622	2,694	34,924	23,010	22,528	30,695	12,622	133,700	30.7%	435,050
1991	1,852	2,954	37,076	23,550	22,744	31,309	12,578	128,300	29.1%	441,377
1992	2,262	3,205	38,963	24,020	23,008	37,579	12,781	126,581	28.0%	452,311
1993	2,860	3,361	40,772	24,385	23,402	39,202	12,927	127,327	28.3%	450,473
1994	3,497	3,569	42,678	24,900	23,832	39,918	13,122	127,883	27.0%	473,487
1995	4,179	3,837	44,680	25,100	24,307	40,499	13,183	128,387	26.9%	477,010
1996	4,700	4,246	46,868	25,500	24,864	41,045	13,300	129,728	26.7%	485,954
1997	Data are not available.									
1998	2,940[e]	4,820	49,896	26,800	22,115	41,674	13,887	131,839	27.5%	478,625
1999	3,400	5,200	51,164	27,480	27,539	42,423	14,143	132,432	26.9%	491,598
	Average annual percentage change									
1950–99	[d]	[d]	15.5%	[d]	5.2%	[d]	4.2%	2.5%		4.6%
1970–99	[d]	[d]	6.3%	2.9%	3.0%	3.8%	2.7%	1.4%		3.3%
1990–99	8.6%	7.6%	4.3%	2.0%	2.3%	3.7%	1.3%	-0.1%		1.4%

Source:
Ward's Communications, *Ward's World Motor Vehicle Data*, 2000 Edition, Southfield, MI, 1998, pp. 218–220 and annual.
(Additional resources: www.wardsauto.com)

[a] Data for 1991 and prior include West Germany only. Kraftwagen are included with automobiles.
[b] Data from 1991 and later are not comparable to prior data.
[c] Data from 1985 and later are not comparable to prior data.
[d] Data are not available.
[e] Data are not comparable to prior data due to reclassification of autos and trucks.

The 1997 data in this series were never published. Use caution comparing historical data because of disconnects in data series, such as China in 1998. The U.S. totals include SUVs, minivans, and light trucks, many of which are used for personal travel.

Table 6.2
Truck and Bus Registrations for Selected Countries, 1950–99
(thousands)

Year	China	India	Japan	France	United Kingdom	Germany[a]	Canada[b]	United States[c]	U.S. percentage of world[c]	World total
1950	[d]	[d]	183	[d]	1,060	[d]	643	8,823	50.9%	17,349
1955	[d]	[d]	318	[d]	1,244	[d]	952	10,544	46.1%	22,860
1960	[d]	[d]	896	1,540	1,534	786	1,056	12,186	42.6%	28,583
1965	[d]	[d]	4,119	1,770	1,748	1,021	1,232	15,100	39.6%	38,118
1970	[d]	[d]	8,803	1,850	1,769	1,228	1,481	19,175	36.2%	52,899
1975	811	[d]	10,854	2,210	1,934	1,337	2,158	26,243	38.8%	67,698
1980	1,480	[d]	14,197	2,550	1,920	1,617	2,955	34,195	37.7%	90,592
1985	2,402	1,045	18,313	3,310	3,278	1,723	3,149	43,804	37.4%	117,038
1990	4,496	1,536	22,773	4,748	3,774	1,989	3,931	55,097	37.2%	148,073
1991	4,721	1,687	22,839	4,910	3,685	2,114	3,402	59,837	38.9%	153,695
1992	5,177	1,872	22,694	5,040	3,643	2,672	3,413	63,781	39.6%	161,219
1993	5,316	1,967	22,490	5,065	3,604	2,842	3,409	66,736	40.1%	166,614
1994	5,922	2,083	22,333	5,140	3,605	2,960	3,466	70,162	45.1%	155,591
1995	6,221	2,221	22,173	5,195	3,635	3,062	3,485	73,143	43.1%	169,749
1996	6,750	2,506	21,933	5,255	3,621	3,122	3,515	76,637	41.3%	185,404
1997	Data are not available									
1998	8,313[e]	2,610	20,919	5,500	3,169	4,357	3,694	79,062	44.0%	179,498
1999	9,400	3,000	20,559	5,609	3,392	3,370	3,120	83,148	43.7%	190,203
	Average annual percentage change									
1950–99	[d]	[d]	10.0%	[d]	2.4%	[d]	3.3%	4.7%		5.0%
1970–99	[d]	[d]	3.0%	3.9%	2.3%	3.5%	2.6%	5.2%		4.5%
1990–99	8.5%	7.7%	-1.1%	1.9%	-1.2%	6.0%	-2.5%	4.7%		2.8%

Source:
Ward's Communications, *Ward's World Motor Vehicle Data*, 2000 Edition, Southfield, MI, 2000, pp. 218–220 and annual.
(Additional resources: www.wardsauto.com)

[a] Data for 1991 and prior include West Germany only. Kraftwagen are included with automobiles.
[b] Data from 1991 and later are not comparable to prior data.
[c] Data from 1985 and later are not comparable to prior data.
[d] Data are not available.
[e] Data not comparable to prior data due to reclassification of autos and trucks.

VEHICLES IN USE

Both the Federal Highway Administration (FHWA) and The Polk Company report figures on the automobile and truck population each year. The two estimates, however, differ by as much as 25.6% for trucks (1992). 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 chasses, and utility vehicles as passenger cars or trucks causes important differences in the two estimates. The Polk Company data included passenger vans in the automobile count until 1980; since 1980 all vans have been counted as trucks. Recently, the Federal Highway Administration adjusted their definition of automobiles and trucks. Starting in 1993, some minivans and sport utility vehicles that were previously included with automobiles 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 passenger cars in use in the U.S. 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 passenger 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.

Table 6.3
Automobiles and Trucks in Use, 1970–2000
(thousands)

	Automobiles			Trucks			Total		
Year	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%
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	[a]	127,721	[a]	[a]	85,579	[a]	[a]	213,300	[a]

Source:

FHWA - U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 1999*, Washington, DC, 2000, Table VM-1, p. V-45, and annual. (Additional resources: www.fhwa.dot.gov)

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

[a]Data are not available.

The data on automobile stock by size class are estimations based on historical sales data. This method assumes a constant scrappage rate for all size classes. The definitions for the size classes are in the Glossary. The data on trucks by weight class are based on estimates from the 1997 Vehicle Inventory and Use Survey (latest available survey). Trucks less than 10,000 lbs. make up 94% of all trucks.

Table 6.4
Vehicle Stock and New Sales in United States, 1999 Calendar Year

	Vehicle stock[a]		New sales		
	Thousands	Percentage	Domestic (thousands)	Import[b] (thousands)	Total (thousands)
Autos	**126,869**	**100.0%**	**6,979 (80.2%)**	**1,719 (19.8%)**	**8,698 (100.0%)**
Two seaters	2,143	1.7%	52 (49.0%)	54 (51.0%)	106 (100.0%)
Minicompact	847	0.7%	0 (0.0%)	14 (100.0%)	14 (100.0%)
Subcompact	26,707	21.1%	1,390 (85.5%)	236 (14.5%)	1,626 (100.0%)
Compact	42,243	33.3%	1,850 (77.5%)	536 (22.5%)	2,386 (100.0%)
Midsize	37,141	29.3%	2,547 (75.1%)	846 (24.9%)	3,393 (100.0%)
Large	17,787	14.0%	1,140 (97.2%)	33 (2.8%)	1,174 (100.0%)
Autos	**126,869**	**100.0%**	[c]	[c]	[c]
Business fleet autos[d]	7,742	6.1%	[c]	[c]	[c]
Personal autos	119,127	93.9%	[c]	[c]	[c]
Motorcycles	**4,152[e]**	**100.0%**	[c]	[c]	[c]
Recreational vehicles	[c]	[c]	**481 (100.0%)**	**0 (0.0%)**	**481 (100.0%)**
Trucks	**82,640**	**100.0%**	7,922 (90.9%)	795 (9.1%)	8,176 (100.0%)
Light (0–10,000 lbs)	77,304	93.5%	7,310 (90.5%)	763 (9.5%)	8,073 (100.0%)
Medium (10,001–26,000 lbs)	2,457	3.0%	220 (87.9%)	30 (12.1%)	250 (100.0%)
Heavy-heavy (26,001 lbs and over)	2,878	3.5%	392 (99.7%)	1 (0.3%)	393 (100.0%)
Trucks	**82,640**	**100.0%**	[c]	[c]	[c]
Business fleet trucks≤19,500 lbs[d]	7,788	9.4%	[c]	[c]	[c]
Personal trucks ≤ 19,500 lbs	71,146	86.1%	[c]	[c]	[c]
Trucks > 19,500 lbs.	3,706	4.5%	[c]	[c]	[c]

Source:
See Appendix A for Table 6.4. (Additional resources: www.polk.com)

[a] Total auto and truck vehicle stock as of July 1,1999 from The Polk Company (FURTHER REPRODUCTION PROHIBITED).
[b] Includes domestic-sponsored imports.
[c] Data are not available.
[d] In fleets of four or more vehicles.
[e] Includes mostly on-highway motorcycles. Many states do not require registration for off-highway vehicles.

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 22% more travel in 1999 than in 1970, and automobiles account for 24% less travel in that time period.

Table 6.5
Shares of Highway Vehicle-Miles Traveled by Vehicle Type, 1970–99
(million miles)

Year	Automobiles	Motorcycles	Two-axle, four-tire trucks	Other single-unit trucks	Combination trucks	Buses[a]	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
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%	2,691,335
			Average annual percentage change				
1970–99							3.1%
1989–99							2.5%

Source:
U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 1999*, Washington, DC, 2000, Table VM-1, p. V-45, and annual. (Additional resources: www.fhwa.dot.gov)

[a]The data do not correspond with vehicle-miles of travel presented in the "Bus" section of this chapter due to differing data sources.

Table 6.6
Automobiles in Operation and Vehicle Travel by Age, 1970 and 1999

Age (years)	1970 Vehicles (thousands)	1970 Percentage	1970 Cumulative percentage	1999 Vehicles (thousands)	1999 Percentage	1999 Cumulative percentage	1999 Estimated vehicle travel Percentage	1999 Estimated vehicle travel Cumulative percentage	Average annual miles per vehicle
Under 1[a]	6,288	7.8%	7.8%	6,219	4.9%	4.9%	6.7%	6.7%	15,600
1	9,299	11.6%	19.4%	7,714	6.1%	11.0%	7.7%	14.4%	14,500
2	8,816	11.0%	30.3%	7,971	6.3%	17.3%	8.1%	22.6%	14,800
3	7,878	9.8%	40.1%	7,488	5.9%	23.2%	7.1%	29.7%	13,800
4	8,538	10.6%	50.8%	8,811	6.9%	30.1%	7.8%	37.5%	12,900
5	8,506	10.6%	61.3%	7,771	6.1%	36.2%	6.8%	44.3%	12,700
6	7,116	8.8%	70.2%	7,826	6.2%	42.4%	6.7%	51.0%	12,400
7	6,268	7.8%	78.0%	7,204	5.7%	48.1%	5.8%	56.8%	11,600
8	5,058	6.3%	84.3%	7,354	5.8%	53.9%	5.7%	62.5%	11,300
9	3,267	4.1%	88.3%	7,387	5.8%	59.7%	5.7%	68.2%	11,200
10	2,776	3.5%	91.8%	7,797	6.1%	65.8%	4.8%	73.1%	9,000
11	1,692	2.1%	93.9%	7,475	5.9%	71.7%	4.6%	77.7%	9,000
12	799	1.0%	94.9%	6,780	5.3%	77.1%	4.2%	81.9%	9,000
13	996	1.2%	96.1%	6,089	4.8%	81.9%	3.8%	85.7%	9,000
14	794	1.0%	97.1%	4,987	3.9%	85.8%	3.1%	88.8%	9,000
15 and older	2,336	2.9%	100.0%	17,996	14.2%	100.0%	11.2%	100.0%	9,000
Subtotal	**80,427**	**100.0%**		**126,869**					
Age not given	**22**			**0**					
Total	**80,449**			**126,869**					
Average age		5.6			8.9				
Median age		4.9			8.3				

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 *Nationwide Personal Transportation Survey* web site: www-cta.ornl.gov/npts.
(Additional resources: www.polk.com, www-cta.ornl.gov/npts)

[a]Includes automobiles from model year 2000 and 1999 which were sold prior to July 1, 1999, and similarly, model years 1971 and 1970 sold prior to July 1, 1970.

Table 6.7
Trucks in Operation and Vehicle Travel by Age, 1970 and 1999

Age (years)	1970 Vehicles (thousands)	1970 Percentage	1970 Cumulative percentage	1999 Vehicles (thousands)	1999 Percentage	1999 Cumulative percentage	1999 Estimated vehicle travel Percentage	1999 Estimated vehicle travel Cumulative percentage	Average annual miles per vehicle
Under 1[a]	1,262	7.1%	7.1%	5,953	7.2%	7.2%	8.8%	8.8%	17,500
1	1,881	10.6%	17.8%	6,750	8.2%	15.4%	11.1%	19.9%	19,200
2	1,536	8.7%	26.5%	6,507	7.9%	23.2%	11.0%	30.9%	19,800
3	1,428	8.1%	34.6%	5,492	6.6%	29.9%	8.4%	39.3%	17,900
4	1,483	8.4%	43.0%	6,063	7.3%	37.2%	9.0%	48.3%	17,500
5	1,339	7.6%	50.5%	5,437	6.6%	43.8%	7.9%	56.2%	17,000
6	1,154	6.5%	57.1%	4,539	5.5%	49.3%	6.0%	62.2%	15,600
7	975	5.5%	62.6%	3,739	4.5%	53.8%	4.9%	67.1%	15,400
8	826	4.7%	67.3%	3,626	4.4%	58.2%	4.7%	71.7%	15,100
9	621	3.5%	70.8%	3,494	4.2%	62.4%	3.9%	75.7%	13,200
10	658	3.7%	74.5%	3,940	4.8%	67.2%	3.1%	78.7%	9,200
11	583	3.3%	77.8%	3,738	4.5%	71.7%	2.9%	81.7%	9,200
12	383	2.2%	80.0%	3,145	3.8%	75.5%	2.5%	84.1%	9,200
13	417	2.4%	82.3%	3,142	3.8%	79.3%	2.5%	86.6%	9,200
14	414	2.3%	84.7%	2,560	3.1%	82.4%	2.0%	88.6%	9,200
15 and older	2,710	15.3%	100.0%	14,515	17.6%	100.0%	11.4%	100.0%	9,200
Subtotal	**17,670**	**100.0%**		**82,640**			**100.0%**		
Age not given	15			0					
Total	**17,685**			**82,640**					
Average age		7.3			8.2				
Median age		5.9			7.2				

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 *1992 Truck Inventory and Use Survey* public use tape provided by U.S. Department of Commerce, Bureau of the Census, Washington, DC, 1995. (Additional resources: www.polk.com, www.census.gov)

[a]Includes trucks from model year 2000 and 1999 which were sold prior to July 1, 1999, and similarly, model years 1971 and 1970 sold prior to July 1, 1970.

The average age of automobiles was lower than the average age of trucks until 1994. Since then, the average automobile age continues to grow, while the average truck age has held about the same. The increasing popularity of light trucks as personal passenger vehicles may have had an influence on the average age of trucks.

Table 6.8
Average Age of Automobiles and Trucks in Use, 1970–99
(years)

Calendar year	Automobiles		Trucks	
	Mean[a]	Median[b]	Mean[a]	Median[b]
1970	5.6	4.9	7.3	5.9
1971	5.7	5.1	7.4	6.1
1972	5.7	5.1	7.2	6.0
1973	5.7	5.1	6.9	5.8
1974	5.7	5.2	7.0	5.6
1975	6.0	5.4	6.9	5.8
1976	6.2	5.5	7.0	5.8
1977	6.2	5.6	6.9	5.7
1978	6.3	5.7	6.9	5.8
1979	6.4	5.9	6.9	5.9
1980	6.6	6.0	7.1	6.3
1981	6.9	6.0	7.5	6.5
1982	7.2	6.2	7.8	6.8
1983	7.4	6.5	8.1	7.2
1984	7.5	6.7	8.2	7.4
1985	7.6	6.9	8.1	7.6
1986	7.6	7.0	8.0	7.7
1987	7.6	6.9	8.0	7.8
1988	7.6	6.8	7.9	7.1
1989	7.6	6.5	7.9	6.7
1990	7.8	6.5	8.0	6.5
1991	7.9	6.7	8.1	6.8
1992	8.1	7.0	8.4	7.2
1993	8.3	7.3	8.6	7.5
1994	8.4	7.5	8.4	7.5
1995	8.5	7.7	8.4	7.6
1996	8.6	7.9	8.3	7.7
1997	8.7	8.1	8.3	7.8
1998	8.8	8.3	8.3	7.5
1999	8.9	8.3	8.2	7.2

Source:
The Polk Company, Detroit, MI. **FURTHER REPRODUCTION PROHIBITED.**
(Additional resources: www.polk.com)

[a]Mean is the sum of the products of units multiplied by age, divided by the total units.
[b]Median is a value in an ordered set of values below and above which there are an equal number of values.

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 new automobile scrappage rates. The expected median lifetime for a 1990 model year automobile is 16 years. These data are fitted model values which assume constant economic conditions.*

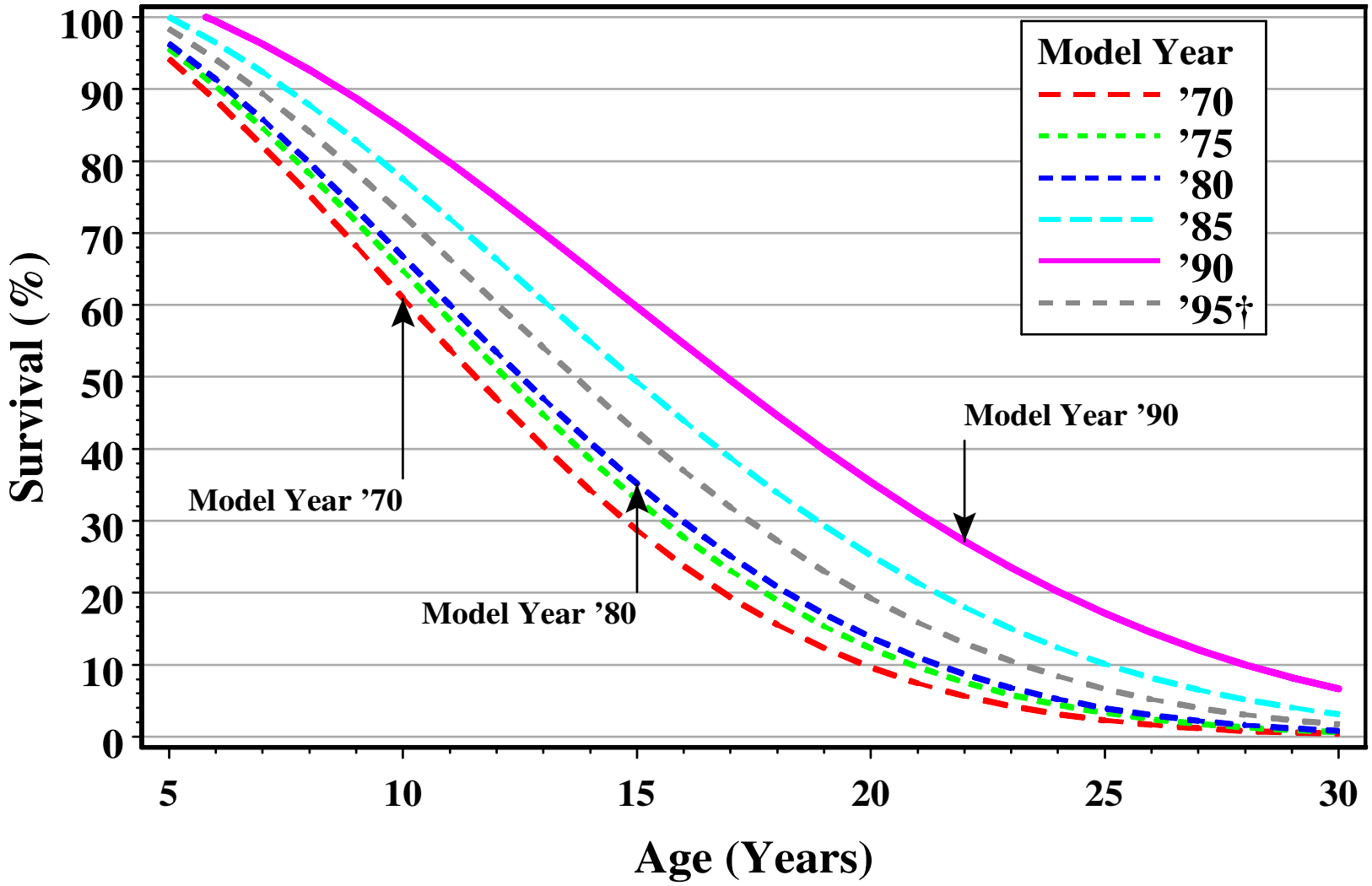
Table 6.9
Automobile Scrappage and Survival Rates
1970, 1980 and 1990 Model Years

Vehicle age[a] (years)	1970 model year		1980 model year		1990 model year	
	Survival rate[b]	Scrappage rate[c]	Survival rate[b]	Scrappage rate[c]	Survival rate[b]	Scrappage rate[c]
4	99.0	3.9	100.0	3.2	100.0	1.6
5	94.1	5.0	96.3	4.2	100.0	2.1
6	88.4	6.1	91.3	5.1	99.4	2.6
7	82.0	7.2	85.7	6.1	96.3	3.2
8	75.2	8.3	79.7	7.1	92.7	3.7
9	68.1	9.5	73.3	8.1	88.7	4.3
10	60.9	10.6	66.6	9.0	84.4	4.9
11	53.8	11.7	60.0	10.0	79.8	5.5
12	46.9	12.8	53.3	11.0	75.0	6.1
13	40.3	14.0	46.9	12.0	70.0	6.7
14	34.2	15.1	40.8	13.0	64.9	7.3
15	28.7	16.2	35.1	14.0	59.7	7.9
16	23.7	17.4	29.8	15.0	54.6	8.6
17	19.3	18.5	25.0	16.1	49.5	9.3
18	15.5	19.6	20.8	17.1	44.6	9.9
19	12.3	20.8	17.0	18.1	39.9	10.6
20	9.6	21.9	13.8	19.1	35.4	11.3
21	7.4	23.0	11.0	20.1	31.1	12.0
22	5.6	24.2	8.7	21.2	27.2	12.7
23	4.2	25.3	6.7	22.2	23.5	13.5
24	3.1	26.4	5.2	23.2	20.2	14.2
25	2.2	27.5	3.9	24.2	17.1	15.0
26	1.6	28.6	2.9	25.3	14.5	15.7
27	1.1	29.7	2.2	26.3	12.1	16.5
28	0.8	30.8	1.6	27.3	10.0	17.2
29	0.5	31.9	1.1	28.4	8.2	18.0
30	0.4	33.0	0.8	29.4	6.6	18.8
Median lifetime	11.5		12.5		16.1	

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

[a]It was assumed that scrappage for vehicles less than 4 years old is 0.
[b]The percentage of 1970/80/90 model year automobiles which will be in use at the end of a given year.
[c]The percentage of 1970/80/90 model year automobiles which will be retired from use within a given year.

Figure 6.1. Automobile Survival Rates*



*Data Source: See Table 6.9.
†Model Year '95 estimates are based on minimal preliminary data.

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 new light truck scrappage rates. The expected median lifetime for a 1990 model year light truck is 15.5 years. These data are fitted model values which assume constant economic conditions.*

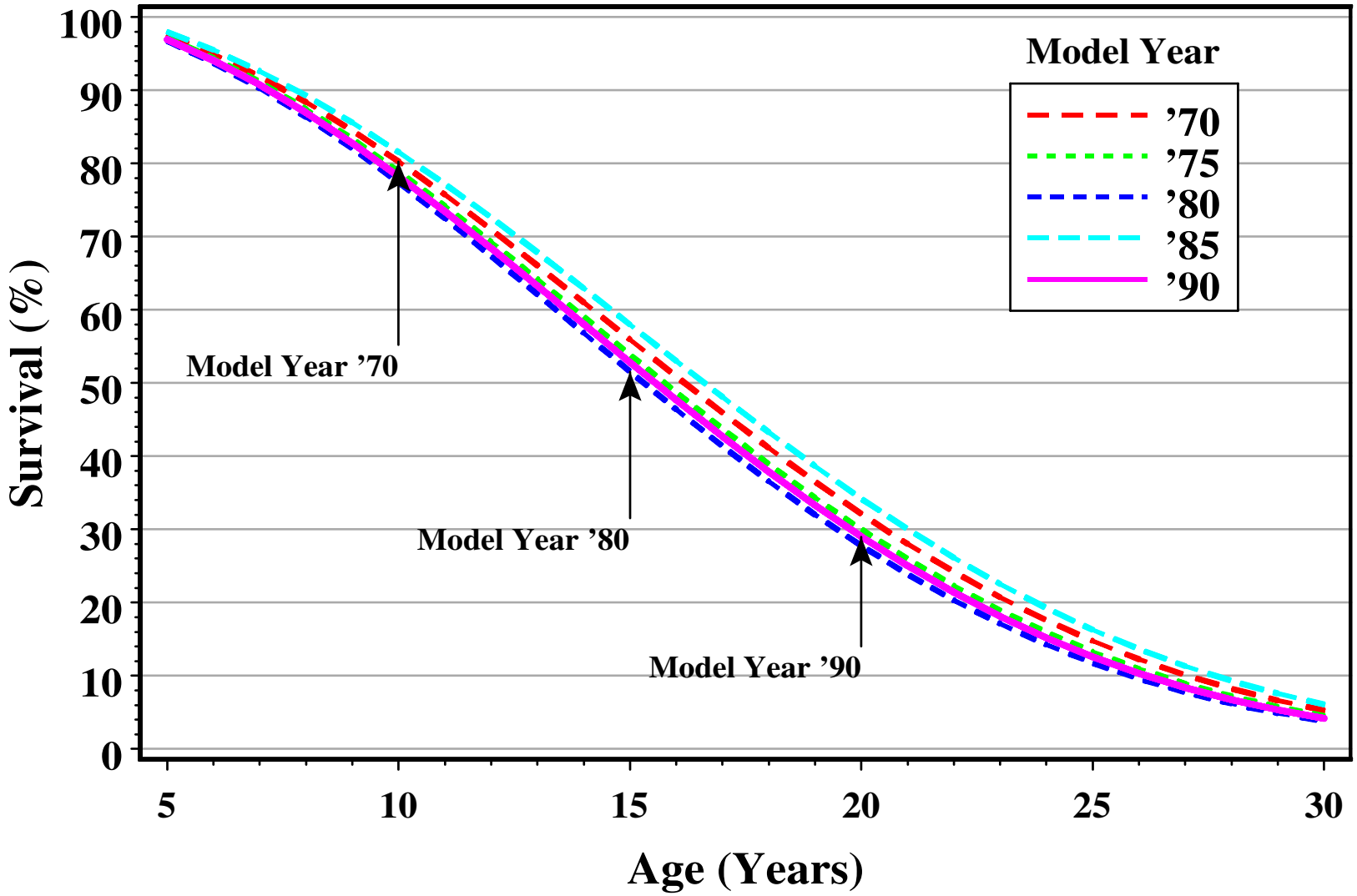
Table 6.10
Light Truck[a] Scrappage and Survival Rates

Vehicle age[b] (years)	1970 model year		1980 model year		1990 model year	
	Survival rate[c]	Scrappage rate[d]	Survival rate[b]	Scrappage rate[c]	Survival rate[b]	Scrappage rate[c]
4	99.7	1.6	99.1	1.9		1.8
5	97.5	2.2	96.6	2.5	96.9	2.4
6	94.9	2.7	93.7	3.1	94.1	3.0
7	91.8	3.2	90.2	3.7	90.7	3.6
8	88.3	3.8	86.3	4.3	86.9	4.2
9	84.4	4.4	82.0	5.0	82.7	4.8
10	80.2	5.0	77.3	5.7	78.2	5.5
11	75.7	5.6	72.4	6.4	73.4	6.1
12	70.9	6.3	67.3	7.1	68.4	6.8
13	66.0	6.9	62.1	7.8	63.3	7.5
14	61.0	7.6	56.8	8.5	58.0	8.2
15	55.9	8.3	51.5	9.3	52.8	9.0
16	50.8	9.0	46.3	10.1	47.7	9.7
17	45.9	9.8	41.3	10.8	42.7	10.5
18	41.1	10.5	36.5	11.6	37.9	11.3
19	36.4	11.3	32.0	12.4	33.3	12.1
20	32.1	12.0	27.7	13.3	29.0	12.9
21	28.0	12.8	23.8	14.1	25.0	13.7
22	24.2	13.6	20.3	14.9	21.4	14.5
23	20.7	14.4	17.1	15.8	18.1	15.4
24	17.5	15.2	14.2	16.7	15.2	16.2
25	14.7	16.1	11.7	17.5	12.6	17.1
26	12.2	16.9	9.6	18.4	10.3	18.0
27	10.1	17.8	7.7	19.3	8.4	18.8
28	8.2	18.6	6.2	20.2	6.7	19.7
29	6.6	19.5	4.9	21.1	5.3	20.6
30	5.2	20.4	3.8	22.1	4.2	21.5
Median lifetime	16.8 years		15.7 years		15.5 years	

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

[a]Light trucks are trucks less than 10,000 lbs. gross vehicle weight.
[b]It was assumed that scrappage for vehicles less than 4 years old is 0.
[c]The percentage of 1970/80/90 model year light trucks which will be in use at the end of a given year.
[d]The percentage of 1970/80/90 model year light trucks which will be retired from use within a given year.

Figure 6.2. Light Truck Survival Rates*



*Data Source: See Table 6.10.

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 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.*

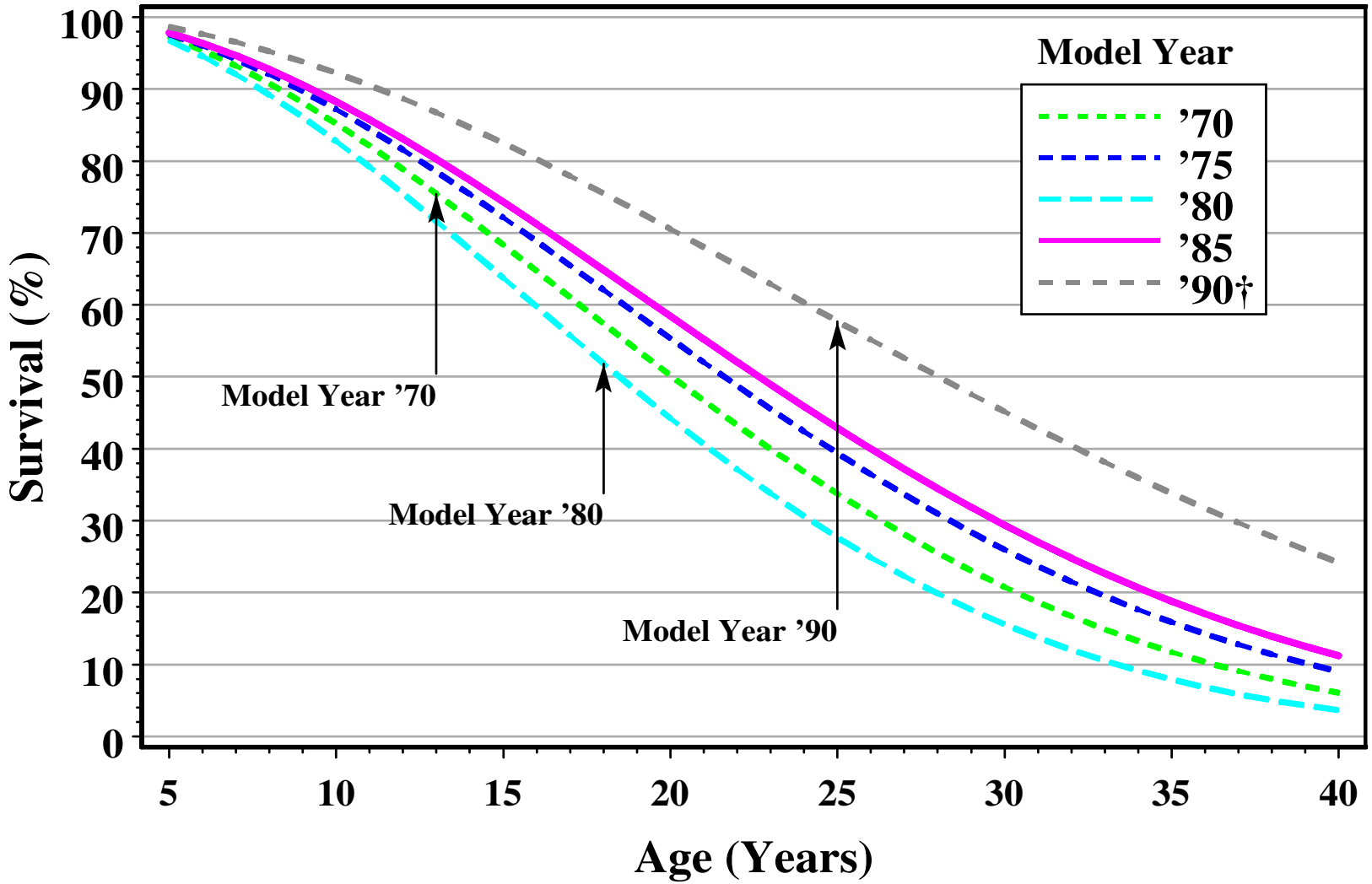
Table 6.11
Heavy Truck[a] Scrappage and Survival Rates

Vehicle age[b] (years)	1970 model year		1980 model year		1990 model year	
	Survival rate[c]	Scrappage rate[d]	Survival rate[b]	Scrappage rate[c]	Survival rate[b]	Scrappage rate[c]
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	21.0 years		18.5 years		29.0 years	

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

[a]Heavy trucks are trucks more than 26,000 lbs. gross vehicle weight.
[b]It was assumed that scrappage for vehicles less than 4 years old is 0.
[c]The percentage of 1970/80/90 model year light trucks which will be in use at the end of a given year.
[d]The percentage of 1970/80/90 model year light trucks which will be retired from use within a given year.

Figure 6.3. Heavy Truck Survival Rates*



*Data Source: See Table 6.11. Estimates based on variation of Greenspan-Cohen model for heavy trucks (R. L. Schmoyer, unpublished report).
†Model year '90 estimates are based on minimal preliminary data.