

Chapter 9 Nonhighway Modes

Summary Statistics from Tables in this Chapter

Source		
	Passenger-miles	(millions)
<i>Table 9.2</i>	<i>Domestic and international air carrier, 2006</i>	<i>810,098</i>
<i>Table 9.10</i>	<i>Amtrak, 2006</i>	<i>5,410</i>
<i>Table 9.11</i>	<i>Commuter rail, 2005</i>	<i>9,473</i>
<i>Table 9.12</i>	<i>Transit rail, 2005</i>	<i>16,117</i>
	Freight ton-miles	(millions)
<i>Table 9.5</i>	<i>Domestic waterborne commerce, 2004</i>	<i>591,000</i>
<i>Table 9.8</i>	<i>Class I railroad, 2006</i>	<i>1,771,897</i>
	Passenger energy use	(trillion Btus)
<i>Table 9.2</i>	<i>Domestic and international air carrier, 2006</i>	<i>2,646.1</i>
<i>Table 9.3</i>	<i>General aviation, 2006</i>	<i>256.3</i>
<i>Table 9.6</i>	<i>Recreational boats, 2006</i>	<i>249.4</i>
<i>Table 9.10</i>	<i>Amtrak, 2006</i>	<i>14.3</i>
<i>Table 9.11</i>	<i>Commuter rail, 2005</i>	<i>28.1</i>
<i>Table 9.12</i>	<i>Transit rail, 2005</i>	<i>44.9</i>
	Freight energy use	(trillion Btus)
<i>Table 9.5</i>	<i>Domestic waterborne commerce, 2005</i>	<i>304.4</i>
<i>Table 9.8</i>	<i>Class I railroad, 2006</i>	<i>584.5</i>



Nonhighway transportation modes accounted for 19.7% of total transportation energy use in 2006.

Table 9.1
Nonhighway Energy Use Shares, 1970–2006

Year	Share of transportation energy use					Nonhighway total	Transportation total (trillion Btu)
	Air	Water	Pipeline	Rail			
1970	8.5%	5.5%	6.4%	3.6%		24.0%	15,399
1971	8.1%	4.9%	6.3%	3.5%		22.8%	16,019
1972	7.7%	4.7%	6.1%	3.4%		21.9%	17,040
1973	7.7%	5.0%	5.6%	3.4%		21.7%	17,878
1974	7.3%	5.1%	5.4%	3.5%		21.4%	17,164
1975	7.3%	5.3%	4.8%	3.1%		20.6%	17,414
1976	7.2%	5.9%	4.3%	3.1%		20.5%	18,481
1977	7.1%	6.2%	4.1%	3.0%		20.4%	19,116
1978	7.1%	6.9%	3.9%	2.9%		20.7%	20,086
1979	7.4%	8.0%	4.3%	2.9%		22.6%	20,088
1980	7.6%	7.4%	4.7%	3.0%		22.7%	18,930
1981	7.6%	8.4%	4.7%	2.9%		23.7%	19,066
1982	7.8%	7.3%	4.6%	2.5%		22.2%	18,503
1983	7.7%	6.7%	4.0%	2.5%		20.9%	18,621
1984	8.4%	6.6%	4.1%	2.7%		21.7%	19,260
1985	8.6%	6.5%	3.9%	2.5%		21.4%	19,595
1986	9.0%	6.3%	3.6%	2.3%		21.3%	20,207
1987	9.2%	6.2%	3.7%	2.3%		21.5%	20,670
1988	9.3%	6.2%	4.1%	2.3%		21.9%	21,200
1989	9.2%	6.2%	4.1%	2.3%		21.9%	21,492
1990	9.6%	6.7%	4.3%	2.3%		22.9%	21,601
1991	9.2%	7.2%	4.1%	2.2%		22.6%	21,193
1992	9.0%	7.3%	3.9%	2.2%		22.4%	21,854
1993	8.9%	6.5%	4.0%	2.2%		21.5%	22,308
1994	9.0%	6.1%	4.1%	2.3%		21.6%	22,928
1995	9.1%	6.3%	4.1%	2.4%		21.9%	23,467
1996	9.2%	5.9%	4.1%	2.4%		21.6%	23,975
1997	9.5%	5.1%	4.2%	2.4%		21.2%	24,329
1998	9.6%	5.0%	3.6%	2.3%		20.5%	24,758
1999	9.5%	5.3%	3.5%	2.3%		20.6%	25,948
2000	9.7%	5.5%	3.4%	2.3%		21.0%	26,268
2001	9.3%	4.6%	3.4%	2.3%		19.6%	25,959
2002	8.3%	4.7%	3.5%	2.3%		18.8%	26,520
2003	8.3%	4.0%	3.2%	2.3%		17.8%	26,673
2004	8.7%	4.8%	3.0%	2.4%		18.9%	27,066
2005	9.0%	5.0%	3.1%	2.4%		19.4%	27,527
2006	9.0%	5.3%	3.0%	2.4%		19.7%	27,671

Source:

See Appendix A for Nonhighway Energy Use.



These data include ALL international and domestic certificated route air carrier statistics; therefore, the data are different than those in Chapter 2. Revenue aircraft-miles, passenger-miles, and seat-miles continued to rise in 2004 and 2005. Passenger load factor rose to 78.8% in 2006 –the highest in the series.

Table 9.2
Summary Statistics for U.S. Domestic and International
Certificated Route Air Carriers (Combined Totals), 1970–2006^a

Year	Revenue aircraft-miles (millions)	Revenue passenger-miles (millions)	Available seat-miles (millions)	Available seats per aircraft ^b	Passenger load factor (percentage) ^c	Revenue freight ton-miles (millions)	Energy use (trillion Btu) ^d
1970	2,542	148,137	264,904	111	49.7%	3,755	1,363.4
1975	2,241	173,324	315,823	135	54.9%	5,062	1,283.4
1980	2,924	267,722	448,479	148	59.7%	7,885	1,386.0
1985	3,462	351,073	565,677	163	62.1%	9,048	1,701.4
1986	3,873	378,923	623,075	161	60.8%	10,987	1,847.1
1987	4,182	417,808	670,825	160	62.3%	13,137	1,945.9
1988	4,354	437,649	696,337	160	62.9%	14,632	2,049.4
1989	4,442	447,480	703,888	158	63.6%	16,347	2,087.4
1990	4,724	472,236	753,211	159	62.7%	16,403	2,213.0
1991	4,661	463,296	738,030	158	62.8%	16,149	2,085.2
1992	4,899	493,715	772,869	158	63.9%	17,306	2,144.2
1993	5,118	505,996	793,959	155	63.7%	19,083	2,169.7
1994	5,360	537,518	809,259	151	66.4%	21,773	2,266.2
1995	5,627	558,794	832,081	150	66.1%	23,375	2,338.6
1996	5,855	596,164	859,721	147	69.3%	24,892	2,409.1
1997	6,025	620,029	880,715	146	70.4%	27,610	2,514.2
1998	6,220	634,933	899,029	145	70.6%	28,015	2,573.4
1999	6,558	668,626	942,311	144	71.0%	25,147	2,653.1
2000	6,946	708,926	981,080	139	72.3%	30,221	2,743.1
2001	6,814	664,849	950,519	139	69.9%	27,882	2,599.4
2002	6,834	655,215	913,898	133	71.9%	30,507	2,408.3
2003	7,367	674,160	922,440	125	73.0%	32,446	2,402.3
2004	7,479	752,341	1,000,193	134	75.2%	37,958	2,504.8
2005	7,716	795,117	1,029,316	133	77.2%	39,286	2,606.8
2006	8,220	810,098	1,027,525	125	78.8%	38,247	2,646.1
<i>Average annual percentage change</i>							
1970–2006	3.3%	4.8%	3.8%	0.3%		6.7%	1.9%
1996–2006	3.5%	3.1%	1.8%	-1.6%		4.4%	0.9%

Sources:

U.S. Department of Transportation, Bureau of Transportation Statistics, *Air Carrier Traffic Statistics, 1981-2006*. (Additional resources: www.bts.gov/programs/airline_information/air_carrier_traffic_statistics)

1970–76 Energy Use - Department of Transportation, Civil Aeronautics Board, *Fuel Cost and Consumption*, Washington, DC, 1981, and annual.

1977–2003 Energy Use - Department of Transportation, Bureau of Transportation Statistics, "Fuel Cost and Consumption Table," Washington, DC. (Additional resources: www.bts.gov, www.faa.gov)

^a Data are for all U.S. air carriers reporting on Form 41.

^b Available seats per aircraft is calculated as the ratio of available seat-miles to revenue aircraft-miles.

^c Passenger load factor is calculated as the ratio of revenue passenger-miles to available seat-miles for scheduled and nonscheduled services.

^d Energy use includes fuel purchased abroad for international flights.



General aviation includes: (1) aircraft operating under general operating and flight rules; (2) not-for-hire airplanes with a seating capacity of 20 or more or a maximum payload capacity of 6,000 lbs. or more; (3) rotocraft external load operations; (4) on-demand and commuter operations not covered under Federal Aviation Regulations Part 121; and (5) agricultural aircraft operations.

Table 9.3
Summary Statistics for General Aviation, 1970–2006

Calendar year	Total number of aircraft	Aircraft hours flown (thousands)	Energy use (trillion btu)
1970	131,700 ^a	26,030 ^b	94.4
1975	168,475	30,298	121.5
1976	177,964	31,950	130.3
1977	184,294	33,679	149.7
1978	199,178	36,844	159.4
1979	210,339	40,432	167.2
1980	211,045	41,016	169.0
1981	213,226	40,704	162.4
1982	209,779	36,457	170.5
1983	213,293	35,249	143.9
1984	220,943	36,119	148.9
1985	196,500	31,456	144.0
1986	205,300	31,782	148.0
1987	202,700	30,883	139.1
1988	196,200	31,114	148.6
1989	205,000	32,332	134.0
1990	198,000	32,096	131.9
1991	196,874	29,862	120.4
1992	185,650	26,747	104.7
1993	177,120	24,455	97.5
1994	172,935	24,092	95.3
1995	188,089	26,612	106.6
1996	191,129	26,909	111.1
1997	192,414	27,713	121.1
1998	204,710	28,100	147.4
1999	219,464	31,756	172.1
2000	217,533	30,975	175.2
2001	211,446	29,133	165.1
2002	211,244	27,040	141.5
2003	209,708	27,329	141.4
2004	219,426	28,126	175.9
2005	224,352	26,982	242.4
2006	221,943	27,705	256.3
<i>Average annual percentage change</i>			
1970–2006	1.5%	0.2%	2.8%
1996–2006	1.5%	0.3%	8.7%

Sources:

Intercity passenger-miles - Eno Foundation for Transportation, *Transportation in America*, Twentieth edition, Lansdowne, VA, 2007, p. 45, and annual.

All other- U.S. Department of Transportation, Federal Aviation Administration, *General Aviation Activity and Avionics Survey: Calendar Year 2005*, Tables 1.2, 1.5, 5.1, and annual. (Additional resources: www.faa.gov/data_statistics/aviation_data_statistics/general_aviation/CY2006/)

^a Active fixed-wing general aviation aircraft only.

^b Includes rotocraft.

^c Data are not available.



In the early seventies, domestic waterborne commerce accounted for over 60% of total tonnage, but by 1994 foreign tonnage grew to more than half of all waterborne tonnage. Total foreign and domestic tons shipped was over 2.5 billion tons in 2005.

Table 9.4
Tonnage Statistics for Domestic and
International Waterborne Commerce, 1970–2005
(million tons shipped)

Year	Foreign and domestic total	Foreign total ^a	Domestic total ^b	Percent domestic of total
1970	1,532	581	951	62.1%
1975	1,695	749	946	55.8%
1976	1,835	856	979	53.4%
1977	1,908	935	973	51.0%
1978	2,021	946	1,075	53.2%
1979	2,073	993	1,080	52.1%
1980	1,999	921	1,077	53.9%
1981	1,942	887	1,054	54.3%
1982	1,777	820	957	53.9%
1983	1,708	751	957	56.0%
1984	1,836	803	1,033	56.3%
1985	1,788	774	1,014	56.7%
1986	1,874	837	1,037	55.3%
1987	1,967	891	1,076	54.7%
1988	2,088	976	1,112	53.3%
1989	2,140	1,038	1,103	51.5%
1990	2,164	1,042	1,122	51.8%
1991	2,092	1,014	1,079	51.6%
1992	2,132	1,037	1,095	51.4%
1993	2,128	1,060	1,068	50.2%
1994	2,215	1,116	1,099	49.6%
1995	2,240	1,147	1,093	48.8%
1996	2,284	1,183	1,101	48.2%
1997	2,333	1,221	1,113	47.7%
1998	2,340	1,245	1,094	46.8%
1999	2,323	1,261	1,062	45.7%
2000	2,425	1,355	1,070	44.1%
2001	2,393	1,351	1,042	43.5%
2002	2,340	1,319	1,021	43.6%
2003	2,394	1,378	1,016	42.4%
2004	2,552	1,505	1,047	41.0%
2005	2,528	1,499	1,029	40.7%
		<i>Average annual percentage change</i>		
1970–2005	1.4%	2.7%	0.2%	
1995–2005	1.2%	2.7%	-0.6%	

Source:

U.S. Department of the Army, Corps of Engineers, *Waterborne Commerce of the United States, Calendar Year 2005*, Part 5: National Summaries, New Orleans, Louisiana, 2006, Table 1-1, p. 1-3, and annual. (Additional resources: www.iwr.usace.army.mil/ndc/usforeign/index.htm)

^a All movements between the U.S. and foreign countries and between Puerto Rico and the Virgin Islands and foreign countries are classified as foreign trade.

^b All movements between U.S. ports, continental and noncontiguous, and on the inland rivers, canals, and connecting channels of the U.S., Puerto Rico, and the Virgin Islands, excluding the Panama Canal. Beginning in 1996, fish was excluded for internal and intra port domestic traffic.



Table 9.5
Summary Statistics for Domestic Waterborne Commerce, 1970–2005

Year	Number of vessels ^a	Ton-miles (billions)	Tons shipped ^b (millions)	Average length of haul (miles)	Energy intensity (Btu/ton-mile)	Energy use (trillion Btu)
1970	25,832	596	949	628.2	545	324.8
1975	31,666	566	944	599.9	549	311.0
1976	33,204	592	976	606.3	468	277.3
1977	35,333	599	969	618.0	458	274.3
1978	35,723	827	1,072	771.6	383	316.6
1979	36,264	829	1,076	770.0	457	378.7
1980	38,792	922	1,074	856.4	358	329.8
1981	42,079	929	1,051	884.0	360	334.5
1982	42,079	886	954	929.0	310	274.9
1983	41,784	920	953	964.6	319	293.7
1984	41,784	888	1,029	862.5	346	307.3
1985	41,672	893	1,011	883.5	446	398.6
1986	40,308	873	1,033	845.3	463	404.0
1987	40,000	895	1,072	835.0	402	370.7
1988	39,192	890	1,106	804.3	361	321.3
1989	39,209	816	1,097	743.2	403	328.6
1990	39,233	834	1,118	745.7	388	323.2
1991	39,233	848	1,074	789.9	386	327.5
1992	39,210	857	1,090	785.7	398	341.0
1993	39,064	790	1,063	742.7	389	307.0
1994	39,064	815	1,093	745.5	369	300.7
1995	39,641	808	1,086	743.6	374	302.2
1996	41,104	765	1,093	699.4	412	314.9
1997	41,419	707	1,106	639.5	415	293.2
1998	42,032	673	1,087	619.0	436	293.1
1999	41,766	656	1,056	621.1	457	299.9
2000	41,354	646	1,064	606.8	473	305.6
2001	41,588	622	1,037	599.7	460	286.1
2002	41,002	612	1,016	602.5	470	287.7
2003	39,983	606	1,010	600.3	418	253.2
2004	40,290	621	1,042	596.4	510	316.7
2005	41,028	591	1,024	577.4	515	304.4
<i>Average annual percentage change</i>						
1970–2005	1.3%	0.0%	0.2%	-0.2%	-0.2%	-0.2%
1995–2005	0.3%	-3.1%	-0.6%	-2.5%	3.3%	0.1%

Sources:

Number of vessels -1970–92, 1995–2004 - U.S. Department of the Army, Corps of Engineers, *Waterborne Transportation Lines of the United States, 2005*, New Orleans, LA, 2006, and annual.

1993–94 - U.S. Dept of the Army, Corps of Engineers, *The U.S. Waterway System-Facts*, Navigation Data Center, New Orleans, Louisiana, January 1996.

Ton-miles, tons shipped, average length of haul - U.S. Department of the Army, Corps of Engineers, *Waterborne Commerce of the United States, Calendar Year 2005 Part 5: National Summaries*, New Orleans, LA, 2006, Table 1-4, pp. 1-6, 1-7, and annual.

Energy use - See Appendix A for Water Energy Use. (Additional resources: www.iwr.usace.army.mil/ndc)

^a Grand total for self-propelled and non-self-propelled.

^b These figures are not consistent with the figures on Table 9.3 because intra-territory tons are not included in this table. Intra-territory traffic is traffic between ports in Puerto Rico and the Virgin Islands.



Before Edition 24, the recreational boat energy use was based on data from a 1980's off-highway study. The new data displayed in this table come from the Environmental Protection Agency's NONROAD2005 model. The diesel fuel use estimates remained unchanged from NONROAD2004, but the gasoline estimates increased.

Table 9.6
Recreational Boat Energy Use, 1970–2006

Year	Number of boats (thousands)	Diesel fuel	Gasoline	Total energy use
		(trillion Btu)		
1970	10,080	5.5	155.6	161.1
1971	10,130	6.5	156.5	163.1
1972	10,180	7.6	157.5	165.0
1973	10,230	8.6	158.4	167.0
1974	10,280	9.7	159.3	169.0
1975	10,330	10.7	160.2	171.0
1976	10,380	11.8	161.2	172.9
1977	10,430	12.8	162.1	174.9
1978	10,450	13.9	163.0	176.9
1979	10,530	14.9	164.0	178.9
1980	10,580	16.0	164.9	180.8
1981	10,630	17.0	165.8	182.8
1982	10,680	18.0	166.7	184.8
1983	10,730	19.1	167.7	186.7
1984	10,780	20.1	168.6	188.7
1985	10,830	21.2	169.5	190.7
1986	10,880	22.2	170.4	192.7
1987	10,930	23.3	171.4	194.6
1988	11,022	24.3	173.8	198.1
1989	11,115	25.4	176.2	201.6
1990	11,207	26.4	178.6	205.0
1991	11,320	27.5	181.8	209.2
1992	11,433	28.5	184.9	213.4
1993	11,545	29.5	188.0	217.5
1994	11,763	30.6	194.8	225.4
1995	11,981	31.6	201.6	233.2
1996	12,198	32.7	208.3	241.0
1997	12,237	33.7	208.8	242.5
1998	12,275	34.8	208.9	243.7
1999	12,313	35.8	208.7	244.5
2000	12,352	36.8	208.1	244.9
2001	12,456	37.9	208.4	246.3
2002	12,561	39.0	208.1	247.2
2003	12,665	40.2	207.5	247.6
2004	12,770	41.3	206.4	247.7
2005	12,874	42.4	205.2	247.6
2006	13,080	43.8	205.6	249.4
<i>Average annual percentage change</i>				
1970–2006	0.7%	5.9%	0.8%	1.2%
1996–2006	0.7%	3.0%	-0.1%	0.3%

Source:

U.S. Environmental Protection Agency, NONROAD2004 model, downloadable file from <http://www.epa.gov/otaq/nonrdmdl.htm>.



The Interstate Commerce Commission designates Class I railroads on the basis of annual gross revenues. In 2006, seven railroads were given this designation. The number of railroads designated as Class I has changed considerably in the last 25 years; in 1976 there were 52 railroads given Class I designation.

Table 9.7
Class I Railroad Freight Systems in the United States
Ranked by Revenue Ton-Miles, 2006

Railroad	Revenue ton-miles (billions)	Percent
Burlington Northern and Sante Fe Railway Company	640	36.1%
Union Pacific Railroad Company	565	31.9%
CSX Transportation	253	14.3%
Norfolk Southern Railway	204	11.5%
Canadian National, Grand Trunk Corporation	55	3.1%
Soo Line Railroad Company	30	1.7%
Kansas City Southern Railway Company	24	1.4%
Total	1,771	100.0%

Source:

Association of American Railroads, *Railroad Facts, 2007 Edition*, Washington, DC, November 2007, p. 66. (Additional resources: www.aar.org)



Revenue ton-miles for Class I freight railroads was over 1.7 trillion in 2006. Though there are many regional and local freight railroads, the Class I freight railroads accounted for 93% of the railroad industry's freight revenue in 2003 and 67% of the industry's mileage operated. The energy intensity of Class I railroads hit an all-time low of 330 btu/ton-mile in 2006.

Table 9.8
Summary Statistics for Class I Freight Railroads, 1970–2006

Year	Number of locomotives in service ^a	Number of freight cars (thousands) ^b	Train-miles (millions)	Car-miles (millions)	Tons originated ^c (millions)	Average length of haul (miles)	Revenue ton-miles (millions)	Energy intensity (Btu/ton-mile)	Energy use (trillion Btu)
1970	27,077 ^d	1,424	427	29,890	1,485	515	764,809	691	528.1
1975	27,846	1,359	403	27,656	1,395	541	754,252	687	518.3
1980	28,094	1,168	428	29,277	1,492	616	918,958	597	548.7
1981	27,421	1,111	408	27,968	1,453	626	910,169	572	521.0
1982	26,795	1,039	345	23,952	1,269	629	797,759	553	440.8
1983	25,448	1,007	346	24,358	1,293	641	828,275	525	435.1
1984	24,117	948	369	26,409	1,429	645	921,542	510	469.9
1985	22,548	867	347	24,920	1,320	665	876,984	497	436.1
1986	20,790	799	347	24,414	1,306	664	867,722	486	421.5
1987	19,647	749	361	25,627	1,372	688	943,747	456	430.3
1988	19,364	725	379	26,339	1,430	697	996,182	443	441.4
1989	19,015	682	383	26,196	1,403	723	1,013,841	437	442.6
1990	18,835	659	380	26,159	1,425	726	1,033,969	420	434.7
1991	18,344	633	375	25,628	1,383	751	1,038,875	391	405.8
1992	18,004	605	390	26,128	1,399	763	1,066,781	393	419.2
1993	18,161	587	405	26,883	1,397	794	1,109,309	389	431.6
1994	18,505	591	441	28,485	1,470	817	1,200,701	388	465.4
1995	18,812	583	458	30,383	1,550	843	1,305,688	372	485.9
1996	19,269	571	469	31,715	1,611	842	1,355,975	368	499.4
1997	19,684	568	475	31,660	1,585	851	1,348,926	370	499.7
1998	20,261	576	475	32,657	1,649	835	1,376,802	365	502.0
1999	20,256	579	490	33,851	1,717	835	1,433,461	363	520.0
2000	20,028	560	504	34,590	1,738	843	1,465,960	352	516.0
2001	19,745	500	500	34,243	1,742	859	1,495,472	346	517.3
2002	20,506	478	500	34,680	1,767	853	1,507,011	345	520.3
2003	20,774	467	516	35,555	1,799	862	1,551,438	344	533.9
2004	22,015	474	535	37,071	1,844	902	1,662,598	341	566.2
2005	22,779	475	548	37,712	1,899	894	1,696,425	337	571.4
2006	23,732	475	563	38,995	1,957	906	1,771,897	330	584.5
<i>Average annual percentage change</i>									
1970–2006	-0.4%	-3.0%	0.8%	0.7%	0.8%	1.6%	2.4%	-2.0%	0.3%
1996–2006	2.1%	-1.8%	1.8%	2.1%	2.0%	0.7%	2.7%	-1.1%	1.6%

Source:

Association of American Railroads, *Railroad Facts, 2006 Edition*, Washington, DC, November 2007, pp. 27, 28, 33, 34, 36, 49, 51, 61.
(Additional resources: www.aar.org)

^a Does not include self-powered units.

^b Does not include private or shipper-owned cars. Beginning in 2001, Canadian-owned U.S. railroads are excluded.

^c Tons originated is a more accurate representation of total tonnage than revenue tons. Revenue tons often produces double-counting of loads switched between rail companies.

^d Data represent total locomotives used in freight and passenger service. Separate estimates are not available.



According to the 2002 Commodity Flow Survey, 5% of all freight ton-miles are rail intermodal shipments (truck/rail or rail/water). **See Table 5.11 for details.** The number of trailers and containers moved by railroads has increased more than seven-fold from 1965 to 2006. Containerization has increased in recent years, evidenced by the 308% increase in the number of containers from 1988 to 2006.

Table 9.9
Intermodal Rail Traffic, 1965–2006

Year	Trailers & containers	Trailers	Containers
1965	1,664,929	a	a
1970	2,363,200	a	a
1975	2,238,117	a	a
1980	3,059,402	a	a
1985	4,590,952	a	a
1986	4,997,229	a	a
1987	5,503,819	a	a
1988	5,779,547	3,481,020	2,298,527
1989	5,987,355	3,496,262	2,491,093
1990	6,206,782	3,451,953	2,754,829
1991	6,246,134	3,201,560	3,044,574
1992	6,627,841	3,264,597	3,363,244
1993	7,156,628	3,464,126	3,692,502
1994	8,128,228	3,752,502	4,375,726
1995 ^b	7,936,172	3,492,463	4,443,709
1996 ^b	8,143,258	3,302,128	4,841,130
1997 ^b	8,698,308	3,453,907	5,244,401
1998 ^b	8,772,663	3,353,032	5,419,631
1999 ^c	8,907,626	3,207,407	5,700,219
2000 ^c	9,176,890	2,888,630	6,288,260
2001	8,935,444	2,603,423	6,332,021
2002	9,312,360	2,531,338	6,781,022
2003	9,955,605	2,625,837	7,329,768
2004	10,993,662	2,928,123	8,065,539
2005	11,693,512	2,979,906	8,713,606
2006	12,282,221	2,882,699	9,399,522
<i>Average annual percentage change</i>			
1965–2006	5.0%	a	a
1996–2006	4.2%	-1.3%	6.9%

Source:

Association of American Railroads, *Railroad Facts, 2006 Edition*, Washington, DC, November 2007, p. 26. (Additional resources: www.aar.org)

^a Data are not available.

^b The Grand Trunk Western Railroad and the Soo Line Railroad Company data are excluded.

^c The Illinois Central, Grand Trunk Western Railroad and the Soo Line Railroad Company data are excluded.



The National Railroad Passenger Corporation, known as Amtrak, began operation in 1971. Amtrak revenue passenger-miles have grown at an average annual rate of 3% from 1971 to 2006.

Table 9.10
Summary Statistics for the National Railroad Passenger Corporation (Amtrak), 1971–2006

Year	Number of locomotives in service	Number of passenger cars	Train-miles (thousands)	Car-miles (thousands)	Revenue passenger-miles (millions)	Average trip length (miles)	Energy intensity (Btu per revenue passenger-mile)	Energy use (trillion Btu)
1971	^a	1,165	16,537	140,147	1,993	188	^a	^a
1975	355	1,913	30,166	253,898	3,753	224	3,548	13.3
1980	448	2,128	29,487	235,235	4,503	217	3,065	13.8
1981	398	1,830	30,380	222,753	4,397	226	2,883	12.7
1982	396	1,929	28,833	217,385	3,993	220	3,052	12.2
1983	388	1,880	28,805	223,509	4,227	223	2,875	12.2
1984	387	1,844	29,133	234,557	4,427	227	2,923	12.9
1985	382	1,818	30,038	250,642	4,785	238	2,703	12.9
1986	369	1,793	28,604	249,665	5,011	249	2,481	12.4
1987	381	1,850	29,515	261,054	5,361	259	2,450	13.1
1988	391	1,845	30,221	277,774	5,686	265	2,379	13.5
1989	312	1,742	31,000	285,255	5,859	274	2,614	15.3
1990	318	1,863	33,000	300,996	6,057	273	2,505	15.2
1991	316	1,786	34,000	312,484	6,273	285	2,417	15.2
1992	336	1,796	34,000	307,282	6,091	286	2,534	15.4
1993	360	1,853	34,936	302,739	6,199	280	2,565	15.9
1994	411	1,874	34,940	305,600	5,869	276	2,282	13.4 ^b
1995	422	1,907	31,579	282,579	5,401	266	2,501	13.5
1996	348	1,501	30,542	277,750	5,066	257	2,690	13.6
1997	292	1,572	32,000	287,760	5,166	255	2,811	14.5
1998	362	1,347	32,926	315,823	5,325	251	2,788	14.8
1999	385	1,285	34,080	349,337	5,289	245	2,943	15.6
2000	385	1,891	35,404	371,215	5,574	243	3,235	18.0
2001	401	2,084	36,512	377,705	5,571	238	3,257	18.1
2002	372	2,896	37,624	378,542	5,314	228	3,212	17.1
2003	442	1,623	37,459	331,864	5,680	231	2,800	15.9
2004	276	1,211	37,159	308,437	5,511	219	2,760	15.2
2005	258	1,186	36,199	264,796	5,381	215	2,709	14.6
2006	319	1,191	36,083	263,908	5,410	220	2,650	14.3
<i>Average annual percentage change</i>								
1971–2006	^a	0.1%	2.3%	1.8%	2.9%	0.5%	^a	^a
1996–2006	-0.9%	-2.3%	1.7%	-0.5%	0.7%	-1.5%	-0.1%	0.5%

Sources:

1971–83- Association of American Railroads, Economics and Finance Department, *Statistics of Class I Railroads*, Washington, DC, and annual.

1984–88- Association of American Railroads, *Railroad Facts*, 1988 Edition, Washington, DC, December 1989, p. 61, and annual.

1989–93- Personal communication with the Corporate Accounting Office of Amtrak, Washington, D.C.

1994–2006 - Number of locomotives in service, number of passenger cars, train-miles, car-miles, revenue passenger-miles, and average trip length - Association of American Railroads, *Railroad Facts*, 2007 Edition, Washington, DC, 2007, p. 77.

Energy use - Personal communication with the Amtrak, Washington, DC. (Additional resources: www.amtrak.com, www.aar.org)

^a Data are not available.

^b Energy use for 1994 on is not directly comparable to earlier years. Some commuter rail energy use may have been inadvertently included in earlier years.



Commuter rail, which is also known as regional rail or suburban rail, is long-haul rail passenger service operating between metropolitan and suburban areas, whether within or across state lines. Commuter rail lines usually have reduced fares for multiple rides and commutation tickets for regular, recurring riders.

Table 9.11
Summary Statistics for Commuter Rail Operations, 1984–2005

Year	Number of passenger vehicles	Vehicle-miles (millions)	Passenger trips (millions)	Passenger-miles (millions)	Average trip length (miles)	Energy intensity (Btu/passenger-mile)	Energy use (trillion Btu)	
1984	4,075	167.9	267	6,207	23.2	2,804	17.4	
1985	4,035	182.7	275	6,534	23.8	2,826	18.5	
1986	4,440	188.6	306	6,723	22.0	2,926	19.7	
1987	4,686	188.9	311	6,818	21.9	2,801	19.1	
1988	4,649	202.2	325	6,964	21.4	2,872	19.7	
1989	4,472	209.6	330	7,211	21.9	2,864	20.7	
1990	4,415	212.7	328	7,082	21.6	2,822	20.0	
1991	4,370	214.9	318	7,344	23.1	2,770	20.3	
1992	4,413	218.8	314	7,320	23.3	2,629	19.2	
1993	4,494	223.9	322	6,940	21.6	2,976	20.7	
1994	4,517	230.8	339	7,996	23.6	2,682	21.4	
1995	4,565	237.7	344	8,244	24.0	2,632	21.7	
1996	4,665	241.9	352	8,351	23.7	2,582	21.6	
1997	4,943	250.7	357	8,038	22.5	2,724	21.9	
1998	4,963	259.5	381	8,704	22.8	2,646	23.0	
1999	4,883	265.9	396	8,766	22.1	2,714	23.8	
2000	5,073	270.9	413	9,402	22.8	2,551	24.0	
2001	5,124	277.3	419	9,548	22.8	2,515	24.0	
2002	5,381	283.7	414	9,504	22.9	2,514	23.9	
2003	5,959	286.0	410	9,559	23.3	2,545	24.3	
2004	6,228	295.0	414	9,719	23.5	2,569	25.0	
2005 ^a	6,392	303.0	423	9,473	22.4	2,743	26.0	
			<i>Average annual percentage change</i>					
1984–2005	2.2%	2.9%	2.2%	2.0%	-0.2%	-0.1%	1.9%	
1995–2005	3.4%	2.5%	2.1%	1.4%	-0.7%	0.4%	1.8%	

Source:

American Public Transportation Association, *2007 Public Transportation Fact Book*, Washington, DC, April 2007, Table 80. (Additional resources: www.apta.com)

^a Preliminary data.



This table on transit rail operations includes data on light rail and heavy rail systems. Light rail vehicles are usually single vehicles driven electrically with power drawn from overhead wires. Heavy rail is characterized by high speed and rapid acceleration of rail cars operating on a separate right-of-way.

Table 9.12
Summary Statistics for Rail Transit Operations, 1970–2005^a

Year	Number of passenger vehicles	Vehicle-miles (millions)	Passenger trips (millions) ^b	Passenger-miles (millions) ^c	Average trip length (miles) ^d	Energy intensity (Btu/passenger-mile) ^e	Energy use (trillion Btu)
1970	10,548	440.8	2,116	12,273	^f	2,157	26.5
1975	10,617	446.9	1,797	10,423	^f	2,625	27.4
1980	10,654	402.2	2,241	10,939	4.9	2,312	25.3
1981	10,824	436.6	2,217	10,590	4.8	2,592	27.5
1982	10,831	445.2	2,201	10,428	4.7	2,699	28.1
1983	10,904	423.5	2,304	10,741	4.7	2,820	30.3
1984	10,848	452.7	2,388	10,531	4.4	3,037	32.0
1985	11,109	467.8	2,422	10,777	4.4	2,809	30.3
1986	11,083	492.8	2,467	11,018	4.5	3,042	33.5
1987	10,934	508.6	2,535	11,603	4.6	3,039	35.3
1988	11,370	538.3	2,462	11,836	4.8	3,072	36.2
1989	11,261	553.4	2,704	12,539	4.6	2,909	36.5
1990	11,332	560.9	2,521	12,046	4.8	3,024	36.4
1991	11,426	554.8	2,356	11,190	4.7	3,254	36.4
1992	11,303	554.0	2,395	11,438	4.8	3,155	36.1
1993	11,286	549.8	2,234	10,936	4.9	3,373	36.9
1994	11,192	565.8	2,453	11,501	4.7	3,338	38.4
1995	11,156	571.8	2,284	11,419	5.0	3,340	38.1
1996	11,341	580.7	2,418	12,487	5.2	3,016	37.7
1997	11,471	598.9	2,692	13,091	4.9	2,854	37.4
1998	11,521	609.5	2,669	13,412	5.0	2,822	37.9
1999	11,603	626.4	2,813	14,108	5.0	2,786	39.3
2000	12,168	648.0	2,952	15,200	5.1	2,729	41.5
2001	12,084	662.4	3,064	15,615	5.1	2,737	42.7
2002	12,479	681.9	3,025	15,095	5.0	2,872	43.3
2003	12,236	694.2	3,005	14,896	4.8	2,837	42.8
2004	12,480	709.7	3,098	15,930	4.9	2,750	43.8
2005 ^h	12,755	715.4	3,189	16,117	4.8	2,784	44.9
Average annual percentage change							
1970–2005	0.5%	1.4%	1.2%	0.8%	-0.1% ^g	0.7%	1.5%
1995–2005	1.3%	2.3%	3.4%	3.5%	-0.4%	-1.8%	1.7%

Sources:

American Public Transit Association, *2007 Public Transportation Fact Book*, Washington, DC, April 2007, Tables 81 and 82.

(Additional resources: www.apta.com)

Energy use - See Appendix A for Rail Transit Energy Use.

^a Heavy rail and light rail. Series not continuous between 1983 and 1984 because of a change in data source by the American Public Transit Association (APTA). Beginning in 1984, data provided by APTA are taken from mandatory reports filed with the Urban Mass Transit Administration (UMTA). Data for prior years were provided on a voluntary basis by APTA members and expanded statistically.

^b 1970–79 data represents total passenger rides; after 1979, data represents unlinked passenger trips.

^c Estimated for years 1970–76 based on an average trip length of 5.8 miles.

^d Calculated as the ratio of passenger-miles to passenger trips.

^e Large system-to-system variations exist within this category.

^f Data are not available.

^g Average annual percentage change is calculated for years 1980–2005.

^h Preliminary data.



