

National Transportation Statistics
2004

**Bureau of
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Statistics**

U.S. Department of Transportation

National Transportation Statistics
2004

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Introduction

Compiled and published by the U.S. Department of Transportation's Bureau of Transportation Statistics (BTS), *National Transportation Statistics 2004* presents information on the U.S. transportation system, including its physical components, safety record, economic performance, energy use, and environmental impacts. *National Transportation Statistics 2004* is a companion document to the *Transportation Statistics Annual Report*, which analyzes some of the data presented here, and *State Transportation Statistics 2004*, which presents state-level data on many of the same topics presented here.

The report has four chapters:

- Chapter 1 provides data on the extent, condition, use, and performance of the physical transportation network.
- Chapter 2 details transportation's safety record, giving data on accidents, crashes, fatalities, and injuries for each transportation mode and hazardous materials.
- Chapter 3 focuses on the relationship between transportation and the economy, presenting data on transportation's contribution to the gross domestic product, employment by industry and occupation, and transportation-related consumer and government expenditures.
- Chapter 4 presents data on transportation energy use and transportation-related environmental impacts.

Appendix A contains metric conversions of select tables. BTS obtained the data in this report from many sources, including federal government agencies, private industry, and associations. Documents cited as sources for the tables provide detailed information about definitions, methodologies, and statistical reliability. Some of the data are based on samples and are subject to sampling variability.

Generally, data are presented in five-year increments through 1995 and annually thereafter. The web version of the report provides a more comprehensive inventory of available data than presented here, including modal profiles. The web version is updated quarterly at www.bts.gov.

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NOTE: Appendices to the Web version of this report contain Modal Profile tables for six modes (air, highway, transit, rail, water, and pipelines) and Data Source and Accuracy Statements. Go to www.bts.gov.

TABLE A: Social and Economic Characteristics of the United States

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL U.S. resident population ^a (thousands)	226,546	237,924	248,791	(R) 266,278	(R) 269,394	(R) 272,647	(R) 275,854	(R) 279,040	281,422	(R) 285,094	(R) 287,974	290,810
Population by age (thousands)												
Under 18	63,754	62,623	63,949	(R) 69,465	(R) 70,226	(R) 70,917	(R) 71,428	(R) 71,947	72,294	(R) 72,604	(R) 72,847	73,043
18-24 years	30,022	28,902	26,961	(R) 25,482	(R) 25,275	(R) 25,479	(R) 26,059	(R) 26,685	27,143	(R) 27,919	(R) 28,461	28,900
25-34	37,082	41,696	43,174	(R) 45,052	(R) 41,809	(R) 41,345	(R) 40,757	(R) 40,178	39,891	(R) 39,683	(R) 39,715	39,873
35-44	25,634	31,691	37,444	(R) 42,711	(R) 43,552	(R) 44,229	(R) 44,748	(R) 45,077	45,149	(R) 45,050	(R) 44,748	44,371
45-54	22,800	22,460	25,062	(R) 31,480	(R) 32,800	(R) 34,178	(R) 35,232	(R) 36,578	37,678	(R) 39,200	(R) 40,029	40,804
55-64	21,703	22,135	21,116	(R) 21,320	(R) 21,590	(R) 22,099	(R) 23,011	(R) 23,778	24,274	(R) 25,300	(R) 26,569	27,900
65 and over	25,550	28,415	(R) 31,084	(R) 33,769	(R) 34,143	(R) 34,402	(R) 34,619	(R) 34,798	34,992	(R) 35,338	(R) 35,608	35,919
Population by sex ^a (thousands)												
Male	110,053	(R) 115,730	121,284	(R) 130,215	(R) 131,807	(R) 133,474	(R) 135,130	(R) 136,803	138,054	(R) 140,009	(R) 141,533	143,037
Female	116,493	(R) 122,194	127,507	(R) 136,063	(R) 137,587	(R) 139,173	(R) 140,724	(R) 142,237	143,368	(R) 145,085	(R) 146,441	147,773
Population in metropolitan areas ^b (millions)	177	U	198	210	212	214	216	U	233	U	239	241
Large (over 1 million)	119	U	139	147	149	151	153	U	(R) 149	U	154	156
Medium (250,000-999,999)	41	U	41	44	44	43	43	U	(R) 55	U	58	57
Small (less than 250,000)	17	U	18	19	19	20	20	U	(R) 28	U	27	28
Population in micropolitan areas ^b (millions)	NA	NA	NA	NA	NA	NA	NA	NA	(R) 29	U	29	30
Population in rural/urban ^c areas (thousands)												
Rural	59,495	U	61,656	U	U	U	U	U	59,061	U	U	U
Urban	167,051	U	187,053	U	U	U	U	U	222,361	U	U	U
Population in regions ^a (millions)												
Northeast	49.1	49.9	50.8	(R) 52.3	(R) 52.5	(R) 52.7	(R) 53.0	(R) 53.3	53.6	(R) 53.9	54.2	54.4
South	75.4	81.4	85.5	(R) 93.2	(R) 94.7	(R) 96.2	(R) 97.7	(R) 99.2	100.2	(R) 101.9	103.2	104.5
Midwest	58.9	58.8	59.7	(R) 62.5	(R) 62.9	(R) 63.3	(R) 63.7	(R) 64.1	64.4	(R) 64.8	65.1	65.4
West	43.2	47.8	52.8	(R) 58.3	(R) 59.2	(R) 60.3	(R) 61.4	(R) 62.4	63.2	64.5	65.5	66.5
Number of immigrants admitted ^d	530,639	570,009	1,536,483	720,461	915,900	798,378	654,451	646,568	849,807	1,064,318	1,063,732	705,827
Total area ^e (square miles)	3,618,770	U	3,717,796	U	U	U	U	U	3,794,083	U	U	U

Continued next page

TABLE A: Social and Economic Characteristics of the United States—continued

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Gross domestic product (chained \$ 2000 billions) ^f	U	U	U	U	U	U	9,066.9	9,470.3	9,817.0	9,890.7	1,074.8	10,381.3
Government, total	U	U	U	U	U	U	1,165.7	1,178.7	1,202.7	1,212.2	1,230.4	1,247.3
Private industry, total	U	U	U	U	U	U	7,896.0	8,285.5	8,614.3	8,692.5	8,851.6	9,123.0
Agriculture, forestry, fishing, and hunting	U	U	U	U	U	U	84.6	87.4	98.0	91.8	98.1	103.5
Mining	U	U	U	U	U	U	123.4	126.6	121.3	114.9	112.4	104.6
Utilities	U	U	U	U	U	U	171.3	179.2	189.3	180.0	190.7	202.0
Construction	U	U	U	U	U	U	423.2	433.3	435.9	436.6	425.1	424.1
Manufacturing	U	U	U	U	U	U	1,286.2	1,342.1	1,426.2	1,346.9	1,378.2	1,440.0
Wholesale trade	U	U	U	U	U	U	564.7	594.1	591.7	633.1	643.0	631.0
Retail trade	U	U	U	U	U	U	598.8	633.9	662.4	708.6	746.4	788.4
Transportation and warehousing	U	U	U	U	U	U	275.8	287.4	301.6	293.6	299.1	314.2
Information	U	U	U	U	U	U	377.0	437.5	458.3	476.8	475.5	502.4
Finance, insurance, real estate, rental, and leasing	U	U	U	U	U	U	1,741.7	1,834.3	1,931.0	2,005.4	2,033.3	2,098.6
Professional and business services	U	U	U	U	U	U	1,049.3	1,105.5	1,140.8	1,133.4	1,147.9	1,188.0
Educational services, health care, and social assistance	U	U	U	U	U	U	648.6	660.1	678.4	700.1	726.6	746.8
Arts, entertainment, recreation, accommodation, and food services	U	U	U	U	U	U	327.2	339.0	350.1	347.6	354.1	360.9
Other services, except government	U	U	U	U	U	U	233.4	229.7	229.1	225.3	223.4	224.5
Total civilian labor force (thousands)	106,940	115,461	125,840	132,304	133,943	136,297	137,673	139,368	(R) 142,583	(R) 143,734	144,863	146,510
Participation rate of men (percent)	77.4	76.3	76.4	75.0	74.9	75.0	74.9	74.7	74.8	74.4	74.1	73.5
Participation rate of women (percent)	51.5	54.5	57.5	58.9	59.3	59.8	59.8	60.0	59.9	59.8	59.6	59.5
Number of households (thousands)	80,776	86,789	93,347	98,990	99,627	101,018	102,528	103,874	104,705	108,209	109,297	111,278
Average size of households	2.76	2.69	2.63	2.65	2.65	2.64	2.62	2.61	2.62	2.58	2.58	2.57
Median household income ^{g,h} (constant \$ 2003)	37,447	38,510	40,865	40,845	41,431	42,294	43,825	44,922	44,853	43,882	43,381	43,318
Average household expenditures ^h (constant \$ 2003)	U	37,444	37,865	37,807	38,568	38,904	39,153	39,922	38,045	39,518	40,667	40,817

KEY: NA = not applicable; R = revised; U = data are not available.

^a Estimates as of July 1 except 1980, 1990, and 2000, which are as of April 1.^b Total population count has been revised since the 1980 census. Numbers by age have not been corrected and may not sum to total.^c 1995 through 1999 data are estimates.

TABLE A: Social and Economic Characteristics of the United States—*Continued*

- d New metropolitan area definitions were published by the Office of Budget and Management (OMB) in 2003. These definitions were applied to population data by the Census Bureau beginning with the data from the 2000 Census. A new term, core based statistical areas (CBSAs), collectively refers to metropolitan and micropolitan statistical areas. A micropolitan statistical area is defined as having at least one urban cluster of 50,000 or more inhabitants. A micropolitan statistical area is defined as having at least one urban cluster of more than 10,000 but less than 50,000 inhabitants.
- e As of April 1 of year indicated. The Census Bureau only tabulates urban / rural numbers for the decennial census years.
- f As of July 1 for all years except 1980, 1990, and 2000.
- g Fiscal year ending September 30.
- h The Census Bureau calculates square mileage comprising land and water area for the decennial census years. Data for 1980 comprises land and inland water. Data for 1990 comprises land, Great Lakes, inland water, and coastal water. Data for 2000 comprises land, Great Lakes, inland water, territorial water, and coastal water.
- i Estimates for 1980 and 1985 are shown on the basis of the 1972 Standard Industrial Code (SIC); 1990-2002 are based on the 1987 SIC. Values expressed as chained 1996 dollars using industry-specific, chain-type quantity indices from the Bureau of Economic Analysis.
- j Households as of March of following year.
- k Converted to constant 2002 dollars using the CPI-U-RS price index.

SOURCES**U.S. resident population:**

- 1980-99: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 2000* (Washington, DC: 2001), table 15.
 2000-01: Ibid., *Statistical Abstract of the United States 2002* (Washington, DC: 2003), table 15.
 2002: Ibid., *Statistical Abstract of the United States 2003* (Washington, DC: 2004), table 13.

Age:

- 1980-99: Ibid., *Statistical Abstract of the United States 2000* (Washington, DC: 2001), table 12.
 2000-02: Ibid., *Statistical Abstract of the United States 2003* (Washington, DC: 2004), table 13.

Sex:

- 1980-99: Ibid., *Statistical Abstract of the United States 2000* (Washington, DC: 2001), table 10.
 2000-02: Ibid., *Statistical Abstract of the United States 2003* (Washington, DC: 2004), table 11.

Metropolitan areas:

- 1980-90, 1998: Ibid., *Statistical Abstract of the United States 2000* (Washington, DC: 2001), table 32.
 2000: Ibid., Census 2000 PHC-T-29 (Washington, DC: 2003), table 1a.
 2000-02: Ibid., *Statistical Abstract of the United States 2003*, Appendix 2 (Washington, DC: 2004), table B.

Rural / urban:

- 1980-90: Ibid., *Statistical Abstract of the United States 2000* (Washington, DC: 2001), table 37.
 2000: Ibid., Census 2000: Summary File 2 (SF 2), Internet site <http://www.census.gov/Press-Release/www/2001/sumfile2.html> as of June 18, 2003.

Regions:

- 1990-99: Ibid., Internet site <http://www.census.gov/population/estimates/state/st-99-3.txt> as of Dec. 29, 1999.
 2000-02: Ibid., *Statistical Abstract of the United States 2003* (Washington, DC: 2004), table 17.

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TABLE A: Social and Economic Characteristics of the United States—Continued

Immigrants:	1980-85: <i>Ibid.</i> , <i>Statistical Abstract of the United States 1990</i> (Washington, DC: 1990), table 6. 1990-96: <i>Ibid.</i> , <i>Statistical Abstract of the United States 1998</i> (Washington, DC: 1998), table 6. 1997: U.S. Department of Justice, Immigration and Naturalization Service, Office of Policy and Planning, Statistics Branch, <i>Annual Report, Legal Immigration, Fiscal Year 2000</i> , No. 6, January 2002, Internet site http://www.bcis.gov/graphics/shared/aboutus/statistics/IMM2000AR.pdf as of June 18, 2003. 1998-2001: U.S. Department of Justice, Immigration and Naturalization Service, Office of Policy and Planning, Statistics Branch, <i>Annual Report, Legal Immigration, Fiscal Year 2001</i> , Internet site http://www.bcis.gov/graphics/shared/aboutus/statistics/IMM2001.pdf as of June 18, 2003. 2002: U.S. Citizenship and Immigration Services, <i>2002 Yearbook of Immigration Statistics</i> (Washington, DC: 2003), Internet site http://uscis.gov/graphics/shared/aboutus/statistics/Yearbook2002.pdf as of Feb. 20, 2004.
Total area:	U.S. Department of Commerce, Bureau of the Census, <i>Statistical Abstract of the United States 2002</i> (Washington, DC: 2003), table 1.
Gross domestic product:	1980-90: U.S. Department of Commerce, Bureau of Economic Analysis, <i>Survey of Current Business</i> (Washington, DC: November 1997). 1995-96: <i>Ibid.</i> , November 1998. 1997: <i>Ibid.</i> , November 2001. 1998-2002: <i>Ibid.</i> , May 2003.
Civilian labor force:	U.S. Department of Commerce, Bureau of the Census, <i>Statistical Abstract of the United States 2003</i> (Washington, DC: 2004), table 587.
Participation rates:	U.S. Department of Labor, Bureau of Labor Statistics, <i>Current Population Survey, Table 2, Employment Status of the Civilian Noninstitutional Population 16 years and Over by Sex, 1971 to Date</i> , Internet site ftp://ftp.bls.gov/pub/special.requests/lf/aa2.txt as of Feb. 20, 2004.
Number of households:	U.S. Department of Commerce, Bureau of the Census, <i>Current Population Survey, Table HH-1, Households by Type: 1940 to Present</i> , Internet site http://www.census.gov/population/socdemo/hh-fam/tabHH-1.pdf as of Feb. 20, 2004.
Average size of households:	U.S. Department of Commerce, Bureau of the Census, <i>Current Population Survey, Table HH-6, Average Population Per Household and Family: 1940 to Present</i> , Internet site http://www.census.gov/population/socdemo/hh-fam/tabHH-6.pdf as of Feb. 20, 2004.
Median household income:	U.S. Department of Labor, Bureau of the Census, <i>Current Population Survey, Table A-1, Households by Total Money Income, Race, and Hispanic Origin of Householder: 1967-2002</i> , Internet site http://www.census.gov/hhes/income/histinc/h05.html as of Feb. 20, 2004.
Average household expenditures:	U.S. Department of Labor, Bureau of Labor Statistics, <i>Average Annual Expenditures and Characteristics of All Consumer Units, Consumer Expenditure Survey, 2000-2002</i> , Internet site http://www.bls.gov/cex/2002/standard/multiyr.pdf as of Feb. 20, 2004.

Chapter 1

The Transportation System

Section A Physical Extent

TABLE 1-1: System Mileage Within the United States (Statute miles)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Highway ^a	3,545,693	3,689,666	3,730,082	3,838,146	3,859,837	3,863,912	3,866,926	3,912,226	3,936,222	3,948,335	3,966,485	3,974,107
Class I rail ^{bc}	207,334	199,798	196,479	191,520	164,822	145,764	119,758	108,264	99,250	97,817	100,125	99,126
Amtrak ^c	N	N	N	N	24,000	24,000	24,000	24,000	23,000	23,000	23,000	22,675
Transit ^d												
Commuter rail ^c	N	N	N	N	N	3,574	4,132	4,160	5,209	5,209	4,440	U
Heavy rail	N	N	N	N	N	1,293	1,351	1,458	1,558	1,572	1,572	U
Light rail	N	N	N	N	N	384	483	568	834	897	943	U
Navigable channels ^e	25,000	25,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000
Oil pipeline ^f	190,944	210,867	218,671	225,889	218,393	213,605	208,752	181,912	176,996	U	U	160,868
Gas pipeline ^g	630,950	767,520	913,267	979,263	1,051,774	1,118,875	(R) 1,189,200	(R) 1,277,600	(R) 1,369,300	(R) 1,373,500	1,411,381	U

KEY: N = data do not exist; R = revised; U = data are not available.

^a All public road and street mileage in the 50 states and the District of Columbia. For years prior to 1980, some miles of nonpublic roadways are included. No consistent data on private road mileage are available. Beginning in 1998, approximately 43,000 miles of Bureau of Land Management Roads are excluded.

^b Data represent miles of road owned (aggregate length of road, excluding yard tracks, sidings, and parallel lines).

^c Portions of Class I freight railroads, Amtrak, and commuter rail networks share common trackage. Amtrak data represent miles of track operated.

^d Transit system mileage is measured in directional route-miles. A directional route-mile is the mileage in each direction over which public transportation vehicles travel while in revenue service. Directional route-miles are computed with regard to direction of service, but without regard to the number of traffic lanes or rail tracks existing in the right-of-way.

^e These are estimated sums of all domestic waterways which include rivers, bays, channels, and the inner route of the Southeast Alaskan Islands, but does not include the Great Lakes or deep ocean traffic. The Waterborne Commerce Statistics Center monitored 12,612 miles as commercially significant inland shallow-draft waterways in 2001.

^f Includes trunk and gathering lines for crude-oil pipeline.

^g Excludes service pipelines. Data not adjusted to common diameter equivalent. Mileage as of the end of each year. Includes gathering, transmission, and distribution mains. Prior to 1990 data also include field lines. See table 1-10 for a more detailed breakout of oil and gas pipeline mileage. In the past, mileage data reported in *Gas Facts* was taken from the American Gas Association's member survey, the Uniform Statistical Report, supplemented with estimates for companies that did not participate. For 2002 and revised data back to 1990, *Gas Facts* mileage data is now based on information reported to the U.S. Department of Transportation on Form 7100.

SOURCES

Highway:

1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: Annual issues), table HM-212.

2000-03: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table HM-20.

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TABLE 1-1: System Mileage Within the United States (Statute miles)—continued

Class I rail:	1960-2003: Association of American Railroads, <i>Railroad Facts 2003</i> (Washington, DC: 2003), p. 45, and similar tables in earlier editions.
Amtrak:	1980: Amtrak, Corporate Planning and Development, personal communication (Washington, DC). 1985-2001: Amtrak, Corporate Planning and Development, <i>Amtrak Annual Report, Statistical Appendix</i> (Washington, DC: Annual issues). 2002-03: Association of American Railroads, <i>Railroad Facts 2004</i> (Washington, DC: 2004), p. 77, and similar tables in earlier editions.
Transit:	1985-2002: U.S. Department of Transportation, Federal Transit Administration, <i>National Transit Database</i> (Washington, DC: Annual issues), table 23 and similar tables in earlier editions.
Navigable channels:	1960-95: U.S. Army Corps of Engineers, Ohio River Division, Huntington District, <i>Ohio River Navigation System Report, 1996, Commerce on the Ohio River and its Tributaries</i> (Fort Belvoir, VA: 1996), p. 2. 2000-03: <i>Ibid.</i> , personal communication, Aug. 12, 2003 and July 23, 2004.
Oil pipeline:	1960-2000: Eno Transportation Foundation, Inc., <i>Transportation in America, 2002</i> (Washington, DC: 2002), p. 58. 2001-03: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, Pipeline Statistics, Internet site http://ops.dot.gov/stats.htm as of Dec. 8, 2004.
Gas pipeline:	1960-2002: American Gas Association, <i>Gas Facts</i> (Arlington, VA: Annual issues), tables 5-1 and 5-3 and similar tables in earlier editions.

TABLE 1-2: Number of Air Carriers, Railroads, Interstate Motor Carriers, Marine Vessel Operators, and Pipeline Operators

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air carriers ^a	N	N	39	36	63	102	70	96	91	87	83	80
Major air carriers	N	N	N	N	N	13	14	11	15	15	15	14
Other air carriers	N	N	N	N	N	89	56	85	76	72	68	66
Railroads	607	568	517	477	480	500	530	541	560	571	552	U
Class I railroads	106	76	71	73	39	25	14	11	8	8	7	U
Other railroads	501	492	446	404	441	475	516	530	552	563	545	U
Interstate motor carriers ^b	e	e	e	e	U	U	216,000	346,000	560,393	592,909	600,104	U
Marine vessel operators ^c	U	U	U	U	U	U	U	1,381	1,114	1,063	877	U
Pipeline operators ^d	N	N	1,123	1,682	2,243	2,204	2,212	2,378	2,163	1,957	U	U
Hazardous liquid	N	N	N	N	N	⁹ 222	187	209	243	(R) 181	173	174
Natural gas transmission	N	N	420	432	474	724	866	974	828	(R) 809	(R) 893	826
Natural gas distribution	N	N	938	¹ 1,500	¹ 1,932	1,485	1,382	1,444	1,351	(R) 1,339	(R) 1,323	1,241

KEY: N = data do not exist; R = revised; U = data are not available.

^a Carrier groups are categorized based on their annual operating revenues as major, national, large regional, and medium regional. The thresholds were last adjusted July 1, 1999, and the threshold for major air carriers is currently \$1 billion. The other air carrier category contains all national, large regional, and medium regional air carriers.

^b Figures are for the fiscal year, October through September. The Federal Motor Carrier Safety Administration deletes motor carriers from the Motor Carrier Management Information System (MCMIS) when they receive an official notice of a change in status. This most often occurs when a safety audit or compliance review is attempted. As a result, inactive carriers may be included in the MCMIS.

^c The printed source materials do not contain totals for the number of operators and data files from which the figures can be determined are not available prior to 1993.

^d There is some overlap among the operators for the pipeline modes so the total number of pipeline operators is lower than the sum for the three pipeline modes.

^e Prior to 1980, the source of motor carrier data was the Interstate Commerce Commission (ICC), which was abolished on Jan. 1, 1996. (Certain functions were transferred to the Surface Transportation Board and the Department of Transportation.) The system used by ICC to collect motor carrier data differs significantly from that used by the Federal Motor Carrier Safety Administration in its Motor Carrier Management Information System (MCMIS), which began operations in 1980. The MCMIS is updated weekly, but archive versions are not retained. Because of differences between the two systems, data are not comparable and thus are not included here.

^f Includes master meter and mobile home park natural gas distribution operators. A master meter system is a pipeline system for distributing gas within, but not limited to, a definable area, such as a mobile home park, housing project, or apartment complex, where the operator purchases metered gas from an outside source for resale through a gas distribution pipeline system. The gas distribution pipeline system supplies the ultimate consumer who either purchases the gas directly through a meter or by other means, such as by rents.

^g This value is for 1986. The number of hazardous liquid pipeline operators is not available for prior years.

Continued next page

TABLE 1-2: Number of Air Carriers, Railroads, Interstate Motor Carriers, Marine Vessel Operators, and Pipeline Operators—*continued*

SOURCES

Air carriers:

1960-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Financial Statistics Quarterly* (Washington, DC: Fourth quarter issues), "Alphabetical List of Air Carriers by Carrier Group ...".
 2003: *Ibid.*, personal communication, Oct. 5, 2004.

Railroads:

1960-85: Association of American Railroads, *Railroad Ten-Year Trends*, Vol. 2 (Washington, DC), table F-2.
 1990-95: *Ibid.*, Vol. 16 (Washington, DC: 1999), p. 10.
 2002: *Ibid.*, *Railroad Facts* (Washington, DC: Annual issues), p. 3.

Interstate motor carriers:

1990-2001: U.S. Department of Transportation, Federal Motor Carrier Safety Administration, Motor Carrier Management Information System (MCMIS) data, personal communication, Nov. 6, 2001.
 2002: U.S. Department of Transportation, Federal Motor Carrier Safety Administration, Analysis and Information Online, Internet site <http://ai.volpe.dot.gov/mcspa.asp> as of June 4, 2004.

Marine vessel operators:

1995-2002: U.S. Army Corps of Engineers, *Waterborne Transportation Lines of the United States, Volume 1, National Summaries* (New Orleans, LA: Annual issues), table 13.

Pipeline Operators:

U.S. Department of Transportation, Office of Pipeline Safety, personal communication, Dec. 15, 2003 and Oct. 14, 2004.

TABLE 1-3: Number of U.S. Airports^a

	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL airports	15,161	16,319	17,490	18,224	19,281	19,356	19,572	19,581
Public use, total	4,814	5,858	5,589	5,415	5,317	5,294	5,286	5,286
Lighted runways, percent	66.2	68.1	71.4	74.3	75.9	76.2	76.1	76.2
Paved runways, percent	72.3	66.7	70.7	73.3	74.3	74.6	74.5	74.5
Private use, total	10,347	10,461	11,901	12,809	13,964	14,062	14,286	14,295
Lighted runways, percent	15.2	9.1	7.0	6.4	7.2	8.0	8.3	9.8
Paved runways, percent	13.3	17.4	31.5	33.0	32.0	32.4	32.4	37.4
TOTAL airports	15,161	16,319	17,490	18,224	19,281	19,356	19,572	19,581
Certificated ^b , total	730	700	680	667	651	635	633	628
Civil	N	N	N	572	563	560	558	555
Military	N	N	N	95	88	75	75	73
General aviation, total	14,431	15,619	16,810	17,557	18,630	18,721	18,939	18,953

KEY: N = data do not exist.

^a Includes civil and joint-use civil-military airports, helports, STOL (short takeoff and landing) ports, and seaplane bases in the United States and its territories.

^b Certificated airports serve air-carrier operations with aircraft seating more than 30 passengers.

SOURCES

1980-2003: U.S. Department of Transportation, Federal Aviation Administration, *Administrator's Fact Book* (Washington, DC: Annual issues), Internet site <http://www.ama500.jccbi.gov/factbook/> as of May 21, 2004.

TABLE 1-4: Public Road and Street Mileage in the United States by Type of Surface^a
(Thousands of miles)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL paved and unpaved	3,546	3,690	3,730	3,838	3,860	3,864	3,867	3,912	3,950	3,962	3,981	3,988
Paved ^b , total	1,230	1,455	1,658	1,855	2,073	2,114	2,255	2,378	2,504	2,523	2,578	2,612
Low and intermediate type	672	758	897	967	1,041	1,015	1,025	1,062	^d N	^d N	^d N	^d N
High-type	558	696	762	888	1,032	1,099	1,230	1,316	^d N	^d N	^d N	^d N
Unpaved ^c , total	2,315	2,235	2,072	1,983	1,787	1,750	1,612	1,534	1,446	1,439	1,403	1,376

KEY: N = data do not exist.

^a 1960-95 data include the 50 states and the District of Columbia; 1996-2002 data include the 50 states, District of Columbia, and Puerto Rico.

^b Paved mileage includes the following categories: low type (an earth, gravel, or stone roadway that has a bituminous surface course less than 1" thick); intermediate type (a mixed bituminous or bituminous penetration roadway on a flexible base having a combined surface and base thickness of less than 7"); high-type flexible (a mixed bituminous or bituminous penetration roadway on a flexible base having a combined surface and base thickness of 7" or more; high-type composite (a mixed bituminous or bituminous penetration roadway of more than 1" compacted material on a rigid base with a combined surface and base thickness of 7" or more; high-type rigid (Portland cement concrete roadway with or without a bituminous wearing surface of less than 1").

^c Unpaved mileage includes the following categories: unimproved roadways using the natural surface and maintained to permit passability; graded and drained roadways of natural earth aligned and graded to permit reasonably convenient use by motor vehicles, and that have adequate drainage to prevent serious impairment of the road by normal surface water—surface may be stabilized; and soil, gravel, or stone roadways drained and graded with a surface of mixed soil, gravel, crushed stone, slag, shell, etc.—surface may be stabilized. The percentage of unpaved roads that are nonsurfaced dropped from approximately 42% in the 1960s to about 37% in the first half of the 1970s, to about 32% in 1980 and has held at about 22% since 1985.

^d Source no longer sorts data into these particular categories for paved minor collectors and local public roads.

NOTES

A public road is any road under the jurisdiction of and maintained by a public authority (federal, state, county, town or township, local government or instrumentality thereof) and open to public travel. No consistent data on private road mileage are available (although prior to 1980 some nonpublic roadway mileage are included). Most data are provided by the states to the US DOT Federal Highway Administration (FHWA). Some years contain FHWA estimates for some states.

Numbers may not add to totals due to rounding.

SOURCES

1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table HM-212.
 2000-03: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table HM-12, Internet site www.fhwa.dot.gov/policy/ohpi as of Dec. 10, 2004.

TABLE 1-5: U.S. Public Road and Street Mileage by Functional System^a

	1990	1995	1996	1997	^b 1998	1999	(R) 2000	2001	2002	2003
TOTAL urban and rural mileage	3,866,926	3,912,226	3,919,652	3,945,872	3,906,290	3,917,243	3,936,222	3,948,335	3,966,485	3,974,107
Urban mileage, total	744,644	819,706	826,765	836,740	841,642	846,085	852,243	877,004	894,724	940,969
Principal arterials, Interstates and expressways	11,527	13,164	13,217	13,247	13,312	13,343	13,379	13,406	13,491	14,460
Principal arterials, other	7,668	8,970	9,027	9,063	9,127	9,132	9,140	9,126	9,323	9,870
Minor arterials	51,968	52,796	52,983	53,223	53,132	53,199	53,314	53,056	53,439	56,870
Collectors	74,659	88,510	89,020	89,185	89,496	89,432	89,789	89,962	90,411	93,888
Local	78,254	87,331	87,790	88,049	88,071	88,005	88,200	88,713	89,247	97,114
	520,568	568,935	574,728	583,973	588,504	592,974	598,421	622,741	638,813	668,767
Rural mileage, total	3,122,282	3,092,520	3,092,887	3,109,132	3,064,648	3,071,158	3,083,979	3,071,331	3,071,761	3,033,138
Principal arterials, Interstates	33,547	32,580	32,820	32,817	32,813	32,974	33,048	33,061	32,992	32,048
Principal arterials, other	83,802	97,948	98,131	98,257	98,852	98,838	98,919	99,185	98,853	97,038
Minor arterials	144,774	137,151	137,359	137,497	137,308	137,462	137,575	137,587	137,568	135,596
Major collectors	436,352	431,712	432,117	432,714	432,408	432,934	433,121	433,284	430,946	424,288
Minor collectors	293,922	274,081	273,198	272,362	272,140	271,676	271,803	271,377	270,700	267,524
Local	2,129,885	2,119,048	2,119,262	2,135,485	2,091,127	2,097,274	2,109,513	2,096,837	2,100,702	2,076,644

KEY: R = revised.

^a Includes the 50 states and the District of Columbia. When states did not submit reports, data were estimated by the U.S. Department of Transportation, Federal Highway Administration.

^b Beginning in 1998, approximately 43,000 miles of Bureau of Land Management roads are excluded.

NOTE

A public road is any road under the ownership of and maintained by a public authority (federal, state, county, town or township, local government or instrumentality thereof) and open to public travel. No consistent data on private road mileage are available. For more detailed information, including breakdowns of mileage by ownership and type of surface, see the source document.

SOURCES

1990-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table HM-220.

1996-2003: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table HM-20, Internet site www.fhwa.dot.gov/policy/ohpi as of Dec. 10, 2004.

TABLE 1-6: Estimated U.S. Roadway Lane-Miles by Functional System^a

	1980	1985	1990	1995	(R) 2000 ^d	2001	2002	2003
TOTAL lane-miles	7,922,174	8,017,994	8,051,081	8,158,253	8,224,245	8,251,847	8,295,171	8,315,121
Urban, total	1,395,245	1,542,339	1,670,496	1,840,107	1,915,503	1,967,047	2,006,436	2,108,650
Interstates	48,458	57,295	62,214	71,377	73,912	74,463	75,107	79,591
Other arterials ^b	333,673	371,649	399,376	445,828	456,181	457,567	462,855	484,171
Collectors	145,128	162,377	167,770	185,032	188,570	189,538	190,843	207,356
Local	867,986	951,018	1,041,136	1,137,870	1,196,840	1,245,479	1,277,631	1,337,532
Rural, total	6,526,929	6,475,655	6,380,585	6,318,146	6,308,742	6,284,800	6,288,735	6,206,471
Interstates	130,980	131,907	135,871	131,916	134,587	134,638	134,570	130,384
Other arterials ^b	507,098	510,005	517,342	530,706	540,457	542,337	544,011	534,278
Collectors ^c	1,431,267	1,466,789	1,467,602	1,417,428	1,414,667	1,414,155	1,408,752	1,388,515
Local	4,457,584	4,366,954	4,259,770	4,238,096	4,219,031	4,193,670	4,201,402	4,153,294

KEY: R = revised.^a Includes the 50 States and the District of Columbia.^b For urban: the sum of other freeways and expressways, other principal arterials, and minor arterials.
For rural: the sum of other principal arterials and minor arterials.^c Includes minor and major collectors.^d Beginning in 1998, approximately 86,000 lane-miles of Bureau of Land Management roads are excluded.**NOTE**

In estimating rural and urban lane mileage, the U.S. Department of Transportation, Federal Highway Administration assumed that rural minor collectors and urban/rural local roads are two lanes wide.

SOURCES

1980-95: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, table HM-260 (unpublished).

2000-03: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table HM-60, Internet site www.fhwa.dot.gov/policy/ohpi as of Dec. 10, 2004.

TABLE 1-7: Number of Stations Served by Amtrak and Rail Transit, Fiscal Year

	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Amtrak	503	516	523	524	535	540	530	542	516	508	510	515	512	515
Rail transit	1,895	2,169	2,192	2,240	2,286	2,376	2,382	2,325	2,391	2,524	2,567	2,595	2,621	2,784

NOTES

Rail transit is the sum of commuter rail, heavy rail, and light rail. In several large urban areas, Amtrak and commuter rail stations are shared. Starting in 2001 stations serving the Alaska Railroad are included in the rail transit total.

Rail transit data for 2002 include service both directly operated and purchased. Prior to 2002, data only include directly operated service.

SOURCES**Amtrak:**

Amtrak, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues).

Rail transit:

U.S. Department of Transportation, Federal Transit Administration, National Transit Database (Washington, DC: Annual issues), table 21 (for 2002 issue) and similar tables in earlier editions.

TABLE 1-8: Lift- or Ramp-Equipped Transit Buses

	1995 — 1998											
	1995			1996			1997			1998		
	Total number	ADA equipped	Percent	Total number	ADA equipped	Percent	Total number	ADA equipped	Percent	Total number	ADA equipped	Percent
TOTAL transit buses	57,322	35,381	61.7	57,369	38,316	66.8	58,975	40,932	69.4	60,830	46,278	76.1
Small buses	5,372	4,539	84.5	5,998	5,269	87.8	6,853	6,194	90.4	7,147	6,545	91.6
Medium buses	3,879	2,561	66.0	4,233	3,081	72.8	5,136	4,143	80.7	5,929	5,150	86.9
Large buses	46,355	27,420	59.2	45,587	29,073	63.8	45,502	29,684	65.2	46,188	33,512	72.6
Articulated buses	1,716	861	50.2	1,551	893	57.6	1,484	911	61.4	1,566	1,071	68.4

	1999 — 2002											
	1999		2000		2001		2002					
	Total number	ADA equipped	Total number	ADA equipped	Total number	ADA equipped	Total number	ADA equipped				
TOTAL transit buses	63,618	51,213	80.5	65,324	54,585	83.6	67,379	58,785	87.2	68,418	64,407	91.4
Small buses	8,265	7,722	93.4	8,850	8,366	94.5	9,622	9,176	95.4	9,822	9,743	99.2
Medium buses	6,613	5,959	90.1	7,455	6,926	92.9	7,830	7,337	93.7	8,693	8,550	98.4
Large buses	46,891	36,029	76.8	47,017	37,581	79.9	47,925	40,501	84.5	47,764	44,035	92.2
Articulated buses	1,849	1,503	81.3	2,002	1,712	85.5	2,002	1,771	88.5	2,139	2,079	97.2

KEY: ADA = Americans with Disabilities Act of 1992.

NOTES

Includes buses of transit agencies receiving federal funding for bus purchases, and buses of agencies not receiving federal funds that voluntarily report data to the Federal Transit Administration.

Large buses have more than 35 seats; medium buses have 25-35 seats; small buses have less than 25 seats; articulated buses are extra-long buses that measure between 54 and 60 feet.

SOURCE

U.S. Department of Transportation, Federal Transit Administration, 2002 *National Transit Summaries and Trends* (Washington, DC: 2003).

TABLE 1-9: Accessible Rail Transit Stations by Agency—continued

Type of rail transit / agency	Primary city served	Number of stations								Number of ADA-accessible stations							
		1996	1997	1998	1999	2000	2001	2002	1996	1997	1998	1999	2000	2001	2002		
Commuter rail— continued																	
Mass Transit Administration - Maryland DOT	Baltimore, MD	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
New Jersey Transit Corporation	New York, NY	158	158	158	162	162	162	167	22	22	41	46	46	46	51		
Metropolitan Transportation Authority Long Island Railroad	New York, NY	134	134	124	124	124	124	124	15	15	88	97	97	97	99		
Metropolitan Transportation Authority Metro-North Railroad Company	New York, NY	106	106	106	106	108	108	109	17	19	20	20	20	28	29		
Pennsylvania Department of Transportation	Pennsylvania, PA	U	U	U	U	U	U	4	U	U	U	U	U	U	3		
Southeastern Pennsylvania Transportation Authority	Philadelphia, PA	181	177	177	177	177	177	153	25	30	30	30	30	30	48		
Dallas Area Rapid Transit	Dallas, TX	U	U	U	U	U	U	4	U	U	U	U	U	U	4		
Fort Worth Transportation Authority	Fort Worth, TX	U	U	U	U	U	U	5	U	U	U	U	U	U	5		
Virginia Railway Express	Washington, DC	U	U	U	U	U	U	18	U	U	U	U	U	U	18		
Central Puget Sound Regional Transit Authority	Seattle, WA	U	U	U	U	U	U	7	U	U	U	U	U	U	7		
Light rail																	
Los Angeles County Metropolitan Transportation Authority	Los Angeles, CA	36	36	36	36	36	36	36	36	36	36	36	36	36	36		
San Francisco Municipal Railway	San Francisco, CA	11	11	11	11	11	11	9	0	0	0	0	0	0	9		
Sacramento Regional Transit District	Sacramento, CA	28	28	28	29	29	29	29	0	0	0	29	29	29	29		
San Diego Trolley, Inc.	San Diego, CA	38	41	49	49	49	49	49	38	41	49	49	49	49	48		
Santa Clara Valley Transit Authority	San Jose, CA	33	34	34	34	47	49	44	5	5	5	5	21	23	44		
Regional Transportation District	Denver, CO	15	15	15	15	20	20	20	15	15	15	15	20	20	20		
Regional Transit Authority of Orleans and Jefferson	New Orleans, LA	2	9	9	9	9	9	9	2	9	9	9	9	9	9		
Massachusetts Bay Transportation Authority	Boston, MA	95	95	95	95	95	78	78	9	9	9	12	12	16	16		
Mass Transit Administration - Maryland DOT	Baltimore, MD	24	24	32	32	32	32	32	24	24	32	32	32	32	32		
City of Detroit Department of Transportation	Detroit, MI	NA	NA	NA	NA	NA	8	8	NA	NA	NA	NA	NA	0	0		
Bi-State Development Agency	St. Louis, MO	18	18	18	18	18	26	26	18	18	18	18	18	26	26		
New Jersey Transit Corporation	Newark, NJ	11	11	11	11	11	11	26	0	0	0	0	0	0	15		
Niagara Frontier Transit Metro System, Inc.	Buffalo, NY	14	14	14	14	14	14	15	7	7	7	7	7	7	7		
Greater Cleveland Regional Transit Authority	Cleveland, OH	33	33	33	34	34	34	34	2	5	5	7	7	7	8		

TABLE 1-9: Accessible Rail Transit Stations by Agency—continued

Type of rail transit / agency	Primary city served	Number of stations							Number of ADA-accessible stations						
		1996	1997	1998	1999	2000	2001	2002	1996	1997	1998	1999	2000	2001	2002
Light rail— continued															
Tri-County Metropolitan Transportation District of Oregon	Portland, OR	27	27	29	47	47	47	52	26	26	28	46	46	46	52
Port Authority of Allegheny County	Pittsburgh, PA	13	13	13	13	13	13	14	0	13	13	13	13	13	14
Southeastern Pennsylvania Transportation Authority	Philadelphia, PA	64	64	64	64	64	64	68	0	0	0	0	0	0	3
Memphis Area Transit Authority	Memphis, TN	20	20	27	28	28	28	1	20	20	27	28	28	28	1
Dallas Area Rail Transit Authority	Dallas, TX	14	20	20	20	20	22	29	14	20	20	20	20	22	29
Galveston-Island Transit	Galveston, TX	3	3	3	U	U	U	3	3	3	3	U	U	U	3
Utah Transit Authority	Salt Lake City, UT	NA	NA	NA	16	16	20	20	NA	NA	NA	16	16	20	20
King County Department of Transportation	Seattle, WA	14	14	14	9	9	9	U	14	14	14	9	9	9	U
Kenosha Transit	Kenosha, WI	NA	NA	NA	NA	1	1	2	NA	NA	NA	NA	0	0	1

KEY: ADA = Americans with Disabilities Act of 1992; NA = not applicable; U = data are not available

NOTE

Rail transit data for 2002 includes both directly operated and purchased. Prior to 2002, the data include directly operated service only.

SOURCE

U.S. Department of Transportation, Federal Transit Administration, *National Transit Database* (Washington, DC: Annual Issues), table 21, Internet site <http://www.ntdprogram.com/NTD/nrdhome.nsf?OpenDatabase> as of February 2004.

TABLE 1-10: U.S. Oil and Gas Pipeline Mileage

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Oil pipeline, total	190,944	210,867	218,671	225,889	218,393	213,605	208,752	181,912	176,996	U	U	160,868
Crude lines ^a	141,085	149,424	146,275	145,679	129,831	117,812	118,805	97,029	85,480	U	U	U
Product lines	49,859	61,443	72,396	80,210	88,562	95,793	89,947	84,883	91,516	U	U	U
Gas pipeline ^b , total	630,950	767,520	913,267	979,263	1,051,774	1,118,875	(R) 1,189,200	(R) 1,277,600	(R) 1,369,300	(R) 1,373,500	1,411,381	U
Distribution mains	391,400	494,500	594,800	648,200	701,800	753,400	(R) 864,600	(R) 949,800	(R) 1,045,600	(R) 1,066,300	1,079,565	U
Transmission pipelines ^c	183,700	211,300	252,200	262,600	266,500	271,200	(R) 292,200	(R) 296,900	(R) 296,600	(R) 287,100	309,503	U
Gathering lines ^d	55,800	61,700	66,300	68,500	83,500	94,300	(R) 32,400	(R) 30,900	(R) 27,100	(R) 20,100	22,313	U

KEY: R = revised; U = data are not available.

^a Includes trunk and gathering lines.

^b Excludes service pipe. Data are not adjusted to common diameter equivalent. Mileage as of the end of each year.

^c After 1975, includes 5,000-6,200 miles of underground storage pipe.

^d Before 1990, data include field line mileage.

NOTE

In the past, mileage data reported in *Gas Facts* was taken from the American Gas Association's member survey, the Uniform Statistical Report, supplemented with estimates for companies that did not participate. For 2002 and revised data back to 1990, *Gas Facts* mileage data is now based on information reported to the U.S. Department of Transportation on Form 7100.

SOURCES

Oil pipeline:

1960-2000: Eno Transportation Foundation, Inc., *Transportation in America, 2002*(Washington, DC: 2002), p. 58.

2001-03: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, Pipeline Statistics, Internet site <http://ops.dot.gov/stats.htm> as of Dec. 8, 2004.

Gas pipeline:

1960-2002: American Gas Association, *Gas Facts* (Washington, DC: Annual issues), tables 5-1 and 5-3, and similar tables in earlier editions.

Section B
Vehicle, Aircraft, and
Vessel Inventory

TABLE 1-11: Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyances

	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air											
Air carrier ^a	2,125	2,679	2,495	3,808	4,678	6,083	7,411	8,055	8,497	8,194	U
General aviation ^b (active fleet)	95,442	131,743	168,475	211,045	210,654	198,000	188,089	217,533	211,446	211,244	U
Highway total (registered vehicles)	91,739,623	111,242,295	137,912,779	161,490,159	177,133,282	193,057,376	205,427,212	225,821,241	235,331,382	234,624,135	236,760,033
Passenger car	75,257,588	89,243,557	106,705,934	121,600,843	127,885,193	133,700,496	128,386,775	133,621,420	137,633,467	135,920,677	135,669,897
Motorcycle	1,381,956	2,824,098	4,964,070	5,693,940	5,444,404	4,259,462	3,897,191	4,346,068	4,903,056	5,004,156	5,370,035
Other 2-axle 4-tire vehicle	i	14,210,591	20,418,250	27,875,934	37,213,863	48,274,555	65,738,322	79,084,979	84,187,636	85,011,305	87,031,553
Truck, single-unit 2-axle 6-tire or more	13,999,285	3,681,405	4,231,622	4,373,784	4,593,071	4,486,981	5,023,670	5,926,030	5,703,501	5,650,619	5,666,933
Truck combination	786,510	905,082	1,130,747	1,416,869	1,403,266	1,708,895	1,695,751	2,096,619	2,154,174	2,276,661	2,245,085
Bus	314,284	377,562	462,156	528,789	593,485	626,987	685,503	746,125	749,548	760,717	776,550
Transit ^c											
Motor bus	49,600	49,700	50,811	59,411	64,258	58,714	67,107	75,013	76,075	(P) 76,190	U
Light rail cars	1,549	1,262	1,061	1,013	717	913	999	1,577	1,366	(P) 1,445	U
Heavy rail cars	9,115	9,286	9,608	9,641	9,326	10,419	10,157	10,591	10,718	(P) 10,718	U
Trolley bus	1,453	1,050	703	823	676	832	885	951	600	(P) 600	U
Commuter rail cars and locomotives	N	N	N	4,500	4,035	4,415	4,565	5,073	5,124	(P) 5,300	U
Demand response	N	N	N	N	14,490	16,471	29,352	33,080	34,661	(P) 34,699	U
Other ^d	N	N	N	N	867	1,197	2,809	5,208	5,727	(P) 6,330	U
Rail											
Class I, Freight cars	1,478,005	1,423,921	1,359,459	1,168,114	867,070	658,902	583,486	560,154	499,860	477,751	467,063
Class I, Locomotive	27,780	27,077	27,846	28,094	22,548	18,835	18,812	20,028	19,745	20,506	20,774
Nonclass I freight cars	37,164	29,787	29,407	102,161	111,086	103,527	84,724	132,448	125,470	130,590	124,580
Car companies and shippers freight cars	285,493	330,473	334,739	440,552	443,530	449,852	550,717	688,194	688,806	691,329	687,337
Amtrak, Passenger train car	N	N	1,913	2,128	1,854	1,863	1,722	1,894	2,084	2,896	1,623

Continued next page

TABLE 1-11: Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyance—Continued

	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Amitrak, Locomotive	N	N	355	419	291	318	313	378	401	372	442
Water											
Nonself-propelled vessels ^e	17,033	19,377	25,515	31,662	33,597	31,209	31,360	33,152	33,042	32,381	31,335
Self-propelled vessels ^f	6,083	6,455	6,144	7,126	7,522	8,236	8,281	8,202	8,546	8,621	8,648
Oceangoing steam and motor ships (1,000 gross tons and over)	2,376	1,579	857	864	737	636	509	454	443	426	412
Recreational boats ^g	4,138,140	5,128,345	7,303,286	8,577,857	9,589,483	10,996,253	11,734,710	12,782,143	12,876,346	(R) 12,854,054	12,794,616

KEY: N = data do not exist; P = Preliminary; R = revised

- ^a Air carrier aircraft are those carrying passengers or cargo for hire under 14 CFR 121 and 14 CFR 135. Beginning in 1990, the number of aircraft is the monthly average of the number of aircraft reported in use for the last three months of the year. Prior to 1990, it was the number of aircraft reported in use during December of a given year.
- ^b 1991-94 data revised to reflect changes in adjustment for nonresponse bias with 1996 telephone survey factors; 1995-97 data may not be comparable to 1994 and earlier years due to changes in methodology. Includes air taxi aircraft.
- ^c Prior to 1984, excludes most rural and smaller systems funded via Sections 18 and 16(b)(2), Urban Mass Transportation Act of 1964, as amended. Also prior to 1984, includes total vehicles owned and leased.
- ^d Other includes aerial tramway, automated guideway transit, cablecar, ferry boat, inclined plane, monorail, and vanpool.
- ^e Nonself-propelled vessels include dry-cargo barges, tank barges, and railroad-car floats.
- ^f Self-propelled vessels include dry-cargo and/or passenger, offshore supply vessels, railroad-car ferries, tankers, and towboats.
- ^g Recreational vessels that are required to be numbered in accordance with Chapter 123 of Title 46 U.S.C.
- ^h Included in single-unit truck.
- ⁱ All trucks.
- ^j Data for Jan. 1, 1991-June 30, 1991 included in 1990 figure.

NOTES

Transit motor bus figure is also included as part of bus in the highway category. For more detail on oceangoing vessels, see table 1-23.

SOURCES

- Air:**
- Air carrier:*
- 1965: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation, 1970* (Washington, DC: 1970), table 5.3.
- 1970-75: *Ibid.*, 1979 edition (Washington, DC: 1979), table 5.1.
- 1980-85: *Ibid.*, *Calendar Year 1986* (Washington, DC: 1986), table 5.1.
- 1990: *Ibid.*, *Calendar Year 1997* (Washington, DC: unpublished), table 5.1, personal communication, Mar. 19, 1999.
- 1995-2002: Aerospace Industries Association, *Aerospace Facts and Figures* (Washington DC: 2004), p.90, and similar tables in earlier editions.

TABLE 1-11: Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyance—Continued

General aviation:

1965: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation, 1969* (Washington, DC: 1969), table 9.10.

1970-75: *Ibid.*, *Calendar Year 1976* (Washington, DC: 1976), table 8-6.

1980: *Ibid.*, *General Aviation Activity Survey, Calendar Year 1980* (Washington, DC: 1981), table 1-3.

1985: *Ibid.*, *Calendar Year 1985* (Washington, DC: 1987), table 2-9.

1990-2002: *Ibid.*, *General Aviation and Air Taxi Activity Survey, Calendar Year 2002* (Washington, DC: 2004), table 1.2, and similar tables in earlier editions.

Highway:

Passenger car:

1965-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:

1965-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Other 2-axle 4-tire vehicles:

1970-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Single-unit and combination trucks, and buses:

1965-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit:

1965-95: American Public Transit Association, *Transit Fact Book* (Washington, DC: 1999), table 44.

2000-2002: *Ibid.*, *Public Transportation Fact Book* (Washington, DC: 2003), table 24.

Rail (all categories, except Amtrak):

1965-2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p.51.

Amtrak:

Passenger train-cars and locomotives:

1975-80: Amtrak, State and Local Affairs Department, personal communication.

1985-2000: *Ibid.*, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues), p. 47.

2001-03: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004) p. 77 and similar tables in earlier editions.

Water transportation:

Nonself-propelled vessels and self-propelled vessels:

1965-2003: U.S. Army, Corps of Engineers, *Waterborne Transportation Lines of the United States, Volume 1, National Summaries* (New Orleans, LA : Annual issues).

Continued next page

TABLE 1-11: Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyance—continued

Oceangoing steam motor ships:

1965-2000, 2002-03: U.S. Department of Transportation, Maritime Administration, *Merchant Fleets of the World* (Washington, DC: Annual issues).

2001: Ibid., personal communication, Aug. 11, 2003.

Recreational boats:

1965-2003: U.S. Department of Transportation, U.S. Coast Guard, *Boating Statistics* (Washington, DC: Annual issues).

TABLE 1-12: U.S. Sales or Deliveries of New Aircraft, Vehicles, Vessels, and Other Conveyances

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number of Civilian aircrafts (shipments)												
Transport ^a	245	233	311	315	387	278	521	256	485	526	379	U
Helicopters	N	598	482	864	1,366	384	603	292	493	415	318	U
General aviation	7,588	11,852	7,283	14,072	11,881	2,029	1,144	1,077	2,802	2,618	2,203	U
Highway												
Passenger car (new retail sales)	6,641,000	9,332,000	8,399,000	8,624,000	8,979,000	11,043,000	9,300,000	8,635,000	8,846,625	8,422,625	8,103,229	7,610,481
Motorcycle (new retail sales) ^b	N	N	1,125,000	940,000	1,070,000	710,000	303,000	309,000	710,000	850,000	936,000	996,000
Truck (factory sales) ^c	1,194,475	1,716,564	1,660,446	2,231,630	1,667,283	3,356,905	3,692,474	5,689,551	7,022,478	6,223,586	6,963,720	7,143,429
Bus: includes school bus (factory sales)	i	35,241	31,994	40,530	34,385	33,533	32,731	23,918	i	i	i	i
Recreational vehicle (shipments)	N	192,830	380,300	339,600	178,500	351,700	347,300	475,200	418,300	321,000	378,700	377,800
Bicycle ^d	N	N	N	N	9,000,000	11,400,000	10,800,000	12,000,000	11,900,000	11,300,000	13,600,000	12,900,000
Transit cars (deliveries)												
Motor bus ^e	2,415	3,000	1,424	5,261	4,572	3,367	4,779	6,022	7,696	(R) 11,018	7,214	U
Light rail	0	0	0	0	32	63	55	38	136	111	107	U
Heavy rail	416	580	308	127	130	441	10	72	204	751	828	U
Trolley bus	0	0	0	1	98	0	118	3	0	(R) 149	88	U
Commuter rail	214	666	302	2,165	152	179	83	38	116	54	166	U
Class I rail (deliveries)												
Freight car ^f	57,047	77,822	66,185	72,392	85,920	12,080	32,063	60,853	55,791	34,260	17,714	32,184
Locomotive	389	1,387	1,029	772	1,480	522	530	928	640	710	745	587
Amtrak (deliveries)												
Passenger train car	N	N	N	109	109	N	58	76	26	U	U	U
Locomotive	N	N	N	30	17	10	0	10	4	U	U	U
Water transport												
Merchant vessel ^g	20	13	13	15	23	14	0	1	0	2	2	U
Recreational boat ⁿ	N	N	N	N	569,700	636,800	494,700	663,760	576,900	882,300	(R) 846,000	840,800

Continued next page

TABLE 1-12: U.S. Sales or Deliveries of New Aircraft, Vehicles, Vessels, and Other Conveyances—Continued

KEY: N = data do not exist; P = preliminary; U = data are not available.

- a U.S.-manufactured fixed-wing aircraft over 33,000 pounds empty weight, including all jet transports plus the 4-engine turboprop-powered Lockheed L-100.
- b Includes domestic and imported vehicles. Prior to 1985, all terrain vehicles (ATVs) were included in the motorcycle total. In 1995, the Motorcycle Industry Council revised its data for the years 1985 to present to exclude ATVs from its totals.
- c Includes large passenger or utility vehicles that may be considered cars in other tables, and starting in 1999 includes buses.
- d Includes domestic and imported vehicles, wheel sizes 20 inches and over. Data from 1997 onwards are projections.
- e Buses or bus-type vehicles only. Includes demand response. Excludes vanpool vans and most rural and smaller systems prior to 1984. Transit motor bus figure is also included as part of the bus total in the highway category.
- f Includes all railroads and private car owners.
- g Self-propelled, 1,000 or more gross tons.
- h Retail unit estimates. Includes outboard, inboard, and sterndrive boats, jet boats (since 1995), personal watercraft (since 1991), sailboats, and canoes. Also includes inflatable boats (until 1992) and sailboards (until 1990).
- i Included in truck figure.

SOURCES

Civilian aircraft:

1960-2001: Aerospace Industries Association, *Aerospace Facts and Figures* (Washington, DC: Annual issues), "Civil Aircraft Shipments."

Highway:

Passenger cars and trucks:

1960-95: American Automobile Manufacturers Association, *Motor Vehicle Facts & Figures, 1998* (Southfield, MI: 1999), p. 21 (passenger car) and p. 6 (truck).

2000-03: Ward's Communications, *Motor Vehicle Facts & Figures, 2004* (Detroit, MI: 2004), p. 21 (passenger car) and p. 9 (truck).

Motorcycles:

1970-2000: Motorcycle Industry Council, Inc., *Motorcycle Statistical Annual, 2001* (Irvine, CA: 2002), p. 8 and similar tables in earlier editions.

2001: Motorcycle Industry Council, Inc., <http://www.mic.org>, press release March 2003.

2003: Motorcycle Industry Council, Inc., "Motorcycle Industry on Track for 12th Year of Consecutive Growth", media release, Nov. 18, 2004, Internet site <http://www.motorcycles.org> as of Dec. 9, 2004.

Buses:

1965-95: American Automobile Manufacturers Association, *Motor Vehicle Facts & Figures, 1998* (Detroit, MI: 1998), p. 6 and similar tables in earlier editions.

Recreational vehicles:

1965-95: *Ibid.*, *Motor Vehicle Facts & Figures, 1998* (Detroit, MI: 1998), p. 12 and similar tables in earlier editions.

2000-03: Ward's Communications, *Motor Vehicle Facts & Figures, 2004* (Detroit, MI: 2004), p. 12.

Bicycles:

1980-2003: National Bicycle Dealers Association, "Industry Overview," Internet site <http://www.nbda.com> as of Dec. 9, 2004, Apr. 21, 2003, and personal communication Sept. 24, 1996.

Transit:

1960-2001: American Public Transit Association, *Public Transportation Fact Book 2003* (Washington, DC: February 2003), table 28 and similar tables in earlier editions.

Class I rail:

1960-2003: Association of American Railroads, *Railroad Facts* (Washington, DC: 2004), p. 55 and similar tables in earlier editions.

TABLE 1-12: U.S. Sales or Deliveries of New Aircraft, Vehicles, Vessels, and Other Conveyances—Continued

Amtrak:
1975-80: <i>Ibid.</i> , <i>Railroad Facts</i> (Washington, DC: 1997), p. 17 and similar tables in earlier editions.
1985-2000: Amtrak, <i>Amtrak Annual Report</i> , Statistical Appendix (Washington, DC: Annual issues).
Water:
<i>Merchant vessel:</i>
1960-2001: U.S. Department of Transportation, Maritime Administration, <i>Merchant Fleets of the World</i> (Washington, DC: Annual issues) and personal communication on Sept. 2, 2003.
<i>Recreational boat:</i>
1980-2002: National Marine Manufacturers Association, <i>Boating 2001</i> (Chicago, IL: 2002), annual retail unit estimates, Internet site http://www.nmma.org as of June 25, 2004.

TABLE 1-13: Active U.S. Air Carrier and General Aviation Fleet by Type of Aircraft (Number of carriers)

	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002
AIR CARRIER^a										
Fixed Wing	2,125	2,679	2,495	3,805	4,678	6,083	7,411	8,055	8,497	8,194
Turbojet, total	2,104	2,663	2,488	3,803	4,673	6,072	7,293	8,016	8,370	8,161
Four engine	725	2,136	2,114	2,526	3,164	4,148	4,832	5,956	6,296	6,383
Three engine	511	931	602	436	322	432	435	432	419	365
Two engine	173	659	994	1,347	1,488	1,438	1,210	1,061	996	790
Turboprop, total	41	546	518	743	1,354	2,278	3,187	4,463	4,881	5,228
Four engine	312	374	260	682	1,073	1,595	1,713	1,475	1,494	1,250
Two engine	215	110	68	92	108	88	81	29	24	17
One engine	89	259	192	590	965	1,507	1,632	1,440	1,470	1,233
Piston, total	8	5	N	N	N	N	0	0	0	0
Four engine	1,067	153	114	595	436	329	748	585	580	528
Three engine	447	34	37	73	38	31	15	17	16	12
Two engine	590	110	69	N	4	6	1	3	3	3
One engine	30	9	8	522	394	292	333	255	173	154
Helicopter	N	N	N	N	N	N	399	310	388	359
	21	16	7	2	5	11	118	39	127	33
GENERAL AVIATION (GENERAL FLEET)^b	95,442	161,743	168,475	211,043	196,500	198,000	188,089	217,533	211,446	211,244
Fixed Wing	^c 93,130	127,934	161,570	200,094	184,700	184,500	162,342	183,276	177,697	176,283
Turbojet, total	N	950	1,776	2,992	4,100	4,100	4,559	7,001	7,787	8,355
Two engine	N	^d 822	^d 1,742	2,551	3,600	3,700	4,071	6,215	5,643	7,655
Other	N	128	^e 34	441	50	400	488	786	831	701
Turboprop, total	N	1,458	2,519	4,089	5,000	5,300	4,995	5,762	6,596	6,841
Two engine	N	1,287	^f 2,486	3,966	4,900	4,900	4,295	5,040	5,643	5,703
One engine	N	138	33	N	N	N	668	678	915	1,108
Other	N	33	N	123	100	400	32	45	38	30

TABLE 1-13: Active U.S. Air Carrier and General Aviation Fleet by Type of Aircraft (Number of carriers)—continued

	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002
Piston, total	92,556	125,526	157,275	193,013	175,600	175,200	152,788	170,513	163,314	161,087
Two engine	^d 11,422	15,835	^d 20,331	24,366	22,100	21,100	15,706	20,951	18,192	17,483
One engine	81,134	109,492	136,944	168,435	153,400	154,000	137,049	149,422	145,034	143,503
Other	N	199	N	212	100	100	33	140	89	101
Rotorcraft	1,503	2,255	4,073	6,001	6,000	6,900	5,830	7,150	6,783	6,648
Piston	N	1,666	2,499	2,794	2,700	3,200	1,863	2,680	2,292	2,351
Turbine, total	N	589	1,574	3,207	3,300	3,700	3,967	4,470	4,491	4,297
Multiengine	N	N	N	N	N	N	733	694	884	686
One engine	N	589	N	N	N	N	3,234	3,776	3,607	3,611
Other Aircraft	809	1,554	2,832	4,945	5,800	6,600	4,741	6,700	6,545	6,377
Gliders	N	N	N	N	N	N	2,182	2,041	1,904	1,951
Lighter-than-Air	N	N	N	N	N	N	2,559	4,660	4,641	4,426
Experimental	N	N	N	N	N	N	15,176	20,407	20,421	21,936
Amateur Built	N	N	N	N	N	N	9,328	16,739	16,736	18,168
Exhibition	N	N	N	N	N	N	2,245	1,973	2,052	2,190
Other	N	N	N	N	N	N	3,603	1,694	1,633	1,578

KEY: N = data do not exist

^a Air carrier aircraft are aircraft carrying passengers or cargo for hire under 14 CFR 121 (large aircraft-more than 30 seats) and 14 CFR 135 (small aircraft-30 seats or less). This definition is more encompassing than that in the Federal Aviation Administration (FAA) Aviation Forecast- jet aircraft, 60 seats or more carrying passengers or cargo for hire. Beginning in 1990, the number of aircraft is the monthly average reported in use for the last three months of the year. Prior to 1990, it was the number of aircraft reported in use during December of a given year.

^b Columns may not add to totals due to estimation procedures and rounding. Beginning in 1993, excludes commuters. Prior to 1993, single engine turboprops were included in "Other turboprops"; single and multiengine turbine rotorcraft were not shown separately; gliders and lighter-than-air aircraft were combined into the "Other" category; and experimental aircraft were included in the appropriate aircraft type. For example, prior to 1993, the single engine piston aircraft type included both experimental and nonexperimental aircraft. Starting in 1993, that aircraft type only includes nonexperimental aircraft. Due to changes in methodology beginning in 1995, estimates may not be comparable to those for 1994 and earlier years. Values for 1991 through 1994 were revised to reflect changes in adjustment for nonresponse bias.

^c Total includes 574 turbine aircraft of unspecified subtype.

^d Multiengine.

^e Single-engine.

^f Source reported rounded data for general aviation.

Continued next page

TABLE 1-13: Active U.S. Air Carrier and General Aviation Fleet by Type of Aircraft (Number of carriers)—Continued**NOTES**

Prior to 1970, aircraft counts included aircraft retained in FAA data systems until the owners requested that they be deregistered. As a result, thousands of aircraft that had been destroyed over the years remained in the system. Since 1970, annual verification of aircraft registrations is required. Failure to comply with this requirement leads to revocation of the registration certificate and exclusion of the aircraft from the official count of the following year. Listed engine configurations (e.g., two-, three-, multi-) represent all applicable combinations for each aircraft type. Totals may not agree with those in other tables as revisions to prior year data are reported at the aggregate level only.

SOURCES**Air carriers:**

- 1965: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation, 1966 Edition*. (Washington, DC: 1966), table 7.5.
 1970: *Ibid.*, *Calendar Year 1971*. (Washington, DC: 1972), table 5.5.
 1975: *Ibid.*, *Calendar Year 1975*. (Washington, DC: Dec. 31, 1975), table 5.3.
 1980: *Ibid.*, *Calendar Year 1980*. (Washington, DC: Dec. 31, 1980), table 5.2.
 1985: *Ibid.*, *Calendar Year 1993*. FAA-APO-95-5 (Washington, DC: 1995), table 5.2.
 1990: *Ibid.*, *Calendar Year 1996*, Internet site: <http://www.api.faa.gov/handbook96/foe96.htm>, as of Mar. 31, 2000, table 5.2.
 1995-2002: Aerospace Industries Association, *Aerospace Facts and Figures* (Washington DC: 2003/2004), "Active U.S. Air Carrier Fleet," and similar tables in earlier editions.

General aviation:

- 1965: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation, 1966 Edition*. (Washington, DC: 1966), table 5.1.
 1970: *Ibid.*, *Calendar Year 1971*. (Washington, DC: 1972), table 8.3.
 1975: *Ibid.*, *Calendar Year 1975*. (Washington, DC: Dec. 31, 1975), table 8.4.
 1980: *Ibid.*, *General Aviation Activity and Avionics Survey, Annual Report Calendar Year 1980*, FAA-MS-81-5 (Washington, DC: December 1985), table 2-6.
 1985: *Ibid.*, *Annual Summary Report 1994 Data*, FAA-APO-95-10 (Washington, DC: 1996), table 1.2.
 1990: *Ibid.*, *General Aviation and Air Taxi Activity Survey, Calendar Year 1999* (Washington, DC: 2001), table 1.2.
 1995-2002: *Ibid.*, *General Aviation and Air Taxi Activity Survey, Calendar Year 2002* (Washington, DC: 2004), table 1.2.

TABLE 1-14: U.S. Automobile and Truck Fleets by Use (Thousands of vehicles)

	1990	1995	1996	1997	1998	1999	2000	2001 ^e	2002 ^e	2003 ^e
TOTAL automobiles and trucks in fleets	U	15,257	15,570	15,869	16,879	15,530	15,196	13,642	11,985	12,128
Automobiles in fleets, total	U	9,042	9,124	9,225	9,550	7,742	7,346	6,640	5,600	5,647
Automobiles in fleets of 25 or more (10 or more cars for 1999-2001 and 15 or more cars for 2002-03) ^a										
Business ^b	2,889	1,326	1,295	1,188	1,159	3,195	2,950	2,620	930	929
Government ^c	538	1,214	1,209	1,218	1,030	885	883	734	1,360	1,420
Utilities	551	376	376	377	359	320	317	U ^f	U ^f	U ^f
Police	249	269	274	280	289	302	306	312	317	317
Taxi (includes vans)	141	139	130	181	190	135	136	142	148	148
Rental (includes vans and SUVs)	990	1,518	1,590	1,608	1,602	1,733	1,581	1,542	1,555	1,520
Automobiles in fleets of 4 to 24 (4 to 9 cars for 1999-2001 and 5 to 14 cars for 2002-03) ^a	U	4,200	4,250	4,373	4,921	1,172	1,173	1,290	1,290	1,313
Trucks in fleets, total	U	6,215	6,446	6,644	7,329	7,788	7,850	7,002	6,385	6,481
Trucks in fleets of 25 or more (10 or more trucks for 1999-2001 and 15 or more cars for 2002-03) ^a										
Business ^d	U	1,205	1,275	1,332	1,360	3,016	3,026	2,820	2,180	2,181
Government ^c	U	2,221	2,215	2,223	2,010	2,400	2,408	2,052	2,070	2,102
Utilities	U	480	482	483	459	499	498	U ^f	U ^f	U ^f
Other (police, taxi, etc.)	U	7	7	7	8	8	8	9	9	9
Rental trucks (not including vans and SUVs)	U	202	197	179	181	213	248	246	251	289
Trucks in fleets of 4 to 24 (4 to 9 trucks for 1999-2001 and 5 to 14 cars from 2002-03) ^a	U	2,100	2,270	2,420	3,311	1,652	1,662	1,875	1,875	1,900

KEY: SUV = sport utility vehicle; U = data are not available.

^a The data source, Bobit Publishing, changed data collection categories in 1999 and again in 2002.

^b Includes driver schools.

^c Includes military vehicles and federal, state, county, and local government vehicles.

Continued next page

TABLE 1-14: U.S. Automobile and Truck Fleets by Use (Thousands of vehicles)—continued

d Businesses with Class 1-5 trucks may include leasing, construction, plumbing, heating, food distribution, pest control, cable TV, etc.

e 2001-2003 data do not include employee-owned fleet information as the source has stopped publishing the data.

f Business and utility data have been combined in the 2002, 2003, and 2004 *Automotive Fleet Fact Book*.

SOURCE

Bobit Publishing Co., *Automotive Fleet Fact Book*, annual issues.

TABLE 1-15: Annual U.S. Motor Vehicle Production and Factory (Wholesale) Sales (Thousands of vehicles)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Production, total	7,905	11,120	8,284	8,987	8,010	11,653	9,783	11,985	12,774	11,425	12,280	12,087
Passenger cars	6,703	9,335	6,550	6,717	6,376	8,185	6,077	6,351	5,542	4,879	5,019	4,510
Commercial vehicles ^a	1,202	1,785	1,734	2,270	1,634	3,468	3,706	5,635	7,231	6,546	7,261	7,577
Factory (wholesale) sales, total	7,869	11,057	8,239	8,985	8,067	11,467	9,775	12,023	12,527	11,108	U	U
Passenger cars	6,675	9,306	6,547	6,713	6,400	8,002	6,050	6,310	5,504	4,884	U	U
Commercial vehicles ^a	1,194	1,752	1,692	2,272	1,667	3,464	3,725	5,713	7,022	6,224	6,964	7,143

KEY: U = Data are not available.

^a Includes trucks under 10,000 pounds gross vehicle weight rating (GVWR), such as compact and conventional pickups, sport utility vehicles, mini-vans, and vans, and trucks and buses over 10,000 pounds GVWR.

NOTES

Factory sales can be greater than production total because of sales from previous year's inventory. Numbers may not add to totals due to rounding.

SOURCE

1960-2003: Ward's, *Motor Vehicle Facts & Figures 2004* (Southfield, MI: 2004), p. 3.

TABLE 1-16: Retail^a New Passenger Car Sales (Thousands of vehicles)

	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL new passenger car sales	8,400	8,624	8,979	11,042	9,300	8,635	8,847	8,423	8,103	7,610
Domestic ^b	7,119	7,053	6,581	8,205	6,897	7,129	6,831	6,325	5,878	5,527
Imports	1,280	1,571	2,398	2,838	2,403	1,506	2,016	2,098	2,226	2,083
Japan	313	808	1,906	2,218	1,719	982	863	837	923	817
Germany	750	493	305	424	265	207	517	523	547	544
Other	217	271	187	196	419	317	637	738	756	722

^a Retail new car sales include both sales to individuals and to corporate fleets. It also includes leased cars.

^b Includes cars produced in Canada and Mexico.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1970: American Automobile Manufacturers Association, *Motor Vehicle Facts & Figures 1992* (Detroit, MI: 1992), p. 16.

1980: Ibid., *Motor Vehicle Facts & Figures 1997* (Detroit, MI: 1997), p. 19.

1975, 1985-2003: Ward's, *Motor Vehicle Facts & Figures 2004* (Southfield, MI: 2003), p. 22.

TABLE 1-17: New and Used Passenger Car Sales and Leases (Thousands of vehicles)

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL new and used passenger car sales	46,830	(R) 50,394	49,328	(R) 49,510	48,983	49,436	50,472	51,046	(R) 51,127	51,187
New passenger car sales ^a	9,300	(R) 8,636	8,527	(R) 8,273	8,142	8,697	8,852	8,422	(R) 8,102	7,615
Used passenger car sales ^b	37,530	41,758	40,801	41,237	40,841	40,739	41,620	42,624	43,025	43,572
Value of transactions (\$ billions)	220	319	329	336	335	350	(R) 357	367	(R) 350	366
Average price (current \$)	5,857	7,644	8,073	8,139	8,211	8,587	(R) 8,578	(R) 8,619	(R) 8,130	8,409
New passenger car leases ^c	534	1,795	1,806	2,062	2,174	2,301	2,272	2,015	1,732	1,683

KEY: R = revised.

^a Includes leased cars.

^b Used car sales include sales from franchised dealers, independent dealers, and casual sales.

^c Consumer leases only.

SOURCES

New passenger car sales:

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Wealth Division, unpublished data.

Used passenger car sales:

1990: ADT Automotive, *2001 Used Car Market Report* (Nashville, TN: 2000), p. 5.

1995-2003: Manheim Auctions, *2004 Used Car Market Report*, Internet site www.manheimnews.com/UCMR/reports/UCMR2004dy7r990/assets/pdfs/ucmr_2004.pdf as of Aug. 5, 2004, and similar tables in earlier editions.

Leased passenger cars:

CNW Marketing / Research, personal communications, May 31, 2000, Aug. 13, 2001, Aug. 26, 2002, July 18, 2003, and June 29, 2004.

TABLE 1-18: Retail Sales of New Cars by Sector (Thousands of vehicles)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL Sales of new cars	6,641	9,333	8,402	8,538	8,982	10,978	9,300	(R) 8,636	8,852	8,422	(R) 8,102	7,615
Consumer	5,645	7,103	6,252	5,907	6,100	7,092	5,677	(R) 4,326	(R) 4,680	(R) 4,634	(R) 4,521	4,336
Business	930	2,140	2,056	2,508	2,758	3,754	3,477	(R) 4,070	(R) 3,949	(R) 3,566	(R) 3,376	3,082
Government	66	89	94	123	124	132	147	(R) 241	(R) 224	(R) 222	(R) 205	197
Percentage of total sales												
Consumer	85.0	76.1	74.4	69.2	67.9	64.6	61.0	50.1	(R) 52.9	(R) 55.0	(R) 55.8	56.9
Business	14.0	22.9	24.5	29.4	30.7	34.2	37.4	(R) 47.1	(R) 44.6	(R) 42.3	(R) 41.7	40.5
Government	1.0	1.0	1.1	1.4	1.4	1.2	1.6	(R) 2.8	(R) 2.5	(R) 2.6	(R) 2.5	2.6

KEY: R = revised.

NOTES

Includes imported cars, but not vans, trucks, or sport utility vehicles.
 Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Wealth Division, unpublished data.

TABLE 1-19: Period Sales, Market Shares, and Sales-Weighted Fuel Economies of New Domestic and Imported Automobiles (Thousands of vehicles)

	1980	1985	1990	1995	2000	2001	2002	2003	2003
Sales ^a (thousands)									
TOTAL units	9,095	10,969	9,224	8,725	8,978	8,308	8,336	7,698	7,698
Minicompact	428	52	77	45	19	33	54	80	80
Subcompact	3,441	2,382	2,030	1,518	1,789	922	636	459	459
Compact	599	3,526	3,156	3,290	2,398	3,058	3,217	3,018	3,018
Midsized	3,073	3,118	2,512	2,499	3,352	2,669	2,918	2,624	2,624
Large	1,336	1,516	1,279	1,321	1,297	1,507	1,377	1,351	1,351
Two-seater	216	374	170	53	122	118	134	165	165
Market share, percent									
Minicompact	4.7	0.5	0.8	0.5	0.2	0.4	0.6	1.0	1.0
Subcompact	37.8	21.7	22.0	17.4	19.9	11.1	7.6	6.0	6.0
Compact	6.6	32.1	34.2	37.7	26.7	36.8	38.6	39.2	39.2
Midsized	33.8	28.4	27.2	28.6	37.3	32.1	35.0	34.1	34.1
Large	14.7	13.8	13.9	15.1	14.4	18.1	16.5	17.5	17.5
Two-seater	2.4	3.4	1.8	0.6	1.4	1.4	1.6	2.1	2.1
Fuel economy, mpg									
Fleet	23.2	27.0	27.6	28.0	28.2	28.5	28.5	28.7	28.7
Minicompact	29.4	32.7	26.4	27.0	25.6	24.6	26.2	29.0	29.0
Subcompact	27.3	30.1	31.3	31.7	31.1	29.6	27.6	27.1	27.1
Compact	22.3	29.6	28.9	30.2	30.4	31.3	31.5	31.5	31.5
Midsized	21.3	24.9	25.9	25.9	26.8	27.2	27.4	28.0	28.0
Large	19.3	22.3	23.5	24.1	25.3	25.4	25.5	25.9	25.9
Two-seater	21.0	27.6	28.0	24.7	25.8	26.5	25.2	25.1	25.1

KEY: mpg = miles per gallon.

^a Sales period is October 1 of the previous year through September 30 of the current year. These figures represent only those sales that could be matched to corresponding U.S. Environmental Protection Agency fuel economy values.

NOTE

Numbers may not add to totals due to rounding.

SOURCE

Light-Duty Vehicle MPG and Market Shares System Database, as cited in Oak Ridge National Laboratory, *Transportation Energy Data Book*, Edition 24, table 4.7, p. 4-7, and similar tables in earlier editions (Oak Ridge, TN).

TABLE 1-20: Period Sales, Market Shares, and Sales-Weighted Fuel Economies of New Domestic and Imported Light Trucks (Thousands of vehicles)

	1980	1985	1990	1995	2000	2001	2002	2003	2003
Sales ^a (thousands)									
TOTAL units	2,217	4,235	4,515	5,934	8,307	8,020	8,673	8,617	8,617
Small pickups	516	864	1,136	1,068	1,072	819	762	744	744
Large pickups	1,115	1,691	1,116	1,473	1,969	1,988	2,210	2,077	2,077
Small vans	14	438	1,012	1,331	1,272	1,141	1,165	1,066	1,066
Large vans	328	536	319	328	369	324	350	322	322
Small SUV	52	442	402	510	756	895	878	853	853
Medium SUV	152	187	434	1,077	2,167	2,069	2,448	2,692	2,692
Large SUV	40	78	94	149	702	785	861	864	864
Market share, percent									
Small pickups	23.3	20.4	25.2	18.0	12.9	10.2	8.8	8.6	8.6
Large pickups	50.3	39.9	24.7	24.8	23.7	24.8	25.5	24.1	24.1
Small vans	0.6	10.3	22.4	22.4	15.3	14.2	13.4	12.4	12.4
Large vans	14.8	12.7	7.1	5.5	4.4	4.0	4.0	3.7	3.7
Small SUV	2.3	10.4	8.9	8.6	9.1	11.2	10.1	9.9	9.9
Medium SUV	6.9	4.4	9.6	18.1	26.1	25.8	28.2	31.2	31.2
Large SUV	1.8	1.8	2.1	2.5	8.5	9.8	9.9	10.0	10.0
Fuel economy, mpg									
Fleet	18.1	20.4	20.5	20.2	20.4	20.5	20.2	20.5	20.5
Small pickups	25.5	26.8	24.5	24.4	22.0	21.3	21.3	21.7	21.7
Large pickups	17.0	19.0	17.5	17.8	18.7	19.0	18.4	18.3	18.3
Small vans	19.6	23.9	22.3	22.4	23.0	23.2	23.0	23.5	23.5
Large vans	16.3	16.4	17.1	17.2	18.2	18.3	18.5	17.9	17.9
Small SUV	17.7	22.1	22.5	22.0	23.8	24.3	25.3	25.4	25.4
Medium SUV	14.9	17.2	19.7	19.2	20.4	20.5	20.5	21.3	21.3
Large SUV	13.7	17.1	16.5	16.1	17.5	17.6	17.5	17.6	17.6

KEY: mpg = miles per gallon; R = revised; SUV = sport utility vehicle.

^a Sales period is October 1 of the previous year through September 30 of the current year. These figures represent only those sales that could be matched to corresponding U.S. Environmental Protection Agency fuel economy values.

NOTES

Fleet sales total cannot be compared with truck sales in table 1-12 for the following reasons: 1) this table includes both domestic and imported trucks, whereas the numbers in table 1-12 are for domestic trucks only; and 2) this table covers only light trucks, whereas the numbers in table 1-12 include heavy trucks.

Numbers may not add to totals due to rounding.

SOURCE

Light-Duty Vehicle MPG and Market Shares System Database, as cited in Oak Ridge National Laboratory, *Transportation Energy Data Book*, Edition 24, table 4.8, p. 4-8, and similar tables in earlier editions (Oak Ridge, TN).

TABLE 1-21: Number of Trucks by Weight

	Thousands of trucks			Percent change	Percent change
	1992	1997	2002	1992-97	1992-2002
ALL trucks	59,200.8	72,800.3	85,174.8	23.0%	43.9%
Light Trucks					
Less than 6,001 lb	50,545.7	62,798.4	62,617.3	24.2%	23.9%
Medium Trucks					
6,001 to 10,000 lb	4,647.5	5,301.5	17,142.3	14.1%	268.8%
10,001 to 14,000 lb	694.3	818.9	1,142.1	17.9%	64.5%
14,001 to 16,000 lb	282.4	315.9	395.9	11.9%	40.2%
16,001 to 19,500 lb	282.3	300.8	376.1	6.6%	33.2%
Light-heavy Trucks					
19,501 to 26,000 lb	732.0	729.3	910.3	-0.4%	24.4%
Heavy Trucks					
26,001 to 33,000 lb	387.3	427.7	436.8	10.4%	12.8%
33,001 to 40,000 lb	232.6	256.7	228.8	10.4%	-1.6%
40,001 to 50,000 lb	338.6	399.9	318.4	18.1%	-6.0%
50,001 to 60,000 lb	226.7	311.4	326.6	37.4%	44.1%
60,001 to 80,000 lb	781.1	1,069.8	1,178.7	37.0%	50.9%
80,001 to 100,000 lb	33.3	46.3	68.9	39.0%	106.9%
100,001 to 130,000 lb	12.3	17.9	26.4	45.5%	114.6%
130,000 lb or more	4.6	5.9	6.3	28.3%	37.0%
Not reported	<50	<50	N	N	N

KEY: lb = pound; N = data do not exist.

NOTES

Average vehicle weight is the empty weight of the vehicle plus the average load of the vehicle.

Excludes vehicles owned by Federal, state, or local governments; ambulances; buses; motor homes; farm tractors; unpowered trailer units; and trucks reported to have been sold, junked, or wrecked prior to July 1 of the year preceding the 1992 and 1997 surveys and January 1, 2002 for the 2002 survey.

SOURCE

1992, 1997: U.S. Census Bureau, *1997 Economic Census: Vehicle Inventory and Use Survey: United States*, EC97TV-US (Washington, DC: 1999).

2002: U.S. Census Bureau, *2002 Economic Census: Vehicle Inventory and Use Survey: United States*, EC02TV-US (Washington, DC: 2004).

TABLE 1-22: World Motor Vehicle Production, Selected Countries (Thousands of vehicles)

	Passenger cars ^a							
	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL world	36,111	37,318	38,474	37,286	38,816	40,732	40,144	41,215
U.S. percent of world	18%	16%	15%	15%	15%	14%	12%	12%
Argentina	227	269	366	353	225	239	170	111
Australia	314	303	320	350	294	324	286	307
Austria	59	97	98	91	124	116	131	131
Belgium	386	368	356	319	218	912	1,059	937
Brazil	1,297	1,459	1,680	1,244	1,102	1,348	1,482	1,521
Canada	1,337	1,279	1,374	1,122	1,626	1,551	1,275	1,369
China	321	382	482	507	570	620	704	1,091
Czech Republic ^b	208	263	321	368	348	428	457	441
France	3,051	3,148	2,259	2,603	2,676	2,883	3,182	3,284
Germany	4,360	4,540	4,678	5,348	5,310	4,803	5,301	4,799
India	330	396	410	384	519	514	548	706
Italy	1,422	1,318	1,563	1,402	1,410	1,422	1,272	1,126
Japan	7,611	7,864	8,491	8,056	8,100	8,363	8,118	8,619
South Korea	2,003	2,265	2,308	1,625	2,362	2,602	2,471	2,651
Malaysia	164	176	280	126	200	280	345	U
Mexico	699	798	855	953	994	1,130	1,001	960
Netherlands	100	145	197	243	262	215	189	182
Poland	347	353	295	460	651	533	367	287
Portugal	41	119	186	181	187	191	177	183
Romania	71	76	108	104	88	58	57	U
Russia	838	868	982	U	946	966	1,022	981
Spain	2,131	2,213	2,342	2,217	2,029	2,445	2,211	2,267
Sweden	388	368	376	368	385	260	248	238
Taiwan	282	265	268	293	255	265	195	245
Turkey	233	208	243	U	U	297	175	204
United Kingdom	1,532	1,686	1,698	1,748	1,787	1,629	1,492	1,628
United States	6,351	6,083	5,927	5,554	5,638	5,542	4,879	5,019
Yugoslavia, Federal Republic of	8	9	11	U	U	U	U	U

TABLE 1-22: World Motor Vehicle Production, Selected Countries (Thousands of vehicles)—*continued*

	Commercial vehicles ^c							
	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL world	13,926	14,147	14,988	14,811	16,132	16,796	16,181	17,757
U.S. percent of world	40%	40%	41%	44%	46%	43%	40%	41%
Argentina	59	44	80	105	80	101	66	48
Australia	17	19	29	34	17	25	34	37
Austria	9	9	10	12	16	25	24	20
Belgium	82	69	74	87	74	121	129	119
Brazil	332	346	388	329	242	323	316	271
Canada	1,071	1,118	1,198	1,050	1,430	1,411	1,258	1,260
China	1,114	1,084	1,096	1,121	1,235	1,389	1,628	2,160
Czech Republic ^b	8	9	47	42	27	27	8	6
France	424	443	322	351	357	469	447	409
Germany	307	303	345	379	378	395	390	346
India	306	366	336	129	261	282	277	186
Italy	245	227	254	290	291	316	308	301
Japan	2,585	2,482	2,484	1,994	1,805	1,781	1,660	1,639
South Korea	523	548	510	329	471	513	475	496
Malaysia	0	0	0	7	5	15	14	U
Mexico	236	422	503	500	540	792	856	845
Netherlands	32	19	20	28	25	52	50	49
Poland	34	48	27	39	44	24	20	23
Portugal	16	13	81	90	65	56	62	68
Romania	22	23	21	23	19	14	12	U
Russia	156	136	192	U	226	237	228	239
Spain	203	199	220	609	644	587	639	588
Sweden	102	95	104	114	109	36	38	38
Taiwan	124	101	113	112	95	100	77	92
Turkey	49	69	102	U	U	133	95	142
United Kingdom	233	238	238	233	186	189	193	193
United States	5,635	5,716	6,192	6,452	7,387	7,228	6,546	7,261
Yugoslavia, Federal Republic of	2	1	2	U	U	U	U	U

Continued next page

TABLE 1-22: World Motor Vehicle Production, Selected Countries (Thousands of vehicles)—*continued*

	Total Passenger cars ^a and Commercial vehicles ^c							
	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL world	50,036	51,465	53,463	52,098	54,948	57,528	56,325	58,973
U.S. percent of world	24%	23%	23%	23%	24%	22%	20%	21%
Argentina	286	313	446	458	305	340	236	159
Australia	331	322	349	384	311	348	319	344
Austria	68	106	108	103	139	141	155	151
Belgium	468	437	430	406	291	1,033	1,187	1,056
Brazil	1,629	1,805	2,067	1,573	1,344	1,671	1,798	1,793
Canada	2,408	2,397	2,571	2,173	3,057	2,962	2,532	2,629
China	1,435	1,466	1,578	1,628	1,805	2,009	2,332	3,251
Czech Republic ^b	216	272	369	411	376	455	465	447
France	3,475	3,591	2,581	2,954	3,033	3,352	3,628	3,693
Germany	4,667	4,843	5,023	5,727	5,688	5,198	5,692	5,145
India	636	762	746	513	780	796	825	892
Italy	1,667	1,545	1,817	1,693	1,701	1,738	1,580	1,427
Japan	10,196	10,346	10,975	10,050	9,905	10,145	9,777	10,258
South Korea	2,526	2,813	2,818	1,954	2,832	3,115	2,946	3,148
Malaysia	164	176	280	134	205	295	359	U
Mexico	935	1,220	1,358	1,453	1,534	1,923	1,857	1,805
Netherlands	132	164	218	271	287	267	239	231
Poland	381	401	322	499	695	556	387	310
Portugal	57	132	267	271	252	247	240	251
Romania	93	99	129	127	107	72	69	U
Russia	994	1,004	1,174	U	1,172	1,203	1,250	1,220
Spain	2,334	2,412	2,562	2,826	2,672	3,033	2,850	2,855
Sweden	490	463	480	483	494	296	286	276
Taiwan	406	366	381	405	350	365	272	337
Turkey	282	277	344	U	U	431	271	347
United Kingdom	1,765	1,924	1,936	1,981	1,973	1,817	1,685	1,821
United States	11,985	11,799	12,119	12,006	13,025	12,771	11,425	12,280
Yugoslavia, Federal Republic of	10	10	14	U	U	U	U	U

KEY: N = data do not exist; U = data are not available.

^a Does not include minivans, pickups, and sport utility vehicles.

^b Formerly Czechoslovakia.

^c Includes all trucks and buses. Light trucks, such as pickups, sport utility vehicles, and minivans are included under commercial vehicles.

NOTES

Prior to 2000, the country of manufacture was recognized as the producing country. To conform with current OICA (International Organization of Motor Vehicle Manufacturers) practices, starting in 2000, the country of final assembly was recognized as the producing country. This explains the sudden change in trends across some countries from 1999 to 2000.

Numbers may not add to totals due to rounding.

SOURCE

Ward's, *Motor Vehicle Facts & Figures 2003* (Southfield, MI: 2003), p. 12 and similar tables in previous editions.

TABLE 1-23: Number and Size of the U.S. Flag Merchant Fleet and Its Share of the World Fleet (Oceangoing ships of 1,000 gross tons and over)

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
World fleet	24,867	25,555	23,596	23,943	23,753	24,331	25,092	25,608	26,858	27,557	27,825	28,259	28,318	28,296	28,761	28,650
U.S. fleet	864	737	636	619	603	565	543	509	495	477	470	463	454	443	426	416
U.S. share of the world fleet	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%
Freighters, total	471	417	367	359	349	322	308	295	292	288	289	284	286	283	276	275
Deadweight tons (DWT) (thousands)	6,885	7,353	7,265	7,156	7,211	7,040	6,866	6,517	6,419	6,458	6,732	6,696	6,680	6,635	6,404	6,538
General cargo ^a	259	209	166	165	182	169	152	142	146	142	140	137	136	132	126	124
DWT (thousands)	3,329	2,980	2,605	2,592	2,973	2,913	2,677	2,472	2,467	2,420	2,400	2,404	2,362	2,162	1,838	1,818
Containership	121	104	92	92	83	87	86	81	83	85	91	89	90	91	90	87
DWT (thousands)	2,289	2,651	2,856	2,856	2,722	2,812	2,802	2,600	2,639	2,743	3,096	3,056	3,058	3,200	3,292	3,309
Partial containerships	68	63	59	52	30	3	3	3	1	1	1	1	1	1	1	1
DWT (thousands)	940	904	836	741	456	57	57	57	17	17	17	17	17	17	17	17
RO / RO	23	41	50	50	54	63	67	69	62	60	58	58	60	60	60	64
DWT (thousands)	327	818	968	967	1,060	1,258	1,330	1,388	1,296	1,278	1,236	1,236	1,260	1,273	1,273	1,411
Tankers, total	308	258	233	226	220	210	200	181	173	161	154	154	142	130	120	110
DWT (thousands)	16,152	15,534	15,641	14,993	14,180	13,048	11,945	11,028	10,378	9,696	9,289	9,373	8,447	7,532	6,552	5,828
Petroleum/chemical ships ^b	N	244	219	212	206	196	186	167	159	148	145	146	142	130	120	110
DWT (thousands)	N	14,574	14,681	14,033	13,279	12,143	11,040	10,123	9,473	8,857	8,737	8,845	8,447	7,532	6,552	5,828
Liquefied petroleum/natural gas ships	N	14	14	14	14	14	14	14	14	13	9	8	N	N	N	N
DWT (thousands)	N	960	960	960	901	905	905	905	905	839	552	528	N	N	N	N
Combination / passenger and cargo, total	65	37	10	10	11	12	13	13	15	14	12	11	11	13	12	11
DWT (thousands)	446	299	91	92	97	104	115	115	139	136	116	99	99	105	100	90
Bulk carriers, total	20	25	26	24	23	21	22	20	15	14	15	14	15	17	18	20
DWT (thousands)	607	1,152	1,270	1,014	991	949	1,042	925	575	321	604	579	604	706	797	837

KEY: N = data do not exist; RO/RO = roll-on/roll-off vessels.

^a Includes barge carriers, breakbulk, partial containership, refrigerated cargo, and specialized cargo ships.

^b Includes integrated tug/barges.

NOTES

Excludes nonmerchant type and/or U.S. Navy-owned vessels currently in the National Defense Reserve Fleet.

Excludes ships operating exclusively on the Great Lakes and inland waterways and special types such as: channel ships, icebreakers, cable ships, and merchant ships owned by military forces. Data through 2002 are as of December 31 of the year shown. Beginning in 2003 data are as of October 1.

SOURCES

1980-2002: U.S. Department of Transportation, Maritime Administration, *Merchant Fleets of the World* (Washington, DC: Annual issues), and unpublished revisions.

2003: U.S. Department of Transportation, Maritime Administration, *U.S.-Flag Merchant Fleet* (Washington, DC: 2004) and personal communication, June 2004.



Section C

Condition

TABLE 1-24: U.S. Airport Runway Pavement Conditions

	1986	1990	1993	1997	1999	2000	2001	2002	2003
NPIAS ^a airports, number	3,243	3,285	3,294	3,331	3,344	3,361	3,364	3,358	3,346
Good condition (percent)	61%	61%	68%	72%	72%	73%	73%	71%	75%
Fair condition (percent)	28%	29%	25%	23%	23%	22%	22%	24%	21%
Poor condition (percent)	11%	10%	7%	5%	5%	5%	5%	5%	4%
Commercial service airports ^b , number	550	568	554	566	547	546	546	536	510
Good condition (percent)	78%	78%	79%	79%	78%	79%	79%	79%	80%
Fair condition (percent)	15%	17%	18%	19%	20%	19%	19%	19%	18%
Poor condition (percent)	7%	5%	3%	2%	2%	2%	2%	2%	2%

KEY: NPIAS = National Plan of Integrated Airport Systems.

^a The U.S. Department of Transportation, Federal Aviation Administration's (FAA's) National Plan of Integrated Airport Systems is composed of all commercial service airports, all reliever airports, and selected general aviation airports. It does not include over 1,000 publicly owned public-use landing areas, privately owned public-use airports, and other civil landing areas not open to the general public. NPIAS airports account for almost all enplanements. In 2001, there were 15,942 non-NPIAS airports. See table 1-3 for more detail on airports.

^b Commercial service airports are defined as public airports receiving scheduled passenger service, and having at least 2,500 enplaned passengers per year.

NOTES

Data are as of January 1 of each year. Runway pavement condition is classified by the FAA as follows:

Good: All cracks and joints are sealed.

Fair: Mild surface cracking, unsealed joints, and slab edge spalling.

Poor: Large open cracks, surface and edge spalling, vegetation growing through cracks and joints.

SOURCES

Condition:

1986-90: U.S. Department of Transportation, Federal Aviation Administration, *National Plan of Integrated Airport Systems* (Washington DC: 1991).

1993: Ibid. (Washington DC: 1995).

1997, 1999-2003: U.S. Department of Transportation, Federal Aviation Administration, Office of Airport Planning and Programming, National Planning Division, personal communication, 1997, 2000, Aug. 20, 2001, May 27, 2002, and Jan. 29, 2004.

Total number of airports:

1986-2003: Ibid., June 23, 2000, Aug. 20, 2001, May 27, 2002, and Jan. 29, 2004.

TABLE 1-25: Median Age of Automobiles and Trucks in Operation in the United States

Year	Automobiles	Light trucks ^a	All trucks ^b
1990	6.5	N	6.5
1991	6.7	N	6.8
1992	7.0	N	7.2
1993	7.3	7.1	7.5
1994	7.5	7.2	7.5
1995	7.7	7.4	7.6
1996	7.9	7.5	7.7
1997	8.1	7.3	7.8
1998	8.3	7.1	7.6
1999	8.3	6.9	7.2
2000	8.3	6.7	6.9
2001	(R) 8.3	6.1	6.8
2002	8.4	6.6	6.8
2003	8.6	6.5	6.7

KEY: N = data do not exist; R = revised.

^a Gross vehicle weight 1-3.

^b Gross vehicle weight 1-8.

NOTES

Data are as of July 1 of each year.

The National Household Travel Survey (formerly the Nationwide Personal Transportation Survey), conducted by the U.S. Department of Transportation, estimates the mean age of household vehicles for several years:

	1969	1977	1983	1990	1995	2001
Automobile	5.1	5.5	7.2	7.6	8.2	8.5
Van	N	6.4	8.5	5.9	6.7	7.0
Sport utility	N	N	N	N	6.6	6.1
Pickup	N	7.3	8.5	8.4	9.7	9.4
Other truck	N	11.6	12.4	14.5	14.9	16.8
RV/motor home	N	4.5	10.7	10.4	13.2	12.5

KEY: N = data do not exist.

The 1969, 1977, 1983, and 1990 surveys do not include a separate category for sports utility vehicles (SUV), while the 1995 and 2001 surveys do. In the 1990, most SUVs were classified as automobiles. SOURCE: U.S. Department of Transportation, Federal Highway Administration, *1995 Nationwide Personal Transportation Survey: Summary of Travel Trends* (Washington, DC: 1999); U.S. Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, 2001 National Household Travel Survey (NHTS) data, available at Internet site <http://nhts.ornl.gov/2001/index.shtml> as of Aug. 21, 2003.

SOURCE FOR TABLE 1-25

The R.L. Polk Co., Internet site <http://www.polk.com> as of Feb. 9, 2004.

TABLE 1-26: Condition of U.S. Roadways by Functional System

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
RURAL										
Interstates miles reported	33,547	31,254	31,312	31,431	30,498	32,820	32,888	32,951	32,907	31,956
Poor, percent	8.7	6.3	3.9	3.6	4.1	2.4	2.1	1.9	2.1	1.6
Mediocre, percent	^b	20.7	19.1	19.1	16.5	14.0	12.2	11.7	10.2	9.8
Fair, percent	31.9	22.3	21.7	20.7	17.8	18.1	16.9	15.4	15.5	15.4
Good, percent	^b	36.9	38.8	41.0	42.6	44.0	44.8	43.3	44.0	43.9
Very good, percent	59.5	13.9	16.6	15.7	19.0	21.5	23.9	27.7	28.2	29.3
Unpaved, percent	N	N	N	N	N	N	N	N	N	N
Miles not reported ^a	N	1,326	1,508	1,382	2,313	153	162	109	84	87
Other principal arterials miles reported	83,802	89,265	92,103	92,170	93,333	97,247	(R) 97,297	97,947	97,854	96,656
Poor, percent	3.4	4.4	1.4	1.6	1.4	0.9	0.8	0.7	0.7	0.7
Mediocre, percent	^b	7.6	5.8	4.9	4.6	3.7	3.2	3.0	2.7	2.8
Fair, percent	42.6	51.1	49.1	47.7	43.3	41.5	38.7	37.3	35.6	35.5
Good, percent	^b	27.9	34.4	37.2	38.3	40.5	42.9	42.5	44.2	44.6
Very good, percent	53.8	9.0	9.3	8.6	12.3	13.5	14.4	16.5	16.7	16.4
Unpaved, percent	N	N	N	N	N	N	N	N	N	N
Miles not reported ^a	N	8,683	6,028	6,083	5,524	1,587	(R) 1,619	1,247	1,009	386
Minor arterials miles reported	144,735	121,443	126,381	126,525	130,591	135,192	(R) 136,096	134,698	136,955	134,984
Poor, percent	4.6	3.7	2.3	2.3	1.9	1.7	1.7	1.7	1.3	1.3
Mediocre, percent	^b	9.0	8.2	6.7	6.0	5.2	5.3	5.2	4.5	4.8
Fair, percent	48.2	54.7	50.7	50.4	47.2	47.3	46.2	44.9	43.6	43.0
Good, percent	^b	23.9	31.0	33.6	34.3	34.4	35.6	36.9	39.1	41.2
Very good, percent	47.2	8.7	7.7	7.0	10.6	11.4	11.2	11.3	11.6	9.7
Unpaved, percent	-	N	N	N	N	N	N	N	N	N
Miles not reported ^a	N	15,708	10,978	10,978	6,664	1,968	(R) 1,436	2,883	606	607

Continued next page

TABLE 1-26: Condition of U.S. Roadways by Functional System—continued

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Major collectors miles reported	436,365	431,712	432,117	386,122	171,134	(R) 389,134	(R) 388,488	389,573	389,125	383,414
Poor, percent	8.9	6.5	6.7	7.8	8.8	(R) 15.4	8.5	7.6	7.7	7.4
Mediocre, percent	^b	11.4	10.3	12.3	13.0	(R) 15.8	12.7	12.8	11.8	11.7
Fair, percent	43.8	30.8	34.4	37.6	33.5	(R) 44.8	43.7	43.7	43.4	44.3
Good, percent	^b	17.4	20.0	23.0	21.3	(R) 17.2	22.0	23.4	24.9	25.1
Very good, percent	36.2	23.7	18.4	19.3	23.4	(R) 6.7	13.2	12.5	12.2	11.4
Unpaved, percent	11.1	10.2	10.1	N	N	N	N	N	N	N
Miles not reported ^a	N	N	N	2,402	217,566	N	N	N	N	N
URBAN										
Interstates miles reported	11,527	12,307	12,430	12,477	12,231	13,109	13,139	13,261	13,367	14,331
Poor, percent	8.6	10.4	8.6	9.0	9.4	7.3	6.5	7.4	7.7	7.7
Mediocre, percent	^b	26.8	28.3	27.0	25.5	23.1	21.7	20.8	20.6	19.1
Fair, percent	32.2	23.8	24.7	24.4	21.8	(R) 22.5	21.4	20.9	20.3	18.8
Good, percent	^b	27.5	30.7	32.9	32.0	34.9	37.1	35.9	36.0	36.6
Very good, percent	59.1	11.4	7.6	6.7	11.4	12.0	13.3	14.9	15.4	17.9
Unpaved, percent	N	N	N	N	N	N	N	N	N	N
Miles not reported ^a	N	857	787	771	1,040	230	226	147	123	131
Other freeways and expressway miles reported	7,670	7,804	8,410	8,480	8,772	8,860	(R) 8,796	8,955	9,242	9,786
Poor, percent	2.2	4.8	3.4	3.3	3.2	2.6	2.8	3.1	2.7	2.4
Mediocre, percent	^b	9.8	8.7	8.7	8.7	(R) 8.1	8.1	7.1	7.6	8.3
Fair, percent	43.9	54.7	54.7	58.5	54.3	53.6	(R) 50.7	50.6	48.6	45.7
Good, percent	^b	20.4	26.3	25.2	27.1	(R) 29.0	31.6	31.5	33.3	35.0
Very good, percent	53.9	10.3	6.8	4.2	6.6	6.8	6.8	7.7	7.9	8.6
Unpaved, percent	N	N	N	N	N	N	N	N	N	N
Miles not reported ^a	N	1,166	617	579	397	281	(R) 353	176	82	81

TABLE 1-26: Condition of U.S. Roadways by Functional System—continued

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Other principal arterials miles reported	51,987	41,444	44,498	45,009	44,886	48,045	(R) 47,890	48,931	50,016	53,431
Poor, percent	5.9	12.4	11.8	12.1	12.9	12.5	13.2	12.9	13.3	12.7
Mediocre, percent	^b	14.7	14.1	14.6	18.5	18.1	16.8	16.4	16.4	16.4
Fair, percent	49.0	47.2	48.9	49.5	45.3	45.2	45.1	45.7	46.1	46.7
Good, percent	^b	15.9	17.5	17.8	17.6	18.8	19.4	19.5	19.4	19.5
Very good, percent	45.1	9.7	7.7	6.0	5.8	5.4	5.4	5.5	4.9	4.7
Unpaved, percent	N	N	N	N	N	N	N	N	N	N
Miles not reported ^a	N	11,352	8,485	8,209	8,246	5,154	(R) 5,426	4,126	3,422	3,440
Minor arterials miles reported	74,656	88,510	89,020	88,484	45,275	(R) 88,663	(R) 88,338	88,260	89,559	92,527
Poor, percent	8.9	6.7	6.9	7.2	5.7	(R) 19.4	10.0	10.5	10.5	11.4
Mediocre, percent	^b	13.6	13.0	13.0	12.2	(R) 17.4	16.0	15.9	16.1	16.5
Fair, percent	48.5	36.9	37.9	37.9	36.0	(R) 40.7	39.8	41.1	40.7	41.6
Good, percent	^b	20.4	20.7	21.4	22.1	(R) 14.2	16.9	16.8	17.4	16.7
Very good, percent	42.1	22.1	21.1	20.6	24.0	(R) 8.3	17.3	15.7	15.3	13.8
Unpaved, percent	0.5	0.3	0.4	N	N	N	N	N	N	N
Miles not reported ^a	N	N	N	374	43,435	N	N	N	N	N
Collectors miles reported	78,248	87,331	87,790	86,666	53,806	(R) 86,821	(R) 86,030	86,267	87,754	94,939
Poor, percent	16.5	9.7	9.7	10.6	8.1	(R) 22.1	14.7	14.6	15.4	16.5
Mediocre, percent	^b	16.8	16.6	16.0	12.8	(R) 17.5	17.4	17.3	17.4	17.5
Fair, percent	50.4	39.0	39.2	39.0	39.4	(R) 37.7	35.7	36.6	36.8	36.0
Good, percent	^b	17.2	18.2	18.4	18.8	(R) 12.8	14.2	13.5	13.7	13.4
Very good, percent	31.7	16.6	15.4	15.9	20.9	(R) 9.9	18.0	18.1	16.7	16.6
Unpaved, percent	1.3	0.8	0.9	N	N	N	N	N	N	N
Miles not reported ^a	N	N	N	663	32,921	N	N	N	N	N

KEY: N = data do not exist; R = revised; — = value too small to report.

^a Historical differences in miles not reported result from the transition from the Present Serviceability Rating (PSR) to the International Roughness Indicator (IRI).^b Included in row below.

Continued next page

TABLE 1-26: Condition of U.S. Roadways by Functional System—Continued**NOTES**

Because of the transition to a new indicator for pavement condition beginning with U.S. Department of Transportation, Federal Highway Administration (FHWA) data published in 1993, comparisons between pre-1993 data and 1993 and later data are difficult. Thus, trend comparisons should be made with care. For additional information, the reader is referred to the accuracy profile for this table in the appendix. Total mileage in this table will not match that in table 1-5 because of a change in the method of creating mileage-based tables derived from the Highway Performance Monitoring System, beginning with the 1997 issue of FHWA's Highway Statistics.

Data are for the 50 states and the District of Columbia.
Numbers may not add to totals due to rounding.

SOURCES

1990: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table HM-63.

1995-2003: *Ibid.*, table HM-63 for rural major collector, urban minor arterial, and urban collector, and table HM-64 for all other categories.

TABLE 1-27: Condition of U.S. Highway Bridges

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL bridges	572,205	581,135	581,863	582,751	582,976	585,542	589,674	589,685	590,877	590,753
Urban bridges	108,770	122,537	124,950	127,633	128,312	130,339	133,384	133,401	135,337	135,228
Rural bridges	463,435	458,598	456,913	455,118	454,664	455,203	456,290	456,284	455,540	455,525
Urban deficient bridges, total	47,113	42,692	43,181	41,711	41,661	42,032	42,093	42,088	42,179	42,189
Structurally	16,847	15,205	15,094	14,846	14,073	12,967	12,695	12,705	12,504	12,310
Functionally	30,266	27,487	28,087	26,865	27,588	29,065	29,398	29,383	29,675	29,879
Rural deficient bridges, total	191,107	142,575	139,545	134,174	130,911	128,018	122,993	122,946	120,612	118,381
Structurally	121,018	89,112	86,424	83,629	78,999	75,183	70,881	70,890	68,762	67,391
Functionally	70,089	53,463	53,121	50,545	51,912	52,835	52,112	52,056	51,850	50,990
All deficient bridges, total	238,220	185,267	182,726	175,885	172,572	170,050	165,086	165,034	162,791	160,570
Structurally	137,865	104,317	101,518	98,475	93,072	88,150	83,576	83,595	81,266	79,701
Functionally	100,355	80,950	81,208	77,410	79,500	81,900	81,510	81,439	81,525	80,869

NOTES

U.S. totals include the 50 states, the District of Columbia, and Puerto Rico.

Structurally deficient bridges are defined as those needing significant maintenance attention, rehabilitation, or replacement.

Functionally deficient bridges are defined as those that do not have the lane widths, shoulder widths, or vertical clearances adequate to serve traffic demand, or the bridge may not be able to handle occasional roadway flooding.

Table includes: Rural-Interstate, principal arterial, minor arterial, major collector, minor collector and local roads; Urban-Interstate, other freeways or expressways, other principal arterial, minor arterial, collector, and local roads.

Data for 1990, 1992, 1997-99, and 2001 are as of December of those years; data for 1991 and 1994-96 are as of June of those years; data for 1993 are as of September of that year; data for 2000 are as of August of that year; data for 2002-03 are as of July of those years.

SOURCES

1990-2000: U.S. Department of Transportation, Federal Highway Administration, Office of Bridge Technology, National Bridge Inventory Database, personal communication, Aug. 14, 2001.

2001: U.S. Department of Transportation, Federal Highway Administration, Office of Bridge Technology, National Bridge Inventory Database, *Count of Bridges by Highway System*, Internet site <http://www.fhwa.dot.gov/bridge/britab.htm> as of Aug. 28, 2002.

2002-03: Ibid., National Bridge Inventory Database, CD-ROM (Washington, DC: Annual Issues), June 23, 2003 and July 20, 2004.

TABLE 1-28: Average Age of Urban Transit Vehicles (Years)

	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Transit rail										
Commuter rail locomotives ^a	16.3	15.7	15.9	17.6	17.0	14.7	13.2	13.4	14.2	16.0
Commuter rail passenger coaches	19.1	17.6	21.4	24.1	21.6	19.4	17.5	16.9	18.1	20.1
Commuter rail self-propelled passenger cars	12.3	15.9	19.8	21.1	22.3	23.2	24.3	25.4	26.2	27.1
Heavy-rail passenger cars	17.1	16.2	19.3	20.2	21.1	22.0	22.5	22.9	21.7	20.0
Light rail vehicles (streetcars)	20.6	15.2	16.8	16.0	15.9	15.7	15.7	16.1	16.4	16.3
Transit bus ^b										
Articulated	3.4	7.6	10.9	11.5	11.9	11.3	8.6	6.5	5.9	5.8
Full-size	8.1	8.2	8.7	8.8	8.6	8.5	8.4	8.1	7.8	7.5
Mid-size	5.6	6.6	6.9	6.3	5.8	5.7	5.6	5.6	5.7	5.6
Small	4.8	3.9	4.1	4.1	4.0	4.0	4.1	4.2	4.1	4.0
Trolley	U	10.9	13.1	14.0	14.7	14.6	15.6	16.4	20.4	15.4
Other										
Vans	3.8	2.8	3.1	3.1	3.0	2.9	3.1	3.1	3.3	4.9
Ferry boats	U	21.7	23.4	25.3	25.4	25.8	25.1	25.6	24.7	26.8

KEY: U = data are not available.

^a Locomotives used in Amtrak intercity passenger services are not included.

^b Full-size buses have more than 35 seats; mid-size buses have 25-35 seats; small buses have fewer than 25 seats.

SOURCE

1985-2001: U.S. Department of Transportation, Federal Transit Administration, *National Transit Database* (Washington, DC: Annual issues), table 29 and similar tables in earlier editions.

All data, except full-size, mid-size, and small transit bus:

2002: Ibid., *National Transit Database* (Washington, DC: Annual issues), table 25.

Full-size, mid-size, and small transit bus:

2002: Ibid., *National Transit Summaries and Trends* (Washington, DC: Annual issues), p. 74.

TABLE 1-29: Class I Railroad Locomotive Fleet by Year Built (Locomotive units)

Year built ^a	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total	18,835	18,344	18,004	18,161	18,505	18,812	19,269	19,684	20,261	20,256	20,028	19,745	20,506	20,774
Before 1970	5,117	4,353	4,038	3,766	3,535	b	b	b	b	b	f	f	f	f
1970-74	3,852	3,617	3,384	3,248	3,184	^c 6,048	^c 5,783	^c 5,529	^c 5,565	^c 5,196	f	f	f	f
1975-79	4,432	4,375	4,292	4,352	4,275	4,254	4,274	4,219	4,116	4,000	^g 8,541	^g 7,862	^g 7,133	^g 6,889
1980-84	2,837	2,826	2,784	2,730	2,625	2,754	2,735	2,728	2,723	2,581	2,411	2,153	1,790	1,655
1985-89	1,989	1,985	1,970	1,968	1,971	1,890	1,866	1,829	1,830	1,779	1,775	1,672	1,807	1,791
1990	608	605	604	604	599	^d 2,965	^d 2,959	^d 2,958	^d 2,736	^d 2,688	^d 2,648	^d 2,667	^d 2,702	^d 2,700
1991		583	595	595	594	e	e	e	e	e	e	e	e	e
1992			337	340	339	e	e	e	e	e	e	e	e	e
1993				558	602	e	e	e	e	e	e	e	e	e
1994					781	e	e	e	e	e	e	e	e	e
1995						901	945	983	953	951	973	^h 4,020	^h 4,582	^h 4,673
1996							707	696	708	706	697	i	i	i
1997								742	741	743	745	i	i	i
1998									889	890	890	i	i	i
1999										722	713	i	i	i
2000										635	635	691	987	863
2001												680	810	891
2002													695	725
2003														587

^a Disregards year of rebuilding.

^b Included in 1970-74 category.

^c Includes all locomotives built before 1975.

^d Includes locomotives built between 1990-94.

^e Included in 1990 category.

^f Included in 1975-79 category.

^g Includes all locomotives built before 1980.

^h Includes locomotives built between 1995-99.

ⁱ Included in 1995 category.

SOURCE

Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 50 and similar pages in earlier editions.

TABLE 1-30: Age and Availability of Amtrak Locomotive and Car Fleets

	1972	1975	1980	1985	1990	1995	2000	2001
Locomotives								
Percent available for service ^a	N	87	83	93	84	88	89	U
Average age (years) ^b	22.3	14.4	7.4	7.0	12.0	13.9	11.2	U
Passenger and other train cars								
Percent available for service ^a	N	82	77	90	90	90	91	U
Average age (years) ^b	22.0	24.7	14.3	14.2	20.0	21.8	19.4	U

KEY: N = data do not exist; U = data are not available.

^a Year-end daily average. Active units less backshop units undergoing heavy maintenance less back-ordered units undergoing progressive maintenance and running repairs.

^b Year-end average.

NOTE

1972 was Amtrak's first full fiscal year of operation.

SOURCES

1972-80: Amtrak, *Amtrak Annual Report* (Washington, DC: Annual issues).

1985-2000: Ibid., *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues).

TABLE 1-31: U.S. Flag Vessels by Type and Age (Number of vessels)

Age ^a	Vessel type							Total ^b
	Dry cargo	Tanker	Towboat	Passenger ^c	Offshore support / crewboats ^d	Dry barge	Tank / liquid barge ^e	
1990-91, total ^b	900	257	5,210	721	1,168	27,110	3,874	39,342
<6	80	6	132	151	85	2,335	162	2,951
6-10	161	38	706	120	318	4,570	316	6,229
11-15	212	50	1,029	110	474	7,639	829	10,343
16-20	141	35	844	80	144	6,374	750	8,368
21-25	82	38	750	65	84	2,607	759	4,385
>25	196	86	1,718	188	51	3,372	1,049	6,660
1992, total ^b	497	249	5,203	1,201	1,205	26,981	3,864	39,313
<6	36	5	134	219	93	3,224	296	4,012
6-10	73	28	398	198	208	1,783	121	2,829
11-15	135	54	1,137	203	567	9,114	902	12,150
16-20	73	33	926	169	189	6,696	740	8,853
21-25	31	42	716	122	91	2,475	677	4,167
>25	124	82	1,874	287	53	3,496	1,123	7,049
1993, total ^b	470	205	5,219	1,243	1,197	26,982	3,970	39,306
<6	25	3	135	207	103	3,558	325	4,356
6-10	67	22	205	221	107	1,070	68	1,764
11-15	135	43	1,221	211	597	8,810	869	11,894
16-20	70	33	968	164	218	6,772	791	9,019
21-25	41	31	674	129	106	2,904	655	4,543
>25	128	73	2,008	311	64	3,713	1,256	7,555
1994, total ^b	778	202	5,179	928	1,236	26,757	3,966	39,064
<6	46	4	146	157	107	3,630	399	4,489
6-10	103	12	151	185	61	1,171	36	1,719
11-15	200	36	1,135	123	540	7,903	754	10,691
16-20	130	44	966	122	309	6,314	799	8,684
21-25	90	32	664	82	130	3,873	638	5,509
>25	206	74	2,107	259	86	3,706	1,327	7,765
1995, total ^b	726	178	5,127	954	1,288	27,375	3,985	39,641
<6	38	5	168	149	119	3,975	489	4,943
6-10	90	8	134	195	58	1,483	46	2,014
11-15	168	34	959	133	463	6,387	611	8,760
16-20	135	38	988	121	412	6,507	736	8,939
21-25	80	29	726	91	141	4,897	697	6,661
>25	213	64	2,146	263	92	3,966	1,403	8,148

Continued next page

TABLE 1-31: U.S. Flag Vessels by Type and Age (Number of vessels)—*continued*

Age ^a	Vessel type							Total ^b
	Dry cargo	Tanker	Towboat	Passenger ^c	Offshore support / crewboats ^d	Dry barge	Tank / liquid barge ^e	
1996, total ^b	713	161	5,177	967	1,274	28,775	4,036	41,104
<6	43	7	205	153	123	5,189	573	6,293
6–10	74	8	118	188	61	2,041	87	2,577
11–15	141	29	715	142	351	4,505	346	6,229
16–20	155	36	1,036	119	460	7,234	840	9,881
21–25	79	23	842	87	155	5,416	723	7,325
>25	229	62	2,386	290	144	4,766	1,576	9,453
1997, total ^b	692	147	5,173	1,025	1,369	29,040	3,971	41,419
<6	52	8	227	150	122	5,515	519	6,593
6–10	66	2	118	187	94	2,582	181	3,230
11–15	96	27	396	152	223	1,800	137	2,831
16–20	183	36	1,173	131	588	8,943	928	11,982
21–25	84	21	918	102	177	5,772	727	7,801
>25	209	53	2,332	302	159	4,284	1,477	8,816
1998, total ^b	714	135	5,237	1,011	1,423	29,557	3,952	42,032
<6	56	12	247	150	163	5,877	485	6,991
6–10	55	3	124	168	105	3,117	267	3,839
11–15	105	19	196	166	111	1,113	72	1,782
16–20	179	31	1,198	129	634	8,591	865	11,626
21–25	88	22	979	106	211	5,909	763	8,076
>25	230	48	2,487	292	195	4,817	1,499	9,573
1999, total ^b	695	142	5,098	970	1,470	29,414	3,973	41,766
<6	60	12	302	144	245	6,640	565	7,968
6–10	49	3	140	146	114	3,192	298	3,943
11–15	97	12	146	183	61	1,231	39	1,769
16–20	146	35	1,101	120	571	7,414	742	10,129
21–25	99	30	953	95	283	5,302	760	7,522
>25	243	50	2,447	282	191	5,491	1,560	10,267
2000, total ^b	737	135	4,995	918	1,414	29,141	4,011	41,354
<6	66	11	325	134	246	6,721	582	8,085
6–10	50	4	143	118	106	3,051	329	3,802
11–15	113	8	142	178	58	1,565	48	2,112
16–20	136	34	929	124	454	5,846	602	8,125
21–25	105	30	954	90	332	5,365	712	7,588
>25	263	48	2,497	271	214	6,461	1,714	11,470

TABLE 1-31: U.S. Flag Vessels by Type and Age (Number of vessels)—*continued*

Age ^a	Vessel type							Total ^b
	Dry cargo	Tanker	Towboat	Passenger ^c	Offshore support / crewboats ^d	Dry barge	Tank / liquid barge ^e	
2001, total ^b	966	120	5,150	733	1,573	28,920	4,122	41,588
<6	114	12	369	84	305	6,830	623	8,337
6–10	76	3	167	81	111	2,815	388	3,641
11–15	132	5	125	138	68	2,043	85	2,596
16–20	139	32	692	110	372	4,241	329	5,916
21–25	154	28	972	77	452	6,126	805	8,614
>25	347	40	2,818	240	262	6,712	1,884	12,306
2002, total	989	108	5,180	750	1,591	28,313	4,068	41,002
<6	113	13	369	70	322	6,117	595	7,599
6–10	86	3	185	92	96	3,416	419	4,298
11–15	130	2	142	136	89	2,499	172	3,170
16–20	114	22	381	117	228	1,669	134	2,665
21–25	175	35	1,091	75	547	7,702	843	10,468
>25	368	33	3,004	256	305	6,731	1,904	12,603

^a Age is based on the year the vessel was built or rebuilt.

^b Totals may be greater than sum of columns because of unclassified vessels and vessels of unknown age; figures include vessels available for operation.

^c Includes passenger excursion/sightseeing, combination passenger and dry-cargo vessels, and ferries.

^d In 1992, offshore supply boats were designated as crewboats.

^e In 1992, tank barges were designated as liquid barges.

SOURCE

U.S. Army Corps of Engineers, *Waterborne Transportation Lines of the United States, Volume 1, National Summaries* (New Orleans, LA: Annual issues), table 4 in 2002 and similar tables in previous years; also available on Internet site <http://www.iwr.usace.army.mil> as of June 2004.

Section D
Travel and Goods
Movement

TABLE 1-32: U.S. Vehicle-Miles (Millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Air												
Air carrier, large certificated, domestic, all services	2,523	3,046	3,963	4,629	4,811	4,911	5,035	5,332	5,664	(R) 5,616	6,085	6,085
General aviation ^a	5,204	4,673	4,548	3,795	3,524	3,877	N	N	N	N	N	N
Highway ^b , total	1,527,295	1,774,826	2,144,362	2,422,696	2,485,848	2,561,695	2,631,522	2,691,056	2,746,925	(R) 2,797,287	2,855,756	2,890,893
Passenger car ^{b,c}	1,111,596	1,246,798	1,408,266	1,438,294	1,469,854	1,502,556	1,549,577	1,569,100	1,600,287	(R) 1,628,332	1,658,640	1,660,828
Motorcycle ^c	10,214	9,086	9,557	9,797	9,920	10,081	10,283	10,584	10,469	(R) 9,639	9,553	9,539
Other 2-axle 4-tire vehicle ^b	290,935	390,961	574,571	790,029	816,540	850,739	868,275	901,022	923,059	(R) 943,207	966,184	998,004
Truck, single-unit 2-axle 6-tire or more	39,813	45,441	51,901	62,705	64,072	66,893	68,021	70,304	70,500	(R) 72,448	75,887	77,562
Truck, combination	68,678	78,063	94,341	115,451	118,899	124,584	128,359	132,384	135,020	(R) 136,584	138,643	138,322
Bus	6,059	4,478	5,726	6,420	6,563	6,842	7,007	7,662	7,590	(R) 7,077	6,849	6,638
Transit ^d , total	2,287	2,791	3,242	3,550	3,650	3,746	3,794	3,972	4,081	4,196	(P) 4,277	U
Motor bus ^e	1,677	1,863	2,130	2,184	2,221	2,245	2,175	2,276	2,315	2,377	(P) 2,411	U
Light rail	18	17	24	35	38	41	44	49	53	54	(P) 61	U
Heavy rail	385	451	537	537	543	558	566	578	595	608	(P) 621	U
Trolley bus	13	16	14	14	14	14	14	14	15	13	(P) 14	U
Commuter rail	179	183	213	238	242	251	260	266	271	277	(P) 284	U
Demand responsive ^e	N	247	306	507	548	585	671	718	759	789	(P) 803	U
Ferry boat	h	h	2	3	2	3	3	3	3	3	(P) 3	U
Other	15	15	16	34	43	50	63	69	71	75	(P) 80	U
Rail												
Class I freight, train-miles	428	347	380	458	469	475	475	490	504	500	500	516
Class I freight, car-miles	29,277	24,920	26,159	30,383	31,715	31,660	32,657	33,851	34,590	34,243	34,680	35,555
Intercity/Amtrak ^f , train-miles	30	30	33	32	30	32	33	34	35	36	38	37
Intercity/Amtrak ^f , car-miles	235	251	301	292	276	288	312	342	368	378	379	332
Total train-miles ^g	458	377	413	490	499	507	508	524	539	536	537	553

KEY: N = data do not exist; P = preliminary; R = revised.

^a All operations other than those operating under 14 CFR 121 and 14 CFR 135. Data for 1996 are estimated using new information on nonrespondents and are not comparable to earlier years. Mileage in source is multiplied by 1.151 to convert to nautical-miles for 1985-1997.

Continued next page

TABLE 1-32: U.S. Vehicle-Miles (Millions)—continued

- b In July 1997, the FHWA published revised vehicle-miles data for the highway modes for many years. The major change reflected the reassignment of some vehicles from the passenger car category to the other 2-axle 4-tire vehicle category. This category was calculated prior to rounding.
- c U.S. Department of Transportation, Federal Highway Administration (FHWA), provides data separately for passenger car and motorcycle in its annual *Highway Statistics* series. However, the 1995 summary report provides updated data for passenger car and motorcycle combined. Passenger car figures in this table were computed by U.S. Department of Transportation, Bureau of Transportation Statistics, by subtracting the most current motorcycle figures from the aggregate passenger car and motorcycle figures.
- d Prior to 1985, excludes demand responsive and most rural and smaller systems funded via Sections 18 and 16(b)2, Federal Transit Act. The series is not continuous between 1980 and 1985. Transit rail modes are measured in car-miles. Car-miles measure individual vehicle-miles in a train. A 10-car train traveling 1 mile would equal 1 train-mile and 10 car-miles.
- e Motor bus and demand responsive figures are also included in the bus figure for highway.
- f Amtrak began operations in 1971.
- g Although both train-miles and car-miles are shown for rail, only train-miles are included in the total. A train-mile is the movement of a train, which can consist of multiple vehicles (cars), the distance of 1 mile. This differs from a vehicle-mile, which is the movement of 1 vehicle the distance of 1 mile. A 10-vehicle train traveling 1 mile would be measured as 1 train-mile and 10 vehicle-miles. Caution should be used when comparing train-miles with vehicle miles.
- h Ferry boat included with other.

SOURCES**Air:****Air carrier:**

- 1980: Civil Aeronautics Board, *Air Carrier Traffic Statistics* (Washington, DC: 1976, 1981), p. 4 (December 1976) and p. 2 (December 1981).
- 1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 3, line 25 plus line 46.

General aviation:

- 1980: U.S. National Transportation Safety Board estimate, personal communication, Dec. 7, 1998.
- 1985-90: Ibid., *General Aviation Activity and Avionics Survey* (Washington, DC: Annual issues), table 3.3.
- 1995-97: Ibid., *General Aviation and Air Taxi Activity and Avionics Survey* (Washington, DC: Annual issues), table 3.3.

Highway:**Passenger car and motorcycle:**

- 1980-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.

- 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.

Motorcycle:

- 1980: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1985* (Washington, DC: 1986), table VM-201A.

- 1985-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.

Other 2-axle 4-tire vehicle:

- 1980: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.

- 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.

Single-unit 2-axle 6-tires or more truck, combination truck, and bus:

- 1980: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.

- 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.

TABLE 1-32: U.S. Vehicle-Miles (Millions)—Continued

Transit:
1980-2002: American Public Transit Association, <i>Public Transportation Fact Book</i> (Washington, DC: 2004), table 18, 103, and similar tables in earlier editions.
Rail:
<i>Class I rail freight train- and car-miles:</i>
1980-2003: Association of American Railroads, <i>Railroad Facts 2004</i> (Washington, DC: 2004), p. 33 (train-miles) and p. 34 (car-miles).
<i>Intercity/Amtrak train-miles:</i>
1980-2001: Amtrak, <i>Amtrak Annual Report</i> , Statistical Appendix (Washington, DC: Annual issues).
2002-03: Association of American Railroads, <i>Railroad Facts 2004</i> (Washington, DC: 2004), p. 77.
<i>Intercity/Amtrak car-miles:</i>
1980-2000: Amtrak, Amtrak Corporate Reporting, Route Profitability System, personal communication, 2001.
2001-03: Association of American Railroads, <i>Railroad Facts 2004</i> (Washington, DC: 2004), p. 77.

TABLE 1-33: Roadway Vehicle-Miles Traveled (VMT) and VMT per Lane-Mile by Functional Class

	1980	1985	1990	1995	2000	2001	2002	2003
Urban VMT, total (millions)	855,265	1,044,098	1,275,484	1,489,534	(R) 1,663,773	1,676,379	1,727,596	(R) 1,805,508
Interstate	161,242	216,188	278,901	341,528	(R) 393,465	399,890	408,618	432,633
Other arterials ^a	484,189	578,270	699,233	815,170	(R) 900,392	913,726	937,357	973,936
Collector	83,043	89,578	106,297	126,929	(R) 135,372	137,922	141,874	153,751
Local	126,791	160,062	191,053	205,907	(R) 234,544	224,841	239,747	245,188
Rural VMT, total (millions)	672,030	730,728	868,878	933,289	(R) 1,083,152	1,105,083	1,128,160	1,085,385
Interstate	135,084	154,357	200,173	223,382	(R) 268,180	274,024	279,962	269,945
Other arterials ^a	262,774	282,803	330,866	368,595	(R) 420,599	426,945	433,805	416,596
Collector ^b	189,468	206,669	240,460	236,148	(R) 267,231	270,962	275,007	263,662
Local	84,704	86,899	97,379	105,164	(R) 127,142	133,152	139,386	135,182
Urban VMT per lane-mile, total (thousands)	613	677	764	810	869	852	861	856
Interstate	3,327	3,773	4,483	4,784	(R) 5,323	5,370	5,440	5,436
Other arterials ^a	1,451	1,556	1,751	1,829	(R) 1,974	1,997	2,025	2,012
Collector	572	552	634	686	718	728	743	741
Local	146	168	184	181	(R) 196	181	188	183
Rural VMT per lane-mile, total (thousands)	103	113	136	148	172	176	179	175
Interstate	1,031	1,170	1,473	1,693	(R) 1,993	2,035	2,080	2,070
Other arterials ^a	518	555	640	695	(R) 778	787	797	780
Collector ^b	132	141	164	167	189	192	195	190
Local	19	20	23	25	30	32	33	33

KEY: R = revised.

^a For urban: the sum of other freeways and expressways, other principal arterials, and minor arterials.
For rural: the sum of other principal arterials and minor arterials.

^b Collector is the sum of major and minor collectors (rural only).

NOTE

See table 1-6 for estimated highway lane-miles by functional class.

**TABLE 1-33: Roadway Vehicle-Miles Traveled (VMT) and VMT per Lane-Mile by Functional Class—
continued**

SOURCES

1980: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-202.

1995-2003: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table VM-2 and VM-2A.

Lane-miles:

1980-95: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, unpublished data, 1997, table HM-260.

2000-03: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table HM-60.

TABLE 1-34: U.S. Air Carrier Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons

	1975	1980	1985	1990	1995	(R) 2000	(R) 2001	2002	2003
AIRCRAFT DEPARTURES									
Total performed ^a	4,555,516	5,156,848	5,505,659	6,641,681	8,030,530	8,957,993	8,576,964	8,224,121	8,804,262
Total scheduled	4,530,535	5,204,564	5,591,596	6,758,571	7,920,467	8,680,059	8,367,753	8,163,234	8,719,284
Large hubs									
Performed	2,437,958	2,887,239	3,439,446	4,167,868	5,162,534	5,747,367	5,087,765	5,358,697	5,078,548
Scheduled	2,409,874	2,905,923	3,487,660	4,237,466	5,147,875	5,578,593	5,012,524	5,308,166	5,077,665
Medium hubs									
Performed	902,652	1,048,726	1,185,008	1,394,833	1,439,639	1,713,370	1,990,393	1,498,772	1,924,962
Scheduled	899,543	1,058,438	1,201,540	1,417,762	1,387,833	1,645,385	1,897,953	1,490,040	1,901,540
Small hubs									
Performed	640,589	598,559	514,176	669,450	738,231	780,396	815,700	747,715	1,015,831
Scheduled	644,133	608,738	524,048	679,103	711,947	761,263	796,472	777,324	983,410
Nonhubs									
Performed	574,317	622,324	367,029	409,530	690,126	716,860	683,106	618,937	784,921
Scheduled	576,985	631,465	378,348	424,240	672,812	694,818	660,804	587,704	756,669
ENPLANED REVENUE PASSENGERS^b									
Large hubs	196,782,144	281,408,852	363,341,497	438,544,001	526,055,483	639,446,947	595,972,862	577,422,530	595,149,842
Medium hubs	133,975,900	197,679,376	264,507,144	317,595,099	392,601,890	467,620,242	403,616,740	426,962,279	400,638,780
Small hubs	36,539,613	51,664,627	65,770,376	80,466,373	85,929,285	113,405,037	133,153,039	97,578,535	126,876,982
Nonhubs	19,406,607	23,393,324	24,240,726	30,771,383	33,561,098	40,389,121	40,692,711	37,713,263	49,025,098
	6,860,024	8,671,525	8,823,251	9,711,146	13,963,210	18,032,547	18,510,372	15,168,453	18,608,982
ENPLANED REVENUE TONS^c									
Freight, total	3,661,061	5,088,313	4,024,470	6,298,824	9,365,017	15,059,539	17,514,903	13,335,026	13,006,815
Large hubs	2,764,763	3,562,187	2,601,027	4,732,726	7,204,479	12,731,046	15,806,017	12,697,666	13,006,815
Medium hubs	2,265,665	3,008,311	2,047,988	3,001,217	4,402,327	6,313,583	5,873,484	5,658,380	5,218,742
Small hubs	358,044	414,325	469,057	1,446,744	1,950,318	4,795,686	6,802,985	5,380,734	4,132,885
Nonhubs	99,133	73,795	48,127	191,358	541,062	954,430	2,236,951	931,033	2,521,107
	41,922	65,756	35,855	93,407	310,772	667,346	892,597	727,519	1,133,081

TABLE 1-34: U.S. Air Carrier Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons—continued

	1975	1980	1985	1990	1995	(R) 2000	(R) 2001	2002	2003
Mail, total	896,298	1,526,125	1,423,443	1,566,098	2,160,538	2,328,494	1,708,886	637,361	842,331
Large hubs	677,179	1,091,059	1,082,567	1,146,589	1,546,568	1,647,633	1,104,674	481,719	628,115
Medium hubs	151,498	255,929	268,179	292,899	442,814	532,461	434,875	120,937	121,195
Small hubs	48,486	148,116	59,917	108,656	136,008	108,869	128,431	23,253	79,404
Nonhubs	19,134	31,021	12,781	17,954	35,149	39,531	40,907	11,452	13,617

KEY: R = revised.

^a Total performed includes scheduled departures performed minus those scheduled departures that did not occur plus unscheduled service.

^b The number of persons receiving air transportation from an air carrier for which remuneration is received by the carrier, excluding persons receiving reduced rate charges, such as air carrier employees, infants, and others (except ministers of religion, elderly individuals, and handicapped individuals).

^c The number of short tons of freight transported by an air carrier aboard an aircraft.

NOTES

Data are for all scheduled and nonscheduled service by large certificated U.S. air carriers at all airports served within the 50 states, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration. Not all scheduled service is actually performed. Moreover, for several years, total performed departures exceed total scheduled departures because nonscheduled departures are included in the totals. Prior to 1993, all scheduled and some nonscheduled enplanements for certificated air carriers were included; no enplanements were included for air carriers offering charter service only. Prior to 1990, freight includes both freight and express shipments, and mail includes priority and nonpriority U.S. mail and foreign mail; beginning in 1990, only aggregate numbers are reported.

Large certificated air carriers operate aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds and hold Certificates of Public Convenience and Necessity issued by the U.S. Department of Transportation authorizing the performance of air transportation. Data for commuter, intrastate, and foreign-flag air carriers are not included.

Air traffic hubs are designated as geographical areas based on the percentage of total passengers enplaned in the area. A hub may have more than one airport in it. (This definition of hub should not be confused with the definition used by the airlines in describing their "hub-and-spoke" route structures.) Individual communities fall into four hub classifications as determined by each community's percentage of total enplaned revenue passengers in all services and all operations of U.S. certificated route carriers within the 50 states, the District of Columbia, and other U.S. areas. Classifications are based on the percentage of total enplaned revenue passengers for each year according to the following: one percent or more = large, 0.25 to 0.9999 percent = medium, 0.05 to 0.249 percent = small, less than 0.05 = nonhub.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Airport Activity Statistics of Certified Route Air Carriers* (Washington, DC: Annual issues), tables 2, 3, 4, and 5.

2000-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Special Tabulation of data from the Office of Airline Information.

TABLE 1-35: Average Length of Haul, Domestic Freight and Passenger Modes (Miles)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002
Freight											
Air carrier	953	943	1,014	1,082	1,052	1,157	1,389	1,160	982	973	U
Truck ^a	272	259	263	286	363	366	391	416	473	485	U
Class I rail	461	503	515	541	616	665	726	843	843	859	853
Coastwise (water)	1,496	1,501	1,509	1,362	1,915	1,972	1,604	1,652	1,251	1,228	1,219
Lakewise (water)	522	494	506	530	536	524	553	514	506	509	529
Internal (water)	282	297	330	358	405	435	470	494	481	476	483
Intraport (water)	U	U	U	16	17	15	13	16	16	15	15
Crude (oil pipeline)	325	320	300	633	871	777	812	797	U	U	U
Petroleum products (oil pipeline)	269	335	357	516	414	391	387	402	U	U	U
Passenger											
Air carrier, domestic, scheduled	583	614	678	698	736	758	803	791	833	(R) 850	842
Bus, intercity	79	94	106	113	125	121	141	140	143	U	U
Commuter rail	21	21	22	23	23	24	22	24	23	23	23
Amtrak ^b	N	N	N	236	216	231	273	268	244	237	U

KEY: N = data do not exist; R = revised; U = data are not available.

^a Total Class I and Class II motor carriers of freight (less-than-truckload, specialized carrier for truckload, and others).

^b Amtrak began operations in 1971. Data are reported for fiscal years.

NOTES

Average length of haul for freight is calculated by dividing ton-miles in the previous table by estimates of tonnage from the various data sources. The calculation of average length of haul for passenger trips varies by mode: for air carrier it is calculated by dividing revenue passenger-miles by revenue passenger enplanements; for commuter rail, intercity bus, and Amtrak it is calculated by dividing passenger-miles by number of passengers.

SOURCES

Freight:

Air carrier, truck:

Eno Transportation Foundation, Inc., *Transportation In America, 2002* (Washington, DC: 2002), p. 65.

Class I rail:

Association of American Railroads, *Railroad Facts* (Washington, DC: 2003), p. 36.

TABLE 1-35: Average Length of Haul, Domestic Freight and Passenger Modes (Miles)—continued

Water:
 U.S. Army Corps of Engineers, *Waterborne Commerce of the United States, Part 5* (New Orleans, LA: Annual issues), section 1, table 1-4 .

Oil pipeline:
 1960-70: Transportation Policy Associates, Washington, DC, personal communication.
 1975-95: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 65.

Passenger:

Air carrier:
 U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues), p. 3, line 34.

Intercity bus and commuter rail:
 Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 64.

Commuter rail:
 1960-2000: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 64.
 2001-02: U.S. Department of Transportation, Federal Transit Administration, *National Transit Database* (Washington, DC: annual issues), table 19 and similar tables in earlier editions.

Amtrak:
 1970-85: Amtrak, corporate communication, Jan. 26, 1999.
 1990-2001: Amtrak, *Amtrak Annual Report* (Washington, DC: 2003), Statistical Appendix.

TABLE 1-36: Worldwide Commercial Space Launches

	TOTAL														
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	1990-2003
TOTAL space launches	15	12	14	11	15	23	24	38	41	39	35	16	24	17	324
United States, total	9	6	6	5	5	12	11	17	22	15	7	3	5	5	128
Athena	0	0	0	0	0	1	0	1	1	3	0	0	0	0	6
Atlas	1	2	3	3	4	8	7	6	5	4	3	1	3	4	54
Conestoga	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Delta	5	4	3	1	1	1	3	7	11	5	2	1	2	0	46
Pegasus	0	0	0	1	0	1	1	3	4	2	2	0	0	1	15
Taurus	0	0	0	0	0	0	0	0	1	1	0	1	0	0	3
Titan	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Europe, total	5	6	6	6	8	8	9	11	9	8	12	8	10	4	110
Ariane 4	5	6	6	6	8	8	9	11	9	8	8	6	7	1	98
Ariane 5	0	0	0	0	0	0	0	0	0	0	4	2	3	3	12
Russia, total	0	0	0	0	0	0	2	7	5	13	13	3	8	5	56
Cosmos	0	0	0	0	0	0	0	0	0	1	2	0	0	1	4
Dnepr	0	0	0	0	0	0	0	0	0	1	1	0	1	0	3
Proton	0	0	0	0	0	0	2	6	4	5	6	2	5	1	31
Rockot	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3
Shitl	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Soyuz	0	0	0	0	0	0	0	0	0	6	3	0	0	2	11
Start	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3
Ukraine, total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Zenit 2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1

TABLE 1-36: Worldwide Commercial Space Launches—continued

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	1990-2003
China, total	1	0	2	0	2	3	2	3	4	1	0	0	0	0	18
Long March 2C	0	0	0	0	0	0	0	1	4	1	0	0	0	0	6
Long March 2E	0	0	2	0	1	3	0	0	0	0	0	0	0	0	6
Long March 3	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3
Long March 3B	0	0	0	0	0	0	1	2	0	0	0	0	0	0	3
Sea Launch ^a , total	0	0	0	0	0	0	0	0	0	2	3	2	1	3	11
Zenit 3SL	0	0	0	0	0	0	0	0	0	2	3	2	1	3	11

^a Sea Launch is an international venture involving organizations in four countries and uses its own launch facility outside national borders. Their first commercial launch, in 1999, was licensed by the Federal Aviation Administration.

NOTE

A commercial launch is a launch that is internationally competed (i.e., available in principle to international launch providers) or whose primary payload is commercial in nature. FAA-licensed launches carrying captive government (NASA and DOD) or industry payloads (ORBCOMM, Delta 3 demosat, Zenit 3SL demosat, and others) are counted here. Data are for orbital launches only.

SOURCES

1990–99: U.S. Department of Transportation, Federal Aviation Administration, Associate Administrator for Commercial Space Transportation, personal communication, June 4, 2002.
 2000–2003: U.S. Department of Transportation, Federal Aviation Administration, *Commercial Space Transportation: 2003 Year in Review* (Washington, DC: January 2004), Internet site <http://ast.faa.gov/> as of June 7, 2004.

TABLE 1-37: U.S. Passenger-Miles (Millions)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air, total	33,399	57,626	117,542	147,400	219,068	290,136	358,873	414,688	531,329	502,406	U	U
Air carrier, certificated, domestic, all services	31,099	53,226	108,442	136,000	204,368	277,836	345,873	403,888	516,129	(R) 486,506	482,149	503,339
General aviation ^a	2,300	4,400	9,100	11,400	14,700	12,300	13,000	10,800	15,200	15,900	U	U
Highway, total ^b	1,272,078	1,555,237	2,042,002	2,404,954	2,653,510	3,012,953	3,561,209	3,868,070	4,390,076	(R) 4,643,794	4,733,824	4,723,059
Passenger car ^{bc}	1,144,673	1,394,803	1,750,897	1,954,166	2,011,989	2,094,621	2,281,391	2,286,887	2,544,457	(R) 2,556,481	2,604,065	2,624,108
Motorcycle ^{bc}	g	g	3,277	6,192	12,257	11,812	12,424	10,777	11,516	(R) 11,760	11,655	12,115
Other 2-axle 4-tire vehicle ^c	h	h	225,613	363,267	520,774	688,091	999,754	1,256,146	1,467,664	(R) 1,678,853	1,719,750	1,730,218
Truck, single-unit 2-axle 6-tire or more	98,551	128,769	27,081	34,606	39,813	45,441	51,901	62,705	70,500	(R) 85,489	89,547	77,562
Truck, combination	28,854	31,665	35,134	46,724	68,678	78,063	94,341	115,451	135,020	(R) 161,169	163,599	138,322
Bus ^d	N	N	N	N	N	94,925	121,398	136,104	160,919	(R) 150,042	145,208	140,735
Transit, total ^e	(i) 4,197	(i) 4,128	(i) 4,592	(i) 4,513	39,854	39,581	41,143	39,808	47,666	49,070	(P) 48,324	U
Motor bus ^d	N	N	N	N	21,790	21,161	20,981	18,818	21,241	22,022	(P) 21,841	U
Light rail	N	N	N	N	381	350	571	860	1,356	1,437	(P) 1,432	U
Heavy rail	N	N	N	N	10,558	10,427	11,475	10,559	13,844	14,178	(P) 13,663	U
Trolley bus	N	N	N	N	219	306	193	187	192	187	(P) 188	U
Commuter rail	4,197	4,128	4,592	4,513	6,516	6,534	7,082	8,244	9,402	9,548	(P) 9,504	U
Demand responsive ^d	N	N	N	N	N	364	431	607	839	855	(P) 853	U
Ferry boat	N	N	N	N	j	j	286	260	330	325	(P) 333	U
Other	N	N	N	N	390	439	124	273	462	518	(P) 510	U
Rail												
Intercity / Amtrak ^f	17,064	13,260	6,179	3,931	4,503	4,825	6,057	5,545	5,498	5,559	5,468	U

KEY: N = data do not exist; P = preliminary; R = revised.

^a All operations other than those operating under 14 CFR 121 and 14 CFR 135.

^b In July 1997, FHWA published revised passenger-miles data for the highway modes for a number of years. The major change reflected the reassignment of some vehicles from the passenger car category to the other 2-axle 4-tire vehicle category. Passenger-miles for passenger car, motorcycle, and other 2-axle 4-tire vehicles were derived by multiplying vehicle-miles for these vehicles by average vehicle occupancy rates, provided by the Nationwide Personal Transportation Survey (1977, 1983, and 1995) and the National Household Travel Survey (2001).

^c U.S. Department of Transportation, Federal Highway Administration (FHWA), provides data separately for passenger car and motorcycle in its annual *Highway Statistics* series. However, the 1995 summary report provides updated data for passenger car and motorcycle combined. Passenger car figures in this table were computed by U.S. Department of Transportation, Bureau of Transportation Statistics by subtracting the most current motorcycle figures from the aggregate passenger car and motorcycle figures.

TABLE 1-37: U.S. Passenger-Miles (Millions)—continued

- d Motor bus and demand responsive figures are also included in the bus figure for highway.
- e Prior to 1985, excludes demand responsive and most rural and smaller systems funded via Sections 18 and 16(b)2, Federal Transit Act. The series is not continuous between 1980 and 1985. Transit rail modes are measured in car-miles. Car-miles measure individual vehicle-miles in a train. A 10-car train traveling 1 mile would equal 1 train-mile and 10 car-miles.
- f Amtrak began operations in 1971. Does not include contract commuter passengers.
- g Included in passenger car.
- h Included in other single-unit 2-axle 6-tire or more truck.
- i Includes commuter rail figures only.
- j Ferryboat included in other.

NOTE

Air carrier passenger-miles are computed by summing the products of the aircraft-miles flown on each interairport segment multiplied by the number of passengers carried on that segment. Highway passenger-miles from 1960 to 1994 are calculated by multiplying vehicle-miles of travel as cited by FHWA by the average number of occupants for each vehicle type. Average vehicle occupancy rates are based on various sources, such as the Nationwide Personal Transportation Survey, conducted by the Federal Highway Administration, and the Truck Inventory and Use Survey, conducted by the Bureau of the Census. Transit passenger-miles are the cumulative sum of the distances ridden by each passenger. Rail passenger-miles represent the movement of 1 passenger for 1 mile.

SOURCES

Air:

Air carrier, domestic, all services:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: 1970), part III, table 2.

1965-70: Ibid., *Handbook of Airline Statistics, 1973* (Washington, DC: 1974), part III, table 2.

1975-80: Ibid., *Air Carrier Traffic Statistics* (Washington, DC: 1976, 1981), p. 4 (December 1976) and p. 2 (December 1981).

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), page 3, line 1.

General aviation:

1960-2001: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), pp. 45-46.

Highway:

Passenger car and motorcycle:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.

1995-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1 and Internet site www.fhwa.dot.gov/ohimstat.htm.

Motorcycle:

1970-80: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1985* (Washington, DC: 1986), table VM-201A.

1985-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1 and Internet site www.fhwa.dot.gov/ohimstat.htm.

Other 2-axle 4-tire vehicle:

1970-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.

1995-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1 and Internet site www.fhwa.dot.gov/ohimstat.htm.

Single-unit 2-axle 6-tires or more truck, combination truck, and bus:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.

1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>.

Continued next page

TABLE 1-37: U.S. Passenger-Miles (Millions)—continued

Transit:
Ferryboat:
 2000-02: Ibid., *Public Transportation Fact Book* (Washington, DC: 2003), table 100 and similar tables in earlier editions.
All other data:
 1960-2002: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: 2002), table 6 and similar tables in earlier editions.

Rail, Intercity / Amtrak:
 1960-80: Association of American Railroads, *Railroad Facts* (Washington, DC: Annual issues).
 1985: Amtrak, *Amtrak FY95 Annual Report Statistical Appendix* (Washington, DC: 1996), p. 4.
 1990-2002: Ibid., *Amtrak Annual Report Statistical Appendix* (Washington, DC: Annual issues).

TABLE 1-38: Principal Means of Transportation to Work (Thousands)

	1985		1989		1993		1997		1999		2001		2003	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All workers	99,592	100.0	106,630	100.0	103,741	100.0	116,469	100.0	118,041	100.0	120,191	100.0	115,342	100.0
Automobile, total	86,148	86.5	93,943	88.1	91,301	88.0	101,908	87.5	103,467	87.7	105,586	87.8	101,664	88.1
Drives self	72,137	72.4	81,322	76.3	79,449	76.6	90,207	77.5	92,363	78.2	93,942	78.2	91,607	79.4
Carpool, total	14,011	14.1	12,621	11.8	11,852	11.4	11,701	10.0	11,104	9.4	11,644	9.7	10,057	8.7
2-person	10,381	10.4	9,708	9.1	9,105	8.8	9,294	8.0	8,705	7.4	9,036	7.5	7,866	6.8
3-person	2,024	2.0	1,748	1.6	1,684	1.6	1,526	1.3	1,454	1.2	1,635	1.4	1,351	1.2
4+ person	1,606	1.6	1,165	1.1	1,063	1.0	881	0.8	945	0.8	973	0.8	840	0.7
Public transportation ^a	5,091	5.1	4,880	4.6	4,740	4.6	5,337	4.6	5,779	4.9	5,627	4.7	5,081	4.4
Taxicab	129	0.1	152	0.1	117	0.1	139	0.1	144	0.1	133	0.1	128	0.1
Bicycle or motorcycle	958	1.0	795	0.7	744	0.7	738	0.6	749	0.6	847	0.7	691	0.6
Walks only	4,032	4.0	3,634	3.4	3,227	3.1	3,869	3.3	3,627	3.1	3,408	2.8	3,171	2.7
Other means ^b	286	0.3	491	0.5	474	0.5	867	0.7	987	0.8	1,049	0.9	1,072	0.9
Works at home	2,947	3.0	2,736	2.6	3,137	3.0	3,611	3.1	3,288	2.8	3,401	2.8	3,536	3.1

^a Public transportation refers to bus, streetcar, subway, or elevated trains.

^b Other means include ferryboats, surface trains, and van service.

NOTES

Principal means of transportation refers to the mode used most often, when different means of transportation were used on different days of the week, or the mode used for the longest distance during the trip to work, when more than one mode is used to get to work each day. Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Housing and Urban Development, *American Housing Survey for the United States: 2003* (Washington, DC: 2004), table 2-24 and similar tables in earlier editions, Internet site <http://www.census.gov/hhes/www/ahs.html> as of Sept. 30, 2004.

**TABLE 1-39: Long-Distance Travel in the United States by Selected Trip Characteristics: 2001
(Roundtrips to destinations at least 50 miles away)**

	Person trips (thousands)		Person-miles (millions)		Trips in personal-use vehicles (thousands)		Vehicle-miles by personal-use vehicles (millions)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
TOTAL	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Principal means of transportation, total	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Personal-use vehicle	2,336,094	89.3	760,325	55.9	2,336,094	100.0	760,325	100.0
Airplane	193,290	7.4	557,609	41.0	NA	NA	NA	NA
Commercial airplane	187,063	7.1	551,314	40.5	NA	NA	NA	NA
Bus	55,443	2.1	27,081	2.0	NA	NA	NA	NA
Intercity	22,941	0.9	9,945	0.7	NA	NA	NA	NA
Charter or tour	32,502	1.2	17,136	1.3	NA	NA	NA	NA
Train	21,144	0.8	10,546	0.8	NA	NA	NA	NA
Ship, boat, or ferry	2,040	0.1	4,278	0.3	NA	NA	NA	NA
Other	3,728	0.1	840	0.1	NA	NA	NA	NA
Not reported	5,388	0.2	133	0.0	NA	NA	NA	NA
Roundtrip distance, total	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Less than 200 miles	1,249,018	47.7	175,171	12.9	1,209,312	51.8	170,441	22.4
200–299 miles	456,100	17.4	110,937	8.2	439,120	18.8	106,748	14.0
300–499 miles	377,177	14.4	144,972	10.7	355,501	15.2	136,328	17.9
500–999 miles	269,109	10.3	185,695	13.6	231,182	9.9	157,405	20.7
1,000–1,999 miles	132,548	5.1	189,468	13.9	71,481	3.1	97,652	12.8
2,000 miles or more	133,174	5.1	554,569	40.8	29,498	1.3	91,749	12.1
Mean (miles)	520	NA	NA	NA	325	NA	NA	NA
Median (miles)	209	NA	NA	NA	194	NA	NA	NA

TABLE 1-39: Long-Distance Travel in the United States by Selected Trip Characteristics: 2001—continued
(Roundtrips to destinations at least 50 miles away)

	Person trips (thousands)		Person-miles (millions)		Trips in personal-use vehicles (thousands)		Vehicle-miles by personal-use vehicles (millions)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Calendar quarter, total	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
1st quarter	576,111	22.0	291,733	21.4	510,906	21.9	162,400	21.4
2nd quarter	684,382	26.2	397,302	29.2	602,396	25.8	199,958	26.3
3rd quarter	733,488	28.0	374,407	27.5	667,600	28.6	220,300	29.0
4th quarter	623,146	23.8	297,371	21.9	555,192	23.8	177,666	23.4
Main purpose of trip, total	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Commute	330,369	12.6	67,599	5.0	318,336	13.6	57,571	7.6
Business	399,312	15.3	279,337	20.5	316,006	13.5	100,665	13.2
Pleasure	1,464,914	56.0	827,035	60.8	1,322,501	56.6	476,681	62.7
Visit relatives or friends	663,203	25.3	357,095	26.2	609,457	26.1	220,583	29.0
Leisure ^a	786,532	30.1	456,201	33.5	700,467	30.0	250,863	33.0
Rest or relaxation	73,810	2.8	30,431	2.2	68,750	2.9	21,602	2.8
Sightseeing	39,764	1.5	20,591	1.5	34,721	1.5	12,828	1.7
Outdoor recreation	125,627	4.8	44,203	3.2	116,724	5.0	34,802	4.6
Entertainment	176,062	6.7	61,561	4.5	154,347	6.6	43,581	5.7
Personal business	245,679	9.4	108,752	8.0	229,706	9.8	76,814	10.1
Other	176,202	6.7	77,342	5.7	149,019	6.4	48,437	6.4
Not reported	651	0.02	748	0.05	526	0.02	157	0.02
Nights away from home, total	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
None	1,472,089	56.2	321,353	23.6	1,401,406	60.0	279,249	36.7
1–3 nights	821,311	31.4	431,155	31.7	728,311	31.2	284,967	37.5
4–7 nights	230,335	8.8	326,913	24.0	155,194	6.6	124,495	16.4
8 or more nights	93,392	3.6	281,390	20.7	51,183	2.2	71,613	9.4
Mean, excluding none (nights)	3.5	NA	NA	NA	3.0	NA	NA	NA

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TABLE 1-39: Long-Distance Travel in the United States by Selected Trip Characteristics: 2001—continued
(Roundtrips to destinations at least 50 miles away)

	Person trips (thousands)		Person-miles (millions)		Trips in personal-use vehicles (thousands)		Vehicle-miles by personal-use vehicles (millions)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Type of lodging at destination, total	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Friend's or relative's home	480,887	18.4	370,166	27.2	416,652	17.8	204,705	26.9
Hotel, motel, or resort	369,065	14.1	469,505	34.5	252,951	10.8	149,185	19.6
Rented cabin, condo, or vacation home	48,041	1.8	41,529	3.1	42,016	1.8	25,037	3.3
Owned cabin, condo, or vacation home	67,816	2.6	36,725	2.7	63,248	2.7	23,988	3.2
Camper, trailer, recreational vehicle, tent	60,815	2.3	35,118	2.6	59,519	2.5	29,924	3.9
Other type of lodging	99,902	3.8	73,314	5.4	83,930	3.6	38,356	5.0
Did not stay overnight	1,489,330	56.9	333,896	24.5	1,417,045	60.7	288,922	38.0
Not reported	1,271	0.05	559	0.04	731	0.03	208	0.03
Nights at destination, total								
Mean nights at destination	1.5	NA	NA	NA	1.1	NA	NA	NA
Friend's or relative's home	3.3	NA	NA	NA	2.7	NA	NA	NA
Hotel, motel, or resort	2.8	NA	NA	NA	2.3	NA	NA	NA

KEY: NA = not applicable.^a Includes other leisure purposes not shown separately.**NOTE**

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, Federal Highway Administration, National Household Travel Survey data, CD-ROM, February 2004.

**TABLE 1-40: Long-Distance Travel in the United States by Selected Traveler Characteristics: 2001
(Roundtrips to destinations at least 50 miles away)**

	Persons (thousands)		Person trips (thousands)		Person-miles (millions)		Trips in personal-use vehicles (thousands)		Vehicle-miles by personal-use vehicles (millions)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
TOTAL	277,208	100.0	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Under 5	19,281	7.0	113,329	4.3	56,136	4.1	107,012	4.6	37,220	4.9
5-17 years	52,450	18.9	337,984	12.9	169,303	12.4	297,520	12.7	101,565	13.4
18-24 years	23,918	8.6	209,171	8.0	97,575	7.2	192,499	8.2	60,386	7.9
25-29 years	18,432	6.6	192,382	7.4	109,392	8.0	172,075	7.4	56,290	7.4
30-39 years	43,114	15.6	505,463	19.3	260,673	19.2	447,666	19.2	136,738	18.0
40-49 years	40,924	14.8	483,005	18.5	257,444	18.9	428,672	18.3	134,938	17.7
50-59 years	30,498	11.0	391,161	14.9	204,614	15.0	351,977	15.1	110,109	14.5
60-64 years	11,250	4.1	123,103	4.7	67,517	5.0	111,692	4.8	39,101	5.1
65-74 years	18,345	6.6	155,190	5.9	81,500	6.0	140,226	6.0	53,741	7.1
75 years and over	18,997	6.9	106,337	4.1	56,659	4.2	86,755	3.7	30,237	4.0
Median (years)	33.5	N/A	37.3	NA	NA	NA	37.4	NA	NA	NA
Sex, total	277,208	100.0	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Male	135,291	48.8	1,499,967	57.3	757,454	55.7	1,347,123	57.7	429,259	56.5
Female	141,917	51.2	1,117,160	42.7	603,358	44.3	988,971	42.3	331,066	43.5
Race, total	277,208	100.0	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
White	193,338	69.7	2,033,914	77.7	1,058,412	77.8	1,821,143	78.0	595,944	78.4
Black	33,877	12.2	207,350	7.9	91,393	6.7	180,399	7.7	59,363	7.8
Asian or Pacific Islander	7,223	2.6	49,559	1.9	59,235	4.4	39,501	1.7	12,067	1.6
American Indian, Eskimo, or Aleutian	1,316	0.5	12,565	0.5	5,975	0.4	11,688	0.5	3,693	0.5
Other	39,472	14.2	294,628	11.3	136,480	10.0	266,200	11.4	84,115	11.1
Not reported	1,983	0.7	19,110	0.7	9,318	0.7	17,163	0.7	5,144	0.7

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TABLE 1-40: Long-Distance Travel in the United States by Selected Traveler Characteristics: 2001—Continued
 (Roundtrips to destinations at least 50 miles away)

	Persons (thousands)		Person trips (thousands)		Person-miles (millions)		Trips in personal-use vehicles (thousands)		Vehicle-miles by personal-use vehicles (millions)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Ethnicity, total	277,208	100.0	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Hispanic origin	35,043	12.6	253,100	9.7	118,516	8.7	227,266	9.7	71,465	9.4
Not of Hispanic origin	242,165	87.4	2,364,026	90.3	1,242,297	91.3	2,108,828	90.3	688,859	90.6
Household income	277,208	100.0	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
Less than \$25,000	58,935	21.3	327,852	12.5	133,903	9.8	302,354	12.9	95,773	12.6
\$25,000–\$39,999	54,404	19.6	454,543	17.4	188,296	13.8	422,556	18.1	138,312	18.2
\$40,000–\$49,999	29,471	10.6	297,383	11.4	135,256	9.9	278,871	11.9	86,849	11.4
\$50,000–\$59,999	26,622	9.6	285,398	10.9	147,926	10.9	260,465	11.1	85,859	11.3
\$60,000–\$74,999	25,557	9.2	305,461	11.7	134,024	9.8	281,037	12.0	83,941	11.0
\$75,000–\$99,999	32,264	11.6	380,371	14.5	221,657	16.3	332,095	14.2	107,055	14.1
\$100,000 or more	33,587	12.1	444,802	17.0	334,526	24.6	359,642	15.4	129,050	17.0
Not reported	16,369	5.9	121,316	4.6	65,224	4.8	99,074	4.2	33,486	4.4
Household type	277,208	100.0	2,617,126	100.0	1,360,813	100.0	2,336,094	100.0	760,325	100.0
One adult, no children	13,743	5.0	139,195	5.3	84,619	6.2	119,661	5.1	38,003	5.0
One adult, youngest child 0-5	5,736	2.1	25,736	1.0	15,239	1.1	21,777	0.9	6,528	0.9
One adult, youngest child 6-15	8,242	3.0	70,325	2.7	31,689	2.3	63,413	2.7	18,918	2.5
One adult, youngest child 16-21	2,614	0.9	22,080	0.8	7,677	0.6	18,741	0.8	4,967	0.7
One adult, retired, no children	8,750	3.2	42,932	1.6	23,648	1.7	36,142	1.5	11,325	1.5
Two or more adults, no children	50,160	18.1	620,148	23.7	355,433	26.1	542,463	23.2	175,694	23.1
Two or more adults, youngest child 0-5	69,688	25.1	593,106	22.7	291,117	21.4	536,070	22.9	172,395	22.7
Two or more adults, youngest child 6-15	64,237	23.2	590,787	22.6	292,422	21.5	530,746	22.7	167,498	22.0
Two or more adults, youngest child 16-21	18,741	6.8	205,093	7.8	101,686	7.5	182,859	7.8	57,110	7.5
Two or more adults, retired, no children	35,297	12.7	307,725	11.8	157,284	11.6	284,221	12.2	107,887	14.2

TABLE 1-40: Long-Distance Travel in the United States by Selected Traveler Characteristics: 2001—Continued
(Roundtrips to destinations at least 50 miles away)

	Persons (thousands)		Person trips (thousands)		Person-miles (millions)		Trips in personal-use vehicles (thousands)		Vehicle-miles by personal-use vehicles (millions)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Educational attainment, total (Persons 16 years and over)	208,479	100.0	2,173,473	100.0	1,144,890	100.0	1,940,042	100.0	624,049	100.0
Less than high school graduate	30,601	14.7	183,801	8.5	84,797	7.4	162,768	8.4	49,856	8.0
High school graduate	63,428	30.4	585,117	26.9	225,637	19.7	554,002	28.6	168,467	27.0
Some college, no degree	43,377	20.8	458,953	21.1	211,462	18.5	423,517	21.8	137,884	22.1
Associate's degree	13,570	6.5	162,145	7.5	80,413	7.0	146,649	7.6	46,528	7.5
Bachelor's degree	33,063	15.9	437,767	20.1	285,168	24.9	369,402	19.0	126,532	20.3
Some grad school or grad degree	23,237	11.1	339,237	15.6	253,592	22.1	278,227	14.3	93,484	15.0
Not reported	1,202	0.6	6,453	0.3	3,822	0.3	5,477	0.3	1,299	0.2
Activity status, total (Persons 16 years and over)	208,479	100.0	2,173,473	100.0	1,144,890	100.0	1,940,042	100.0	624,049	100.0
Working full time	115,428	55.4	1,426,531	65.6	716,671	62.6	1,275,103	65.7	382,355	61.3
Retired	35,611	17.1	254,291	11.7	137,388	12.0	230,254	11.9	85,957	13.8
Other	57,098	27.4	491,046	22.6	289,717	25.3	433,191	22.3	155,015	24.8
Not reported	342	0.2	1,605	0.1	1,115	0.1	1,495	0.1	722	0.1

KEY: NA = not applicable.

NOTE

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, Federal Highway Administration, National Household Travel Survey data, CD-ROM, February 2004.

**TABLE 1-41: Passengers Boarded at the Top 50 U.S. Airports^a
(Ranked By Passenger Enplanments in 2003)**

Airport	Code	1993		2002		2003		Percent change 1993-2003	Percent change 2002-2003
		Rank	Total Enplaned Passengers	Rank	Total Enplaned Passengers	Rank	Total Enplaned Passengers		
Atlanta, GA (Hartsfield Intl.)	ATL	3	22,295,205	1	37,070,492	1	38,228,500	71.5	3.1
Chicago, IL (O'Hare Intl.)	ORD	1	28,459,367	2	28,356,224	2	30,797,513	8.2	8.6
Dallas / Ft. Worth, TX (Dallas / Ft. Worth Intl.)	DFW	2	24,653,530	3	24,072,162	3	24,502,273	-0.6	1.8
Los Angeles, CA (Los Angeles Intl.)	LAX	4	18,445,337	4	20,320,299	4	20,913,455	13.4	2.9
Denver, CO (Denver Intl.)	DEN	5	14,210,166	5	16,053,940	5	17,271,507	21.5	7.6
Phoenix, AZ (Phoenix Sky Harbor Intl.)	PHX	7	11,294,603	6	15,897,012	6	17,175,804	52.1	8.0
Las Vegas, NV (McCarran Intl.)	LAS	13	10,117,974	7	15,575,101	7	16,701,764	65.1	7.2
Houston, TX (George Bush Intercontinental)	IAH	18	8,696,901	8	15,223,638	8	15,495,455	78.2	1.8
Minneapolis, MN (Minneapolis-St. Paul Intl.)	MSP	10	10,377,457	9	15,045,630	9	15,362,399	48.0	2.1
Detroit, MI (Wayne County)	DTW	8	11,044,509	10	14,859,952	10	14,656,475	32.7	-1.4
Newark, NJ (Newark)	EWJ	9	10,969,567	11	13,113,997	11	13,087,544	19.3	-0.2
Seattle, WA (Seattle-Tacoma Intl.)	SEA	16	9,010,385	12	12,577,597	12	12,787,620	41.9	1.7
San Francisco, CA (San Francisco Intl.)	SFO	6	14,003,556	13	12,250,289	13	12,227,636	-12.7	-0.2
Orlando, FL (Orlando Intl.)	MCO	17	8,724,950	14	12,127,425	14	12,049,112	38.1	-0.6
Miami, FL (Miami Intl.)	MIA	12	10,137,504	16	11,125,611	15	11,049,687	9.0	-0.7
New York, NY (John F. Kennedy Intl.)	JFK	21	8,257,682	19	9,930,102	16	10,745,946	30.1	8.2
Cincinnati, OH (Greater Cincinnati)	CVG	27	5,128,274	21	9,492,938	17	10,257,408	100.0	8.1
Philadelphia, PA (Philadelphia Intl.)	PHL	23	7,294,135	17	10,323,655	18	10,185,272	39.6	-1.3
New York, NY (La Guardia)	LGA	15	9,340,107	20	9,713,965	19	10,135,517	8.5	4.3
Charlotte, NC (Douglas Muni)	CLT	22	7,805,221	18	10,154,889	20	9,572,721	22.6	-5.7
Boston, MA (Logan Intl.)	BOS	11	10,206,730	22	9,484,401	21	9,536,108	-6.6	0.5
Baltimore, MD (Baltimore-Washington Intl.)	BWI	34	3,952,301	23	8,962,712	22	9,408,706	138.1	5.0
St. Louis, MO (Lambert-St. Louis Muni)	STL	14	9,902,321	15	11,765,453	23	9,302,358	-6.1	-20.9
Salt Lake City, UT (Salt Lake City Intl.)	SLC	25	7,147,123	29	7,254,485	24	8,874,157	24.2	22.3
Miami / Ft. Lauderdale, FL (Ft. Lauderdale-Hollywood Intl.)	FLL	36	3,879,308	26	7,662,281	26	8,045,678	107.4	5.0
Honolulu, HI (Honolulu Intl.)	HNL	19	8,484,364	25	7,734,079	27	7,485,240	-11.8	-3.2
Chicago, IL (Midway)	MDW	45	2,978,283	24	7,829,471	25	8,655,912	190.6	10.6

**TABLE 1-41: Passengers Boarded at the Top 50 U.S. Airports^a—continued
(Ranked By Passenger Enplanements in 2003)**

Airport	Code	1993		2002		2003		Percent change 1993-2003	Percent change 2002-2003
		Rank	Total Enplaned Passengers	Rank	Total Enplaned Passengers	Rank	Total Enplaned Passengers		
San Diego, CA (San Diego Intl.-Lindbergh)	SAN	26	5,699,382	30	7,082,934	28	7,428,369	30.3	4.9
Tampa, FL (Tampa Intl.)	TPA	28	4,576,551	28	7,260,166	29	7,327,728	60.1	0.9
Washington, DC (Dulles Intl.)	IAD	33	3,982,251	34	5,404,106	30	6,926,067	73.9	28.2
Oakland, CA (Oakland Metropolitan Intl.)	OAK	39	3,577,588	31	5,968,718	31	6,542,940	82.9	9.6
Washington, DC (Ronald Reagan National)	DCA	24	7,186,011	33	5,551,990	32	6,067,824	-15.6	9.3
Portland, OR (Portland Intl.)	PDX	30	4,187,972	32	5,784,838	33	5,950,495	42.1	2.9
Pittsburgh, PA (Greater Pittsburgh)	PIT	20	8,383,674	27	7,528,104	34	5,853,499	-30.2	-22.2
San Jose, CA (Norman Y. Mineta San Jose Intl.)	SJC	43	3,186,195	36	5,067,502	35	5,026,697	57.8	-0.8
Kansas City, MO (Kansas City Intl.)	MCI	38	3,778,822	35	5,073,709	36	4,805,884	27.2	-5.3
Cleveland, OH (Hopkins Intl.)	CLE	35	3,890,066	37	5,016,032	37	4,802,602	23.5	-4.3
New Orleans, LA (New Orleans Intl.)	MSY	40	3,281,874	38	4,545,152	38	4,553,564	38.7	0.2
San Juan, PR (Luis Munoz Marin Intl.)	SJU	31	4,150,438	40	4,472,230	39	4,543,833	9.5	1.6
Memphis, TN (Memphis Intl.)	MEM	41	3,238,706	39	4,537,659	40	4,504,679	39.1	-0.7
Sacramento, CA (Sacramento Intl.)	SMF	50	2,538,181	41	4,052,945	41	4,361,647	71.8	7.6
Santa Ana, CA (John Wayne Intl.)	SNA	46	2,854,297	42	3,889,774	42	4,220,145	47.9	8.5
Nashville, TN (Metropolitan)	BNA	37	3,815,882	45	3,753,291	43	3,768,227	-1.2	0.4
Raleigh-Durham, NC (Raleigh-Durham)	RDU	29	4,203,390	44	3,753,975	44	3,726,659	-11.3	-0.7
Houston, TX (William P. Hobby)	HOU	32	4,061,425	43	3,817,754	45	3,702,964	-8.8	-3.0
Indianapolis, IN (Indianapolis Intl.)	IND	48	2,712,888	46	3,206,486	46	3,412,072	25.8	6.4
Austin, TX (Robert Muller Muni.)	AUS	54	2,268,486	47	3,150,412	47	3,125,082	37.8	-0.8
San Antonio, TX (San Antonio Intl.)	SAT	47	2,753,008	48	3,100,390	48	3,055,642	11.0	-1.4
Ontario, CA (Ontario Intl.)	ONT	44	3,025,640	50	2,979,565	49	3,021,059	-0.2	1.4
Hartford / Springfield / Westfield CT (Bradley Intl.)	BDL	55	2,169,082	49	3,047,535	50	3,011,045	38.8	-1.2
Total top 50			386,338,669		482,023,067		494,250,490	27.9	2.5
All airports			466,677,495		574,858,880		593,974,008	27.3	3.3

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**TABLE 1-41: Passengers Boarded at the Top 50 U.S. Airports^a—continued
(Ranked By Passenger Enplanements in 2003)**

^a Rank order by total enplaned passengers on large certificated U.S. air carriers (Majors, Nationals, Large Regionals, and Medium Regionals), scheduled and nonscheduled operations, at all airports served within the 50 states, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration. Prior to 1993, all scheduled and some nonscheduled enplanements for certificated air carriers were included; no enplanements were included for air carriers offering charter service only.

Large certificated air carriers hold Certificates of Public Convenience and Necessity issued by the U.S. Department of Transportation authorizing the performance of air transportation. Large certificated air carriers operate aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds. Data for commuter, and foreign-flag air carriers are not included.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Schedule T-3 data, various years (Washington, DC 2003)

TABLE 1-42: Air Passenger Travel Arrivals in the United States from Selected Foreign Countries by Flag of Carriers (Thousands of passengers)

	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL arriving passengers (excludes Canada)	12,646	20,262	24,156	36,414	46,910	62,217	56,700	53,865	53,952
United States (excludes Canada)	6,502	10,031	11,798	19,145	24,582	29,837	27,985	26,953	26,557
Foreign (excludes Canada)	6,144	10,231	12,357	17,269	22,328	32,380	28,715	26,912	27,395
Selected countries of embarkation ^a									
Australia	106	227	277	495	581	812	739	724	674
Bahama Islands	758	1,123	1,503	1,679	1,433	1,471	1,458	1,430	1,491
Barbados	76	135	216	228	222	208	191	206	218
Belgium	144	242	281	417	379	778	598	330	305
Bermuda	398	497	434	487	426	374	334	312	310
Brazil	212	300	352	584	1,112	1,280	1,094	977	949
Canada ^b	N	N	N	6,870	7,417	10,236	9,166	8,686	U
China/Taiwan	50	113	206	325	972	1,186	1,092	1,024	846
Colombia	173	315	279	286	481	674	683	590	618
Denmark	222	267	241	313	221	232	240	309	314
Dominican Republic	336	468	606	948	1,136	1,498	1,430	1,409	1,593
France	512	689	955	1,777	2,045	3,147	3,023	2,879	2,735
Germany	622	1,175	1,582	2,466	3,125	3,886	3,519	3,483	3,673
Grand Cayman	25	121	173	273	314	343	317	291	287
Greece	121	208	187	132	220	195	135	108	101
Haiti	91	133	192	233	314	303	317	338	353
Hong Kong	98	228	270	356	658	731	735	697	519
Ireland	220	220	274	448	642	1,064	992	848	1,025
Israel	84	189	294	204	412	577	400	343	356
Italy	431	537	662	792	1,007	1,511	1,269	1,082	983
Jamaica	457	429	707	975	1,124	1,248	1,226	1,238	1,226
Japan	1,095	1,624	2,435	4,528	5,676	6,974	5,876	5,666	5,261
Korea, Republic of	105	234	390	826	1,335	1,470	1,262	1,253	1,192
Mexico	1,626	2,886	2,719	4,313	4,884	6,999	6,591	6,349	6,753
Netherlands	312	427	583	837	1,580	2,401	2,132	2,104	2,055
Netherland Antilles	213	327	407	388	339	389	371	371	401
Panama Republic	97	150	180	153	225	359	343	339	370
Philippines	108	194	145	246	397	405	400	365	339
Spain	306	312	419	558	604	827	758	769	809
Switzerland	236	312	452	616	733	1,069	913	701	699
United Kingdom	1,549	2,973	3,460	5,166	6,648	9,382	8,435	8,217	8,281
Venezuela	205	533	248	458	786	718	730	556	400

KEY: N = data do not exist; R = revised.

^a Country where passenger boarded a direct flight to the United States.

^b Canadian figures come from a separate source and represents the number of revenue passengers on scheduled commercial and charter flights. Does not include foreign (non-Canadian, non-U.S.) scheduled carriers.

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TABLE 1-42: Air Passenger Travel Arrivals in the United States from Selected Foreign Countries by Flag of Carriers (Thousands of passengers)—*continued*

NOTES

Includes passengers on international commercial flights arriving at U.S. airports and travelers between U.S. airports in the 50 states, Puerto Rico, Guam, or the Virgin Islands, and other U.S. territories.

Data compiled from flight reports required by the U.S. Immigration and Naturalization Service, except for Canada.

SOURCES

Totals and all selected Countries, except for Canada:

1975-90: U.S. Department of Transportation, Research and Special Programs Administration, Volpe National Transportation Systems Center, *U.S. International Air Travel Statistics* (Cambridge, MA: Annual issues), table IIa.

1995: U.S. Department of Commerce, International Trade Administration, *U.S. International Air Passenger Statistics Report, Calendar Year 1995* (Washington, DC: 1996), table IIa.

2000-2003: *Ibid.*, *U.S. International Air Travel Statistics Report* (Washington, DC: Annual issues), table IIa.

Canada:

Statistics Canada, *Air Carrier Traffic at Canadian Airports* (Canada: Annual issues) and personal communication, Oct. 22, 2003.

TABLE 1-43: Air Passenger Travel Departures in the United States to Selected Foreign Countries by Flag of Carriers (Thousands of passengers)

	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL departing passengers (excludes Canada)	12,053	19,256	22,487	34,046	43,026	57,498	52,594	48,606	49,968
United States (excludes Canada)	5,912	9,369	10,696	17,628	22,231	27,431	25,483	23,610	24,070
Foreign (excludes Canada)	6,141	9,886	11,791	16,418	20,795	30,068	27,111	24,996	25,897
Selected countries of debarkation ^a									
Australia	103	245	232	540	560	806	713	686	672
Bahama Islands	704	1,006	1,151	1,279	1,024	1,137	1,007	935	1,101
Barbados	74	126	204	230	217	214	204	189	206
Belgium	134	231	249	395	340	740	586	265	269
Bermuda	372	467	389	277	199	189	150	165	216
Brazil	206	291	322	560	1,024	1,194	1,081	936	928
Canada ^b	N	N	N	6,870	7,405	10,246	9,161	8,671	U
China/Taiwan	41	90	187	337	891	1,026	944	927	770
Colombia	171	299	294	277	461	622	649	587	615
Denmark	188	254	254	307	229	227	239	316	334
Dominican Republic	322	443	528	896	995	1,294	1,214	1,180	1,357
France	470	635	894	1,626	1,868	3,082	2,927	2,588	2,620
Germany	649	1,178	1,539	2,339	2,883	3,722	3,389	3,108	3,364
Grand Cayman	26	112	161	250	264	289	271	237	271
Greece	123	190	210	129	194	170	126	102	99
Haiti	81	124	169	201	292	296	300	315	332
Hong Kong	59	152	238	310	640	728	733	657	512
Ireland	163	212	233	311	409	809	797	631	779
Israel	105	186	255	259	426	480	374	338	363
Italy	409	495	660	731	955	1,366	1,182	955	962
Jamaica	416	382	607	888	987	1,095	1,084	1,067	1,126
Japan	1,183	1,602	2,255	4,471	5,452	6,985	5,993	5,665	5,072
Korea, Republic of	60	186	333	723	1,252	1,307	1,137	1,114	1,110
Mexico	1,525	2,886	2,671	4,136	4,568	6,510	6,025	5,643	6,075
Netherlands	304	409	562	777	1,444	2,107	1,854	1,722	1,674
Netherland Antilles	184	282	395	377	295	337	344	330	370
Panama Republic	100	142	209	183	214	344	355	343	386
Philippines	81	160	165	195	281	348	309	332	309
Spain	260	273	397	540	573	782	732	688	740
Switzerland	224	306	434	600	712	1,038	905	671	690
United Kingdom	1,446	2,840	3,322	4,903	6,372	9,154	8,180	7,659	7,962
Venezuela	198	518	245	444	778	694	728	533	405

KEY: N = data do not exist; R = revised.

^a Country where passenger deboarded a direct flight from the United States.

^b Canadian figures come from a separate source and represents the number of revenue passengers on scheduled commercial and charter flights. Does not include foreign (non-Canadian, non-U.S.) scheduled carriers.

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TABLE 1-43: Air Passenger Travel Departures in the United States to Selected Foreign Countries by Flag of Carriers (Thousands of passengers)—*continued*

NOTES

Includes passengers on international commercial flights departing U.S. airports, and travelers between U.S. airports in the 50 states, Puerto Rico, Guam, or the Virgin Islands, and other U.S. territories. Data compiled from flight reports required by the U.S. Immigration and Naturalization Service, except for Canada data.

SOURCES

Totals and all selected Countries, except for Canada:

1975-90: U.S. Department of Transportation, Research and Special Programs Administration, Volpe National Transportation Systems Center, *U.S. International Air Travel Statistics* (Cambridge, MA: Annual issues), table II.d.

1995: U.S. Department of Commerce, International Trade Administration, *U.S. International Air Passenger Statistics Report, Calendar Year 1995* (Washington, DC: 1996), table II.d.

2000-2003: *Ibid.*, *U.S. International Air Travel Statistics Report* (Washington, DC: Annual issues), table II.d.

Canada:

Statistics Canada, *Air Carrier Traffic at Canadian Airports* (Canada: Annual issues) and personal communication, Oct. 22, 2003.

TABLE 1-44: U.S.-Canadian Border Land-Passenger Gateways: Entering the United States

All U.S.-Canadian land gateways					
2001		2002		2003	
All personal vehicle passengers	74,971,105	All personal vehicle passengers	70,007,912	All personal vehicle passengers	61,485,685
All personal vehicles	34,308,013	All personal vehicles	32,538,817	All personal vehicles	30,214,226
All bus passengers	4,456,436	All bus passengers	4,212,863	All bus passengers	3,779,788
All pedestrians	749,805	All pedestrians	1,081,682	All pedestrians	937,488
All train passengers	253,652	All train passengers	225,380	All train passengers	234,181
All buses	169,412	All buses	160,961	All buses	156,580
Personal vehicle passengers – top 5 gateways					
2001		2002		2003	
Buffalo-Niagara Falls, NY	16,571,352	Buffalo-Niagara Falls, NY	17,031,458	Buffalo-Niagara Falls, NY	13,216,214
Detroit, MI	15,156,971	Detroit, MI	12,318,806	Detroit, MI	10,965,872
Blaine, WA	6,926,914	Blaine, WA	4,794,088	Blaine, WA	4,491,959
Port Huron, MI	4,698,825	Port Huron, MI	4,188,972	Port Huron, MI	3,821,908
Champlain-Rouse Point, NY	2,902,006	Champlain-Rouse Point, NY	3,766,141	Champlain-Rouse Point, NY	3,521,091
Personal vehicles – top 5 gateways					
2001		2002		2003	
Detroit, MI	7,585,477	Buffalo-Niagara Falls, NY	7,569,643	Buffalo-Niagara Falls, NY	6,414,415
Buffalo-Niagara Falls, NY	7,396,036	Detroit, MI	6,857,332	Detroit, MI	6,315,590
Blaine, WA	2,892,208	Blaine, WA	2,385,389	Blaine, WA	2,299,636
Port Huron, MI	2,198,962	Port Huron, MI	2,187,210	Port Huron, MI	1,965,011
Calais, ME	1,232,755	Massena, NY	1,162,510	Massena, NY	1,133,727
Bus passengers – top 5 gateways					
2001		2002		2003	
Buffalo-Niagara Falls, NY	1,618,598	Buffalo-Niagara Falls, NY	1,556,924	Buffalo-Niagara Falls, NY	1,321,778
Detroit, MI	989,750	Detroit, MI	915,551	Detroit, MI	904,425
Blaine, WA	382,273	Blaine, WA	336,696	Blaine, WA	283,863
Champlain-Rouse Point, NY	291,421	Champlain-Rouse Point, NY	282,859	Champlain-Rouse Point, NY	234,620
Port Huron, MI	140,955	Port Huron, MI	147,309	Sault Ste. Marie, MI	192,760
Pedestrians – top 5 gateways					
2001		2002		2003	
Buffalo-Niagara Falls, NY	414,704	Buffalo-Niagara Falls, NY	818,913	Buffalo-Niagara Falls, NY	656,022
Sumas, WA	98,968	Sumas, WA	64,432	Sumas, WA	59,330
Calais, ME	49,148	Portland, ME ^a	39,293	Calais, ME	45,899
Portland, ME ^a	32,876	Calais, ME	35,154	Portland, ME ^a	38,129
International Falls-Rainer, MN	27,287	International Falls, MN	24,175	International Falls, MN	27,623
Train passengers – top 5 gateways					
2001		2002		2003	
Buffalo-Niagara Falls, NY	53,337	Blaine, WA	60,521	Skagway, AK	44,430
Blaine, WA	43,136	Buffalo-Niagara Falls, NY	47,315	Blaine, WA	43,515
Champlain-Rouse Point, NY	35,257	Champlain-Rouse Point, NY	33,738	Buffalo-Niagara Falls, NY	37,240
Skagway, AK	33,753	Skagway, AK	29,754	Champlain-Rouse Point, NY	28,325
Port Huron, MI	33,130	Port Huron, MI	26,815	Port Huron, MI	25,485

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TABLE 1-44: U.S.-Canadian Border Land-Passenger Gateways: Entering the United States—*continued*

Buses – top 5 gateways					
2001		2002		2003	
Buffalo-Niagara Falls, NY	53,231	Buffalo-Niagara Falls, NY	50,582	Buffalo-Niagara Falls, NY	43,358
Detroit, MI	39,754	Detroit, MI	36,603	Detroit, MI	36,177
Blaine, WA	16,561	Blaine, WA	15,748	Sault Ste. Marie, MI	15,760
Champlain-Rouse Point, NY	10,374	Champlain-Rouse Point, NY	10,415	Blaine, WA	12,865
Sault Ste. Marie, MI	8,719	Sault Ste. Marie, MI	8,831	Champlain-Rouse Point, NY	11,290

^a Gateway is a pedestrian/ferry combination crossing.

NOTE

Data reflect all personal vehicles, buses, passengers and pedestrians entering the United States across the U.S.-Canadian border, regardless of nationality.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, special tabulation, June 2004. Based on the following primary data source: U.S. Department of Homeland Security, Customs and Border Protection, Operations Management Database.

TABLE 1-45: U.S.-Mexican Border Land-Passenger Gateways: Entering the United States

All U.S.-Mexican land gateways					
2001		2002		2003	
All personal vehicle passengers	209,105,846	All personal vehicle passengers	199,020,692	All personal vehicle passengers	193,697,482
All personal vehicles	89,526,957	All personal vehicles	89,849,415	All personal vehicles	88,068,391
All pedestrians	51,501,321	All pedestrians	50,278,281	All pedestrians	48,663,773
All bus passengers	3,366,795	All bus passengers	3,926,154	All bus passengers	3,747,337
All buses	288,285	All buses	309,360	All buses	319,087
All train passengers	18,895	All train passengers	15,108	All train passengers	12,101
Personal vehicle passengers — top 5 gateways					
2001		2002		2003	
El Paso, TX	39,200,481	San Ysidro, CA	36,171,884	San Ysidro, CA	39,180,519
San Ysidro, CA	33,003,554	El Paso, TX	26,363,164	El Paso, TX	26,317,018
Hidalgo, TX	17,713,609	Hidalgo, TX	17,613,527	Brownsville, TX	15,673,205
Laredo, TX	17,282,264	Laredo, TX	15,915,545	Hidalgo, TX	15,587,611
Brownsville, TX	16,951,901	Brownsville, TX	15,820,595	Laredo, TX	15,208,606
Personal vehicles — top 5 gateways					
2001		2002		2003	
El Paso, TX	16,697,439	El Paso, TX	16,135,835	San Ysidro, CA	17,408,481
San Ysidro, CA	14,106,704	San Ysidro, CA	15,001,616	El Paso, TX	13,699,206
Hidalgo, TX	8,779,691	Hidalgo, TX	7,549,907	Brownsville, TX	7,219,865
Brownsville, TX	7,877,255	Brownsville, TX	7,548,394	Hidalgo, TX	7,169,629
Laredo, TX	7,151,127	Laredo, TX	7,454,330	Laredo, TX	6,777,423
Pedestrians — top 5 gateways					
2001		2002		2003	
San Ysidro, CA	11,435,946	El Paso, TX	9,301,395	El Paso, TX	8,899,168
El Paso, TX	7,201,100	San Ysidro, CA	7,903,483	San Ysidro, CA	8,302,110
Calexico, CA	7,119,785	Calexico, CA	6,894,820	Calexico, CA	6,230,123
Laredo, TX	5,060,947	Nogales, AZ	5,911,866	Nogales, AZ	5,583,533
Nogales, AZ	4,874,738	Laredo, TX	4,648,046	Laredo, TX	4,577,725
Bus passengers — top 5 gateways					
2001		2002		2003	
San Ysidro, CA	897,047	San Ysidro, CA	1,199,630	San Ysidro, CA	1,244,973
Laredo, TX	720,559	Laredo, TX	757,459	Laredo, TX	748,644
Hidalgo, TX	659,450	Hidalgo, TX	632,923	Hidalgo, TX	655,430
Otay Mesa, CA	457,980	Otay Mesa, CA	546,493	El Paso, TX	392,718
El Paso, TX	195,399	El Paso, TX	351,335	Otay Mesa, CA	303,756

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TABLE 1-45: U.S.-Mexican Border Land-Passenger Gateways: Entering the United States—*continued*

Buses — top 5 gateways					
2001		2002		2003	
San Ysidro, CA	102,627	San Ysidro, CA	97,042	San Ysidro, CA	110,820
Otay Mesa, CA	57,954	Otay Mesa, CA	65,474	Otay Mesa, CA	72,749
Laredo, TX	39,718	Laredo, TX	38,852	Laredo, TX	35,406
Hidalgo, TX	33,017	El Paso, TX	32,270	Hidalgo, TX	32,805
Brownsville, TX	14,026	Hidalgo, TX	31,952	El Paso, TX	30,031
Train passengers — top 5 gateways					
2001		2002		2003	
Eagle Pass, TX	6,704	Eagle Pass, TX	6,872	Eagle Pass, TX	6,496
Tecate, CA	5,018	Nogales, AZ	2,216	El Paso, TX	1,869
Nogales, AZ	2,648	Calexico East, CA	1,934	Nogales, AZ	1,664
El Paso, TX	2,337	El Paso, TX	1,866	Calexico East, CA	1,456
Calexico East, CA	1,722	Tecate, CA	1,760	Otay Mesa/San Ysidro, CA	460

NOTE

Data reflect all personal vehicles, buses, passengers and pedestrians entering the United States across the U.S.-Mexican border, regardless of nationality.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, special tabulation, June 2004.
Based on the following primary data source: U.S. Department of Homeland Security, Customs and Border Protection, Operations Management Database.

TABLE 1-46: U.S. Ton-Miles of Freight (Millions)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL U.S. ton-miles of freight (millions)	U 1,854,034	2,206,713	2,284,706	2,988,522	2,949,410	3,195,677	3,648,036	3,778,042	3,757,546	U	U	U
Air carrier, domestic, all services ^a	553	1,353	2,709	3,470	4,528	5,156	9,064	12,520	14,983	13,288	13,882	14,924
Intercity truck ^b	285,000	359,000	412,000	454,000	555,000	610,000	735,000	921,000	1,074,000 (P)	1,051,000	U	U
Class I rail ^c	572,309	697,878	764,809	754,252	918,958	876,984	1,033,969	1,305,688	1,465,960	1,495,472	1,507,011	1,551,438
Domestic water transportation ^d	U 489,803	596,195	565,984	921,836	892,970	833,544	807,728	645,799	621,686	612,081	U	U
Coastwise	U 302,546	359,784	315,846	^e 631,149	610,977	479,134	440,345	283,872	274,559	263,668	U	U
Lakewise	U 75,918	79,416	68,517	61,747	48,184	60,930	59,704	57,879	50,854	53,653	U	U
Internal	U 109,701	155,816	180,399	227,343	232,708	292,393	306,329	302,558	294,861	293,410	U	U
Intrapol	U 1,638	1,179	1,222	1,596	1,102	1,087	1,350	1,490	1,413	1,329	U	U
Oil pipeline ^b	229,000	306,000	431,000	507,000	588,200	564,300	584,100	601,100	577,300	576,100	586,200	U

KEY: P = preliminary; U = data are not available.

^a Includes freight, express, and mail revenue ton-miles as reported on U.S. DOT Form 41.

^b Intercity truck and oil pipeline estimates are reported in billions. The U.S. Department of Transportation, Bureau of Transportation Statistics converted these estimates to millions.

^c Revenue ton-miles.

^d Excludes intraterritorial traffic, for which ton-miles were not compiled.

^e Reflects startup between 1975 and 1980 of Alaska pipeline and consequent water transportation of crude petroleum from Alaskan ports to mainland United States for refining.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

Air carrier, domestic, all services:

1960-65: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: 1970).

1970-80: *Ibid.*, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues), p. 2, line 3.

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues), p. 3, line 3.

Intercity truck:

1960-2001: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 42.

Class I rail:

1960-2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 27.

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TABLE 1-46: U.S. Ton-Miles of Freight (Millions)—continued

Domestic water transportation:

1965-2002: U.S. Army Corps of Engineers, *Waterborne Commerce of the U.S.* (New Orleans, LA: Annual issues), part 5, section 1, table 1-4, and similar tables in earlier editions.

Oil pipeline:

1960-70: Eno Transportation Foundation, Inc., *Transportation in America, 1998* (Washington, DC: 1998), p. 44.

1975: Association of Oil Pipe Lines, *Shifts in Petroleum Transportation* (Washington, DC: Annual issues), table 4.

1980-2002: *Ibid.*, *Shifts in Petroleum Transportation* (Washington, DC: Annual issues), table 1.

TABLE 1-47: Top U.S. Foreign Trade Freight Gateways by Value of Shipments (Current \$ billions)

Gateway	Type	2003				2002			
		Rank	Exports	Imports	Total	Rank	Exports	Imports	Total
Port of Los Angeles, CA	Water	1	16.9	105.2	122.1	2	16.4	93.9	110.3
JFK International Airport, NY	Air	2	46.6	65.3	111.9	1	44.0	68.7	112.7
Port of Detroit, MI	Land	3	54.5	47.3	101.9	3	56.2	44.7	100.9
Port of New York, NY and NJ	Water	4	24.3	76.9	101.2	4	22.6	68.9	91.5
Port of Long Beach, CA	Water	5	17.2	78.7	95.9	5	15.1	73.7	88.8
Port of Laredo, TX	Land	6	32.4	46.4	78.8	6	32.3	46.9	79.3
Los Angeles International Airport, CA	Air	7	32.6	31.2	63.8	7	31.5	29.1	60.6
Port of Huron, MI	Land	8	22.7	39.6	62.3	8	19.1	38.3	57.4
Port of Buffalo-Niagara Falls, NY	Land	9	27.4	32.0	59.4	9	24.2	30.9	55.1
Chicago, IL	Air	10	20.6	33.7	54.3	11	18.6	29.2	47.8
Port of Houston, TX	Water	11	21.4	28.5	49.9	12	19.4	22.5	41.9
San Francisco International Airport, CA	Air	12	20.6	26.1	46.6	10	23.2	26.5	49.7
Port of Charleston, SC	Water	13	13.4	26.0	39.4	14	11.8	21.5	33.3
Port of El Paso, TX	Land	14	16.7	22.5	39.2	13	15.8	22.6	38.5
Port of Norfolk Harbor, VA	Water	15	11.0	18.5	29.5	16	10.8	15.2	26.0
New Orleans, LA	Air	16	13.7	13.7	27.4	15	13.4	13.2	26.6
Port of Tacoma, WA	Water	17	5.2	21.1	26.3	19	4.4	18.4	22.9
Port of Baltimore, MD	Water	18	5.7	20.3	26.0	18	5.3	17.9	23.2
Port of Oakland, CA	Water	19	7.8	17.4	25.1	21	7.5	15.3	22.7
Dallas-Fort Worth, TX	Air	20	11.4	12.2	23.6	24	10.1	9.6	19.7
Port of Seattle, WA	Water	21	5.7	17.4	23.1	17	5.3	18.5	23.8
Miami International Airport, FL	Air	22	14.0	8.8	22.7	22	13.3	7.8	21.1
Anchorage, AK	Air	23	5.6	16.5	22.1	20	4.8	18.0	22.7
Port of Savannah, GA	Water	24	7.4	13.9	21.3	25	6.8	12.8	19.6
Port of Otay Mesa Station, CA	Land	25	8.3	11.4	19.7	23	8.6	11.8	20.4
Port of New Orleans, LA	Water	26	11.2	8.2	19.4	26	10.0	8.8	18.8
Cleveland, OH	Air	27	9.5	9.1	18.6	29	8.4	8.0	16.4
Atlanta, GA	Air	28	8.3	9.9	18.2	27	7.7	9.8	17.5
Port of Miami, FL	Water	29	6.8	9.8	16.6	28	7.8	9.0	16.8
Port of Champlain-Rouses Pt., NY	Land	30	5.2	9.2	14.4	30	5.2	9.6	14.8
Port of Hidalgo, TX	Land	31	6.3	8.1	14.4	31	5.8	6.9	12.7
Newark, NJ	Air	32	2.6	10.4	13.0	46	2.6	5.7	8.3
San Juan International Airport, PR	Air	33	5.2	7.0	12.2	41	3.5	5.3	8.7
Port of Blaine, WA	Land	34	5.2	6.8	12.0	32	4.7	6.7	11.4
Port of Portland, OR	Water	35	3.0	8.8	11.8	34	2.6	8.6	11.2
Port of Jacksonville, FL	Water	36	2.3	8.9	11.2	33	2.6	8.7	11.3
Port of Port Everglades, FL	Water	37	4.3	6.2	10.5	38	4.1	5.3	9.4

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TABLE 1-47: Top U.S. Foreign Trade Freight Gateways by Value of Shipments (Current \$ billions)—*continued*

Gateway	Type	2003				2002			
		Rank	Exports	Imports	Total	Rank	Exports	Imports	Total
Port of Nogales, AZ	Land	38	3.5	6.8	10.4	35	3.8	6.9	10.8
Port of Philadelphia, PA	Water	39	0.6	9.7	10.3	40	0.6	8.3	8.8
Port of Morgan City, LA	Water	40	0.2	9.9	10.1	49	0.2	7.2	7.4
Port of Brownsville-Cameron, TX	Land	41	5.2	4.9	10.1	37	5.4	4.9	10.3
Port of Alexandria Bay, NY	Land	42	3.8	6.2	10.0	36	4.0	6.7	10.7
Port of Corpus Christi, TX	Water	43	2.0	7.9	9.9	47	1.6	6.0	7.5
Port of Beaumont, TX	Water	44	1.0	8.7	9.6	39	0.8	8.3	9.1
Port of Pembina, ND	Land	45	5.0	4.4	9.5	43	4.4	4.3	8.7
Boston Logan Airport, MA	Air	46	5.7	3.5	9.2	44	5.1	3.3	8.5
Port of Calexico-East, CA	Land	47	3.8	5.1	8.9	45	3.6	4.8	8.4
Philadelphia International Airport, PA	Air	48	4.7	4.0	8.7	42	4.4	4.3	8.7
Port of Sweetgrass, MT	Land	49	3.6	3.9	7.5	48	3.3	4.2	7.5
Seattle-Tacoma International Airport, WA	Air	50	4.1	3.1	7.3	51	3.5	3.9	7.3
Total top 50 gateways ^a		NA	458.2	793.1	1,251.3	NA	547.0	940.5	1,487.5

KEY: NA = not applicable.

^a Based on top 50 freight gateways in 2002.

NOTES

All data: Trade levels reflect the mode of transportation as a shipment enters or exits at a border port. Flows through individual ports are based on reported data collected from U.S. trade documents. Trade does not include low-value shipments. (In general, these are imports valued at less than \$1,250 and exports that are valued at less than \$2,500).

In 2002, Houston International Airport, TX (air) ranked 50th.

Numbers may not add to totals due to rounding.

Air: Data for all air gateways include a low level (generally less than 2%-3% of the total value) of small user-fee airports located in the same region. Air gateways not identified by airport name (e.g., Chicago, IL, and others) include major airport(s) in that geographic area in addition to small regional airports. In addition, due to Bureau of Census confidentiality regulations, data for courier operations are included in the airport totals for JFK International Airport, New Orleans, Los Angeles, Cleveland, Chicago, Miami, and Anchorage.

SOURCES

Air: U.S. Department of Commerce, Bureau of the Census, Foreign Trade Division, special tabulation, August 2003 and August 2004.

Water: U.S. Department of Transportation, Maritime Administration, Office of Statistical and Economic Analysis, personal communications, Aug. 6, 2003 and Aug. 4, 2004.

Land: U.S. Department of Transportation, Bureau of Transportation Statistics, Transborder Surface Freight Data, August 2003 and August 2004.

TABLE 1-48: U.S.-Canadian Border Land-Freight Gateways: Number of Truck or Railcar Crossings

Truck	2001		2002		2003
Total U.S.-Canadian border	6,776,909	Total U.S.-Canadian border	6,915,973	Total U.S.-Canadian border	6,727,292
Total top 5 gateways	4,448,865	Total top 5 gateways	4,567,704	Total top 5 gateways	4,478,405
Detroit, MI	1,642,042	Detroit, MI	1,670,565	Detroit, MI	1,634,319
Buffalo-Niagara Falls, NY	1,123,971	Buffalo-Niagara, NY	1,208,095	Buffalo-Niagara, NY	1,162,961
Port Huron, MI	828,802	Port Huron, MI	907,729	Port Huron, MI	928,074
Blaine, WA	471,731	Blaine, WA	410,256	Champlain-Rouse Pt., NY	387,962
Champlain-Rouses Point, NY	382,319	Champlain-Rouse Pt., NY	371,059	Blaine, WA	365,089
Rail					
Total U.S.-Canadian border	1,779,345	Total U.S.-Canadian border	1,830,259	Total U.S.-Canadian border	1,849,911
Total top 5 gateways	1,277,982	Total top 5 gateways	1,310,729	Total top 5 gateways	1,333,244
Port Huron, MI	449,299	Port Huron, MI	429,918	Port Huron, MI	458,551
Detroit, MI	304,591	Detroit, MI	293,300	Detroit, MI	254,688
International Falls, MN	205,430	International Falls, MN	238,515	International Falls, MN	252,699
Portal, ND	168,137	Portal, ND	199,637	Portal, ND	217,390
Buffalo-Niagara Falls, NY	150,525	Buffalo-Niagara, NY	149,359	Buffalo-Niagara, NY	149,916

NOTES

Truck: Data represent the number of truck crossings, not the number of unique vehicles. Data are for both loaded and empty trucks.

Rail: Data includes both loaded and unloaded railcars.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, special tabulation, July 2004.

Based on the following primary data source: U.S. Department of Homeland Security, Customs and Border Protection, Operations Management Database, special tabulation (Washington, DC: 2003).

TABLE 1-49: U.S.-Mexican Border Land-Freight Gateways: Number of Truck or Railcar Crossings

Truck	2001		2002		2003
Total U.S.-Mexican border	4,304,959	Total U.S.-Mexican border	4,426,593	Total U.S.-Mexican border	4,238,045
Total top 5 gateways	3,398,053	Total top 5 gateways	3,544,815	Total top 5 gateways	3,378,199
Laredo, TX	1,403,914	Laredo, TX	1,441,653	Laredo, TX	1,354,229
Otay Mesa/San Ysidro, CA	708,446	Otay Mesa/San Ysidro, CA	731,291	Otay Mesa/San Ysidro, CA	697,152
El Paso, TX	660,583	El Paso, TX	705,199	El Paso, TX	659,614
Hidalgo, TX	368,395	Hidalgo, TX	390,282	Hidalgo, TX	406,064
Calexico East, CA	256,715	Calexico East, CA	276,390	Calexico East, CA	261,140
Rail					
Total U.S.-Mexican border	582,652	Total U.S.-Mexican border	602,322	Total U.S.-Mexican border	607,475
Total top 5 gateways	572,034	Total top 5 gateways	591,255	Total top 5 gateways	596,773
Laredo, TX	273,935	Laredo, TX	296,782	Laredo, TX	313,244
Brownsville, TX	101,787	Eagle Pass, TX	98,236	Brownsville, TX	98,622
Eagle Pass, TX	93,108	Brownsville, TX	96,591	Eagle Pass, TX	88,329
Nogales, AZ	58,667	Nogales, AZ	52,236	El Paso, TX	50,893
El Paso, TX	44,537	El Paso, TX	47,410	Nogales, AZ	45,685

NOTES

Truck: Data represent the number of truck crossings, not the number of unique vehicles. Data are for both loaded and empty trucks.

Rail: Data includes both loaded and unloaded railcars.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, special tabulation, July 2004. Based on the following primary data source: U.S. Department of Homeland Security, Customs and Border Protection, Operations Management Database, special tabulation (Washington, DC: 2003).

TABLE 1-50: U.S. Waterborne Freight (Million short tons)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL freight	1,099.9	1,272.9	1,531.7	1,695.0	1,998.9	1,788.4	2,163.9	2,240.4	2,284.1	2,333.1	2,339.5	2,322.6	2,424.6	(R) 2,393.3	2,340.3
Foreign	339.3	443.7	581.0	748.7	921.4	774.3	1,041.6	1,147.4	1,183.4	1,220.6	1,245.4	1,260.8	1,354.8	(R) 1,350.8	1,319.3
Imports	211.3	269.8	339.3	476.6	517.5	412.7	600.0	672.7	732.6	788.3	840.7	860.8	939.7	(R) 951.8	934.9
Exports	128.0	173.9	241.6	272.1	403.9	361.6	441.6	474.7	450.8	432.3	404.7	400.0	415.0	399.0	384.3
Domestic	760.6	829.2	950.7	946.3	1,077.5	1,014.1	1,122.3	1,093.0	1,100.7	1,112.5	1,094.1	1,061.8	1,069.8	1,042.5	1,021.0
Inland	291.1	369.6	472.1	503.9	535.0	534.7	622.6	620.3	622.1	630.6	625.0	624.6	628.4	619.8	608.0
Coastal	209.2	201.5	238.4	231.9	329.6	309.8	298.6	266.6	267.4	263.1	249.6	228.8	226.9	223.6	216.4
Great Lakes	155.1	153.7	157.1	129.3	115.1	92.0	110.2	116.1	114.9	122.7	122.2	113.9	114.4	100.0	101.5
Intraport	104.2	102.9	81.5	78.3	94.2	74.3	86.4	83.1	89.0	89.8	90.1	(R) 88.6	94.6	93.2	90.0
Intraterritory	1.0	1.5	1.6	2.9	3.6	3.4	4.5	6.9	7.3	6.3	7.2	5.9	5.5	5.9	5.1

KEY: R = revised.

NOTES

Beginning in 1996, shipments of fish are excluded from domestic tonnage totals.
Numbers may not add to totals due to rounding.

SOURCE

1960-2002: U.S. Army Corps of Engineers, *Waterborne Commerce of the United States* (New Orleans, LA: February 6, 2004), part 5, tables 1-1, 1-3, and 1-6.

TABLE 1-51: Tonnage of Top 50 U.S. Water Ports, Ranked by Total Tons^a

	2002		2001		1992		Percent change 2001-2002	Percent change 1992-2002
	Rank	Total tons (Millions)	Rank	Total tons (Millions)	Rank	Total tons (Millions)		
South Louisiana, LA	1	216.4	1	212.6	1	199.7	1.8%	8.4%
Houston, TX	2	177.6	2	185.1	2	137.7	-4.0%	29.0%
New York, NY and NJ	3	134.5	3	137.5	3	115.3	-2.2%	16.6%
Beaumont, TX	4	85.9	5	79.1	26	22.7	8.6%	278.4%
New Orleans, LA	5	85.0	4	85.6	6	66.4	-0.7%	27.9%
Huntington, WV-KY-OH	6	81.1	7	76.7	29	21.8	5.7%	271.3%
Corpus Christi, TX	7	72.0	6	77.6	7	60.9	-7.2%	18.3%
Long Beach, CA	8	67.9	8	67.6	10	52.0	0.3%	30.4%
Baton Rouge, LA	9	60.6	10	61.4	5	84.7	-1.4%	-28.5%
Plaquemines, LA	10	59.1	11	60.7	8	58.5	-2.6%	1.1%
Texas City, TX	11	55.2	9	62.3	13	43.1	-11.3%	28.1%
Los Angeles, CA	12	52.2	14	51.4	15	40.1	1.6%	30.2%
Pittsburgh, PA	13	52.1	12	53.0	19	34.3	-1.8%	51.7%
Valdez, AK	14	50.5	15	51.0	4	93.7	-0.9%	-46.1%
Tampa, FL	15	48.4	18	45.8	11	46.4	5.7%	4.2%
Lake Charles, LA	16	47.5	13	52.8	12	44.0	-10.1%	7.9%
Mobile, AL	17	46.0	16	48.1	14	40.5	-4.4%	13.7%
Duluth-Superior, MN-WI	18	44.2	20	39.8	17	39.3	10.9%	12.4%
Baltimore, MD	19	38.8	19	42.1	18	37.7	-7.7%	3.1%
Philadelphia, PA	20	34.1	17	46.4	16	39.7	-26.5%	-14.0%
St. Louis, MO-IL	21	32.6	22	34.4	21	31.9	-5.3%	2.0%
Pascagoula, MS	22	31.9	25	29.5	22	29.2	7.8%	8.9%
Norfolk Harbor, VA	23	27.9	21	37.3	9	53.5	-25.2%	-47.8%
Freeport, TX	24	27.2	24	30.1	38	15.0	-9.9%	81.7%
Portland, ME	25	27.1	26	28.5	47	12.5	-4.8%	116.9%
Portland, OR	26	26.6	23	31.3	23	28.2	-15.0%	-5.6%
Paulsboro, NJ	27	26.4	31	21.3	31	20.3	24.1%	30.3%
Marcus Hook, PA	28	25.2	37	19.1	24	26.6	31.8%	-5.1%
Charleston, SC	29	25.0	27	23.3	55	9.7	7.5%	159.0%
Port Arthur, TX	30	22.7	28	22.8	20	33.5	-0.6%	-32.4%
Richmond, CA	31	21.9	32	21.2	30	21.0	3.2%	4.1%
Port Everglades, FL	32	21.3	30	21.9	39	14.5	-2.9%	46.7%
Savannah, GA	33	20.7	36	19.4	41	14.0	6.6%	47.7%
Tacoma, WA	34	20.6	35	20.5	32	20.1	0.3%	2.3%
Chicago, IL	35	20.4	29	22.0	27	22.2	-7.2%	-7.9%

TABLE 1-51: Tonnage of Top 50 U.S. Water Ports, Ranked by Total Tons^a—continued

	2002		2001		1992		Percent change 2001-2002	Percent change 1992-2002
	Rank	Total tons (Millions)	Rank	Total tons (Millions)	Rank	Total tons (Millions)		
Boston, MA	36	20.4	33	20.6	33	19.2	-1.1%	6.0%
Seattle, WA	37	19.6	34	20.5	28	21.9	-4.7%	-10.5%
Jacksonville, FL	38	17.9	38	17.8	34	17.2	0.5%	4.1%
Detroit, MI	39	17.3	39	17.0	35	16.3	1.9%	6.1%
Honolulu, HI	40	16.6	42	16.6	51	11.5	0.4%	44.4%
Memphis, TN	41	16.4	40	16.9	44	13.3	-3.0%	23.5%
Anacortes, WA	42	15.4	41	16.8	37	15.3	-8.4%	0.7%
Two Harbors, MN	43	14.9	49	11.9	52	11.2	25.4%	33.5%
Indiana Harbor, IN	44	13.8	45	13.6	36	15.3	1.9%	-9.7%
Cincinnati, OH	45	13.0	43	14.1	49	11.9	-7.7%	9.7%
Oakland, CA	46	12.5	47	12.3	45	13.2	1.5%	-5.7%
San Juan, PR	47	12.4	46	12.8	40	14.3	-3.3%	-13.6%
Cleveland, OH	48	11.4	48	11.9	42	13.7	-4.4%	-16.4%
Newport News, VA	49	11.3	44	13.9	25	24.5	-18.5%	-53.8%
Toledo, OH	50	11.1	51	10.5	46	12.7	5.5%	-12.6%
Total top 50		1,496.0		1,532.2		1,386.8	-2.4%	7.9%
All ports		2,340.3		2,393.3		2,132.1	-2.2%	9.8%

^a Tonnage totals include both domestic and foreign waterborne trade.

NOTES

In 1992, Lorain, OH, ranked 43rd (13.3 million tons); Galveston, TX, ranked 48th (12.3 million tons); and New Castle, DE, ranked 50th (11.8 million tons).

In 2001, Ashtabula, OH, ranked 50th (10.9 million tons).

Numbers may not add to totals due to rounding.

SOURCES

1992: Ibid., *Waterborne Commerce of the United States, Calendar Year 1992, Part 5, National Summaries* (New Orleans, LA: 1994), table 1-1 and 5-2.

2001: Ibid., *Waterborne Commerce of the United States, Calendar Year 2001, Part 5, National Summaries* (New Orleans, LA: 2003), tables 1-1 and 5-2.

2002: Ibid., *A23, Calendar Year 2002, Part 5, National Summaries* (New Orleans, LA: 2004), tables 1-1 and 5-2.

TABLE 1-52: Freight Activity in the United States: 1993, 1997, and 2002^P (Commodity Flow Survey data only)

Mode of transportation	Value			Tons			Ton-miles ^c					
	1993 (\$ billion)	1997 (\$ billion)	2002 (\$ billion)	Percent change	1993 (millions)	1997 (millions)	2002 (millions)	Percent change	1993 (billions)	1997 (billions)	2002 (billions)	Percent change
TOTAL all modes	5,846.3	6,944.0	8,483.1	45.1	9,688.5	11,089.7	11,572.8	19.4	2,420.9	2,661.4	3,204.4	32.4
Single modes, total	4,941.5	5,719.6	7,052.9	42.7	8,922.3	10,436.5	10,878.1	21.9	2,136.9	2,383.5	2,913.0	36.3
Truck ^a	4,403.5	4,981.5	6,200.5	40.8	6,385.9	7,700.7	7,622.3	19.4	869.5	1,023.5	1,311.1	50.8
For-hire truck	2,625.1	2,901.3	3,838.5	46.2	2,808.3	3,402.6	3,666.0	30.5	629.0	741.1	1,001.5	59.2
Private truck	1,755.8	2,036.5	2,340.3	33.3	3,543.5	4,137.3	3,920.5	10.6	235.9	268.6	302.0	28.0
Rail	247.4	319.6	320.5	29.5	1,544.1	1,549.8	1,816.5	17.6	942.6	1,022.5	1,199.4	27.2
Water	61.6	75.8	90.9	47.5	505.4	563.4	713.9	41.2	272.0	261.7	323.1	18.8
Shallow draft	40.7	53.9	56.5	38.7	362.5	414.8	499.7	37.9	164.4	189.3	236.6	44.0
Great Lakes	S	1.5	0.8	S	33.0	38.4	39.5	19.5	12.4	13.4	19.5	57.7
Deep draft	19.7	20.4	33.6	70.3	109.9	110.2	174.7	58.9	95.2	59.0	66.9	-29.7
Air (includes truck and air)	139.1	229.1	279.5	100.9	3.1	4.5	3.9	24.0	4.0	6.2	5.6	38.7
Pipeline ^b	89.8	113.5	161.6	79.9	483.6	618.2	721.6	49.2	S	S	S	S
Multiple modes, total	662.6	945.9	1,111.0	67.7	225.7	216.7	198.5	-12.1	191.5	204.5	214.8	12.2
Parcel, U.S. Postal Service or courier	563.3	855.9	1022.0	81.4	18.9	23.7	26.4	40.0	13.2	18.0	20.5	56.2
Truck and rail	83.1	75.7	S	S	40.6	54.2	S	S	37.7	55.6	S	S
Truck and water	9.4	8.2	17.1	81.6	68.0	33.2	31.8	-53.2	40.6	34.8	59.1	45.6
Rail and water	3.6	1.8	S	S	79.2	79.3	S	S	70.2	77.6	S	S
Other multiple modes	3.2	4.3	5.5	71.9	18.9	26.2	28.0	48.1	S	18.6	19.6	S
Other / unknown modes, total	242.3	278.6	319.2	31.8	540.5	436.5	496.2	-8.2	92.6	73.4	76.6	-17.3

KEY: P = preliminary; S = data are not published because of high sampling variability or other reasons.

^a Truck as a single mode includes shipments that went by private truck only, for-hire truck only, or a combination of both.

^b Excludes most shipments of crude oil.

^c Ton-miles estimates are based on estimated distances traveled along a modeled transportation network.

TABLE 1-52: Freight Activity in the United States: 1993, 1997, and 2002^P (Commodity Flow Survey data only)—continued

NOTE

Numbers may not add to totals due to rounding. Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, *2002 Commodity Flow Survey: United States (Preliminary)* (Washington, DC: December 2003), tables 1b and 1c.

TABLE 1-53: Value, Tons, and Ton-Miles of Freight Shipments within the United States by Domestic Establishments, 2002^P

SCTG	Value (\$ billions)	Percent	Tons (millions)	Percent	Ton-miles ^b (billions)	Percent	Value per ton (\$)	Average miles per shipment
01	7.2	0.1	6.5	0.1	2.0	0.1	1,099	534
02	55.9	0.7	578.6	5.0	263.7	8.2	97	125
03	129.9	1.5	277.5	2.4	122.1	3.8	468	477
04	55.3	0.7	240.0	2.1	77.5	2.4	230	141
05	204.9	2.4	85.0	0.7	41.8	1.3	2,410	192
06	119.7	1.4	116.0	1.0	51.4	1.6	1,032	265
07	362.3	4.3	463.4	4.0	171.2	5.3	782	206
08	115.8	1.4	93.7	0.8	25.6	0.8	1,236	56
09	77.2	0.9	5.8	0.1	1.3	0.0	13,320	414
10	2.5	0.0	16.9	0.1	1.3	0.0	145	170
11	4.6	0.1	466.3	4.0	34.0	1.1	10	57
12	12.6	0.1	1,775.2	15.3	104.6	3.3	7	33
13	12.7	0.1	186.3	1.6	57.0	1.8	68	214
14	15.7	0.2	116.1	1.0	59.4	1.9	136	465
15	24.1	0.3	1,255.1	10.8	562.5	17.6	19	112
17	233.6	2.8	840.4	7.3	130.2	4.1	278	103
18	109.6	1.3	507.5	4.4	108.9	3.4	216	81
19	74.7	0.9	431.3	3.7	96.0	3.0	173	125
20	152.1	1.8	497.0	4.3	173.9	5.4	306	516
21	426.8	5.0	22.8	0.2	12.1	0.4	18,697	722
22	34.1	0.4	214.2	1.9	74.4	2.3	159	150
23	234.4	2.8	109.8	0.9	54.8	1.7	2,134	409
24	343.4	4.0	147.0	1.3	83.9	2.6	2,335	430
25	5.2	0.1	86.3	0.7	8.9	0.3	60	108
26	140.0	1.7	321.1	2.8	114.0	3.6	436	250
27	102.4	1.2	139.9	1.2	82.6	2.6	732	233
28	105.9	1.2	72.5	0.6	25.5	0.8	1,460	282

TABLE 1-53: Value, Tons, and Ton-Miles of Freight Shipments within the United States by Domestic Establishments, 2002^P—
continued

SCTG	Value (\$billions)	Tons		Ton-miles ^b		Value per ton (\$)	Average miles per shipment
		(millions)	Percent	(billions)	Percent		
29	136.9	34.4	0.3	17.4	0.5	3,977	903
30	507.0	53.3	0.5	34.6	1.1	9,511	967
31	143.1	910.3	7.9	120.3	3.8	157	388
32	253.7	326.0	2.8	121.6	3.8	778	275
33	234.9	115.7	1.0	44.4	1.4	2,031	396
34	509.5	62.9	0.5	34.7	1.1	8,094	413
35	948.0	53.8	0.5	32.9	1.0	17,625	747
36	735.7	133.7	1.2	59.1	1.8	5,504	401
37	163.0	10.3	0.1	6.2	0.2	15,871	1,003
38	222.0	15.2	0.1	3.4	0.1	14,600	986
39	135.0	30.9	0.3	13.3	0.4	4,373	564
40	404.7	90.6	0.8	37.1	1.2	4,467	1,003
41	49.3	305.6	2.6	71.1	2.2	161	163
43	858.3	332.2	2.9	57.8	1.8	2,584	434
Commodity unknown	19.6	25.5	0.2	10.1	0.3	769	585
All commodities ^a	8,483.1	11,572.8	100.0	3,204.4	100.0	733	589

KEY: NEC = not elsewhere classified; P = preliminary; SCTG = Standard Classification of Transported Goods.

^a Estimates exclude shipments of crude petroleum (SCTG 16).

^b Ton-miles estimates are based on estimated distances traveled along a modeled transportation network.

NOTE

Estimates are preliminary and may be revised. Coverage for the 2002 Commodity Flow Survey (CFS) differs from previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, U.S. Department of Commerce, Census Bureau, 2002 *Commodity Flow Survey: United States (Preliminary)* (Washington, DC: December 2003), table 3a.

TABLE 1-54: Value of U.S. Land Exports to and Imports from Canada and Mexico by Mode (\$ millions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Exports to Canada, total	124,701.2	129,884.1	139,109.7	133,970.3	137,745.4	146,374.1	154,847.4	145,661.6	146,435.3	154,870.8
Truck	89,151.1	97,423.4	102,743.0	111,173.8	114,806.1	123,140.0	129,825.3	117,694.5	118,259.1	124,235.0
Rail	13,593.9	15,271.9	15,678.7	13,255.6	12,279.6	11,754.6	12,946.5	12,972.7	13,974.1	14,776.5
Pipeline	133.8	121.3	162.2	180.6	93.4	113.9	161.6	221.3	174.3	759.6
Other ^a	21,753.2	17,010.5	20,467.5	9,336.1	10,559.5	11,360.0	11,913.4	14,772.0	14,026.7	15,099.2
Mail	69.3	57.0	58.3	24.1	6.8	5.6	0.6	1.1	1.2	0.4
Exports to Mexico, total	46,503.3	42,662.2	51,753.4	64,169.5	70,165.3	76,129.0	97,158.9	88,926.4	85,157.8	85,614.8
Truck	39,066.5	35,914.2	44,091.8	55,592.6	60,432.1	66,923.8	82,389.2	74,223.1	70,924.7	70,550.8
Rail	4,192.0	4,694.4	5,119.2	5,648.0	6,188.8	5,710.6	10,495.8	10,389.4	10,143.0	11,264.9
Pipeline	0.4	1.0	2.3	68.3	73.4	144.2	301.8	296.1	567.9	155.3
Other ^a	3,238.9	2,025.8	2,540.1	2,860.5	3,470.0	3,349.6	3,972.0	4,017.7	3,521.5	3,643.3
Mail ^b	5.5	26.8	-	0.1	1.0	0.7	-	0.1	0.6	0.4
Imports from Canada, total	123,504.9	143,669.5	156,206.6	155,682.6	162,105.7	183,723.5	210,270.5	200,853.4	194,820.7	207,448.4
Truck	79,456.4	88,964.9	98,400.8	99,814.8	108,856.7	118,901.4	127,816.3	117,129.9	117,985.3	116,714.1
Rail	30,322.8	39,996.9	39,811.0	38,293.0	37,374.1	46,255.4	49,699.2	47,197.9	46,966.8	49,980.9
Pipeline	9,728.6	10,606.6	12,796.2	13,879.5	11,120.1	12,055.5	23,117.1	25,908.5	21,832.3	31,451.3
Other ^a	3,991.6	3,888.2	4,968.4	3,572.5	4,575.1	6,386.9	9,571.0	10,523.8	7,992.7	9,236.6
Mail	5.5	5.2	6.9	0.4	1.7	13.1	4.1	7.2	0.4	0.3
FTZ ^c	U	207.6	223.4	122.4	177.9	111.2	62.8	86.1	43.3	65.3
Imports from Mexico, total	43,616.2	54,048.9	63,312.2	72,155.0	81,720.3	95,023.4	113,436.4	111,870.3	114,380.8	114,842.5
Truck	35,013.9	43,014.3	48,350.0	56,716.5	65,883.7	76,448.0	88,668.7	86,377.2	90,593.6	92,535.0
Rail	7,769.0	9,137.9	12,297.7	12,646.9	12,029.7	14,693.4	21,056.1	22,056.8	20,790.7	19,701.7
Pipeline	187.9	27.4	8.1	3.6	2.4	1.5	11.5	1.6	0.6	0.2
Other ^a	643.5	768.9	639.2	668.2	917.8	1,255.8	1,573.9	1,539.7	1,548.9	1,600.1
Mail	1.9	1.3	1.5	0.2	0.2	0.2	0.6	0.1	0.2	-
FTZ ^c	U	1,099.2	2,015.6	2,119.6	2,886.7	2,624.4	2,125.7	1,894.9	1,446.8	1,005.4

KEY: - = value too small to report; U = data are not available.

^a Other includes "flyaway aircraft" or aircraft moving under their own power (i.e., aircraft moving from the manufacturer to a customer and not carrying any freight), powerhouse (electricity), vessels moving under their own power, pedestrians carrying freight, and unknown and miscellaneous.

TABLE 1-54: Value of U.S. Land Exports to and Imports from Canada and Mexico by Mode (\$ millions)—continued

- b Beginning in January 1996, new edit checks were added to the processing of the Transborder Surface Freight Data. Because of these checks, the number of mail export shipments from the United States to Mexico declined sharply between 1995 and 1996. The Census Bureau found that a number of rail shipments were misidentified as mail shipments in 1994 and 1995, although the exact proportion of these is unknown.
- c Foreign Trade Zones (FTZs) were added as a mode of transport for land import shipments beginning in April 1995. Although FTZs are being treated as a mode of transportation in the Transborder Surface Freight Data, the actual mode for a specific shipment into or out of an FTZ is unknown because U.S. Customs does not collect this information.

NOTES

Shipments that neither originate nor terminate in the United States (i.e., in transit, in-bond shipments) are not included here, although they use the U.S. transportation system. These shipments are usually part of Mexico-Canada trade, and simply pass through the United States. Transshipments, however, are included between 1994, 1995, and 1996; these are shipments that entered or exited the United States by way of a Customs port on the northern or southern border, but whose origin or destination was a country other than Canada or Mexico. Starting in 1997, transshipments are excluded. Users should note these differences before comparing figures for 1994-96 with 1997 and subsequent year data. Data exclude export shipments valued at less than \$2,500 and import shipments valued at less than \$1,250.

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, Transborder Surface Freight Data, Internet site www.bts.gov/transborder as of July 27, 2004.

TABLE 1-55: Crude Oil and Petroleum Products Transported in the United States by Mode (billions)

	1975		1980		1985		1990		2000		2001		2002	
	Ton-miles	Percent	Ton-miles	Percent	Ton-miles	Percent	Ton-miles	Percent	Ton-miles	Percent	Ton-miles	Percent	Ton-miles	Percent
Crude oil, total	331.5	100.0	753.0	100.0	786.2	100.0	628.2	100.0	376.0	100.0	376.6	100.0	384.0	100.0
Pipelines ^a	288.0	86.9	362.6	48.2	334.4	42.5	334.8	53.3	283.4	75.4	277.0	73.6	286.6	74.7
Water carriers	40.6	12.2	(c) 387.4	51.4	449.2	57.2	291.2	46.4	91.0	24.2	98.1	26.0	95.7	24.9
Motor carriers ^b	1.4	0.4	2.5	0.3	1.8	0.2	1.5	0.2	1.2	0.3	1.1	0.3	1.2	0.3
Railroads	1.5	0.5	0.5	0.1	0.8	0.1	0.7	0.1	0.4	0.1	0.4	0.1	0.5	0.1
Refined petroleum products, total	515.2	100.0	492.3	100.0	409.3	100.0	448.6	100.0	497.3	100.0	493.2	100.0	480.6	100.0
Pipelines ^a	219.0	42.5	225.6	45.8	229.9	56.2	249.3	55.6	293.9	59.1	299.1	60.6	299.6	62.3
Water carriers	257.4	50.0	230.4	46.8	141.2	34.5	157.8	35.2	153.4	30.8	145.9	29.6	131.9	27.4
Motor carriers ^b	26.2	5.1	24.3	5.0	26.9	6.6	28.2	6.3	30.1	6.1	29.7	6.0	29.4	6.1
Railroads	12.6	2.4	12.0	2.4	11.3	2.7	13.3	2.9	19.9	4.0	18.5	3.8	19.7	4.1
Combined crude and petroleum products, total	846.7	100.0	1,245.3	100.0	1,195.5	100.0	1,076.8	100.0	873.3	100.0	869.8	100.0	864.6	100.0
Pipelines ^a	507.0	59.9	588.2	47.2	564.3	47.2	584.1	54.2	577.3	66.1	576.1	66.2	586.2	67.8
Water carriers	298.0	35.2	(c) 617.8	49.6	590.4	49.4	449.0	41.7	244.4	28.0	244.0	28.1	227.6	26.3
Motor carriers ^b	27.6	3.3	26.8	2.2	28.7	2.4	29.7	2.8	31.3	3.6	30.8	3.5	30.6	3.5
Railroads	14.1	1.7	12.5	1.0	12.1	1.0	14.0	1.3	20.3	2.3	18.9	2.2	20.2	2.3

^a The amount carried by pipeline is based on ton-miles of crude and petroleum products transported through federally regulated pipelines (84%), plus estimated ton-miles of crude and petroleum products transported through nonfederally regulated pipelines (16%).

^b The amount carried by motor carriers is estimated.

^c Reflects the entrance between 1975 and 1980 of the Alaska pipeline, moving crude petroleum for water transportation to U.S. refineries.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1975: Association of Oil Pipe Lines, *Shifts in Petroleum Transportation* (Washington, DC), table 6.

1980-2002: *Ibid.* (Annual issues), tables 1, 2, and 3.

TABLE 1-56: U.S. Hazardous Materials Shipments by Transportation Mode, 1997

Transportation mode	Value		Tons		Ton-miles	
	(\$ billion)	Percent	(millions)	Percent	(billions)	Percent
TOTAL all modes	466.4	100.0	1,565.2	100.0	263.8	100.0
Single modes, total	452.7	97.1	1,541.7	98.5	258.9	98.1
Truck ^a	298.2	63.9	869.8	55.6	74.9	28.4
For-hire	134.3	28.8	336.4	21.5	45.2	17.1
Private ^b	160.7	34.5	522.7	33.4	28.8	10.9
Rail	33.3	7.1	96.6	6.2	74.7	28.3
Water	27.0	5.8	143.2	9.1	68.2	25.9
Air	8.6	1.8	0.1	–	0.1	–
Pipeline ^c	85.7	18.4	432.1	27.6	S	S
Multiple modes, total	5.7	1.2	6.0	0.4	3.1	1.2
Parcel, U.S. Postal Service or Courier	2.9	0.6	0.1	–	0.1	–
Other	2.9	0.6	5.9	0.4	3.0	1.1
Unknown and other modes, total	7.9	1.7	17.5	1.1	1.8	0.7

KEY: – = less than 1 unit of measure or equal to zero; S = data are not published because of high sampling variability or other reasons.

- ^a Truck as a single mode includes shipments that went by private truck only, for-hire truck only, or a combination of both.
- ^b Private truck refers to a truck operated by a temporary or permanent employee of an establishment or the buyer/receiver of the shipment.
- ^c Excludes most shipments of crude oil. See previous table for the estimated amount of crude oil and petroleum products transported in the United States.

NOTE

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics, U.S. Department of Commerce, Census Bureau, *1997 Economic Census, Transportation, 1997 Commodity Flow Survey, Hazardous Materials* (Washington, DC: December 1999), table 1.

TABLE 1-57: U.S. Hazardous Materials Shipments by Hazard Class, 1997

Hazard class and description	Value		Tons (millions)		Ton-miles (billions)		Average miles per shipment
	(\$ billion)	Percent		Percent		Percent	
Class 1. Explosives	4.3	0.9	1.5	0.1	S	S	549
Class 2. Gases	40.9	8.8	115.0	7.3	21.8	8.3	66
Class 3. Flammable liquids	335.6	72.0	1,264.3	80.8	160.0	60.7	73
Class 4. Flammable solids	3.9	0.8	11.8	0.8	9.6	3.6	838
Class 5. Oxidizers and organic peroxides	4.5	1.0	9.2	0.6	4.5	1.7	193
Class 6. Toxics (poison)	10.1	2.2	6.4	0.4	2.8	1.1	402
Class 7. Radioactive materials	2.7	0.6	0.9	0.1	RZ	RZ	445
Class 8. Corrosive materials	40.4	8.7	91.6	5.9	41.2	15.6	201
Class 9. Miscellaneous dangerous goods	23.9	5.1	65.3	4.2	22.7	8.6	323
Total	466.4	100.0	1,565.2	100.0	263.8	100.0	113

KEY: RZ = less than 1 unit of measure or rounds to zero; S = data were not published because of high sampling variability or other reasons.

NOTE

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, *1997 Economic Census, Transportation, 1997 Commodity Flow Survey, Hazardous Materials* (Washington, DC: December 1999), table 2.

Section E
Physical Performance

TABLE 1-58: Passengers Boarded and Denied Boarding by the Largest U.S. Air Carriers^a (Thousands of passengers)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Boarded	420,696	429,190	445,271	449,184	457,286	460,277	480,555	502,960	514,170	523,081	543,344	(R) 477,970	467,205	485,797
Denied boarding, ^b total	628	646	764	683	824	843	957	1,071	1,136	1,070	1,120	(R) 900	837	769
Voluntary	561	599	718	632	771	794	899	1,018	1,091	1,024	1,062	(R) 861	803	727
Involuntary	67	47	46	51	53	49	58	54	45	46	57	(R) 39	34	42
Percent denied boarding	0.15%	0.15%	0.17%	0.15%	0.18%	0.18%	0.20%	0.21%	0.22%	0.20%	0.21%	0.19%	0.18%	0.16%

KEY: R = revised.

^a Data include nonstop scheduled service between points within the United States (including territories) by U.S. air carriers with at least 1% of the total domestic scheduled service passenger revenues and operate aircraft with a passenger capacity of more than 60 seats. In 2003, the air carriers were Alaska, America West, American, American Eagle, Continental, Delta, Northwest, Southwest, United, US Airways, Air Tran, ATA (formerly American Trans Air), Atlantic Southeast, Hawaiian, and JetBlue. Before 1994, carriers included both majors and national airlines, i.e., airlines with over \$100 million in revenue.

^b Number of passengers who hold confirmed reservations and are denied boarding ("bumped") from a flight because it is oversold. These figures include only passengers whose oversold flight departs without them; they do not include passengers affected by canceled, delayed, or diverted flights.

SOURCE

U.S. Department of Transportation, Office of the Secretary, *Air Travel Consumer Report* (Washington, DC: Annual February issues).

TABLE 1-59: Mishandled-Baggage Reports Filed by Passengers with the Largest U.S. Air Carriers^a

	1990 ^b	1996	1997	1998	1999	2000	2001	2002	2003
Total mishandled-baggage reports (millions)	2.66	2.46	2.28	2.48	2.54	2.74	(R) 2.14	1.81	2.20
Enplaned passengers (domestic) (millions)	395.7	464.0	459.8	481.7	499.1	(R) 517.5	(R) 467.9	471.4	524.5
Reports per 1,000 passengers	6.73	5.30	4.96	5.16	5.08	5.29	(R) 4.58	3.84	4.19

KEY: R = revised.

^a Data include nonstop scheduled service between points within the United States (including territories) by U.S. air carriers with at least 1% of the total domestic scheduled service passenger revenues and those carriers that report voluntarily. In 2003 the air carriers were Alaska, America West, American, American Eagle, Continental, Delta, Northwest, Southwest, United, US Airways, Airtran, ATA (formerly American Trans Air), Atlantic Coast, Atlantic Southeast, ExpressJet, JetBlue (voluntarily), and Skywest.

^b Includes Pan Am.

^c Includes Pan Am and Midway.

NOTES

Domestic system only.

Based on passenger reports of mishandled baggage, including those that did not subsequently result in claims for compensation.

SOURCE

U.S. Department of Transportation, Office of the Secretary, *Air Travel Consumer Report* (Washington, DC: Annual February issues).

TABLE 1-60: Flight Operations Arriving On Time by the Largest U.S. Air Carriers^a

	1990	1996	1997	1998	1999	2000	2001	2002	2003
On-time flight operations (percent)	79.4%	74.5%	77.7%	77.2%	76.1%	72.6%	77.4%	82.1%	82.0%

^a Data include nonstop scheduled service between points within the United States (including territories) by U.S. air carriers with at least 1% of the total domestic scheduled service passenger revenues and other carriers that report voluntarily. In 2003 the air carriers were Alaska, America West, American, American Eagle, Continental, Delta, Northwest, Southwest, United, US Airways, Airtran, ATA (formerly American Trans Air), Atlantic Coast, Atlantic Southeast, ExpressJet, JetBlue (voluntarily), and Skywest. Reporting by Hawaiian Airlines (voluntary) became effective November 2003.

NOTE

A flight is considered on time if it arrived less than 15 minutes after the scheduled time shown in the carriers' Computerized Reservations Systems. Canceled and diverted operations are counted as late.

SOURCE

U.S. Department of Transportation, Office of the Secretary, *Air Travel Consumer Report* (Washington, DC: Annual February issues), table 1a, 12-month column.

TABLE 1-61: FAA-Cited Causes of Departure and En Route Delays (After pushing back from the gate)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Operations delayed (thousands)	393	298	281	276	248	237	272	245	306	374	450	348	286	317
Cause (percent)														
Weather	56	65	65	72	75	72	74	68	74	69	69	72	72	72
Airport terminal volume	33	26	25	21	18	17	17	20	13	8	11	9	9	7
Air Route Traffic Control Center volume	2	1	2	1	1	1	2	2	2	4	3	3	5	4
Closed runways / taxiways	3	3	3	3	2	3	3	3	3	5	6	5	4	7
National Airspace System equipment	1	2	2	2	2	3	2	3	2	2	2	2	1	1
Other	4	3	3	2	2	4	2	4	6	13	9	10	9	9

KEY: FAA = Federal Aviation Administration.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

- 1990-97: U.S. Department of Transportation, Federal Aviation Administration, *Aviation Capacity Enhancement Plan* (Washington, DC: Annual issues).
- 1998-2000: U.S. Department of Transportation, Federal Aviation Administration, Internet site <http://www.faa.gov/apa/Delays/atDelays.htm> as of Aug. 8, 2002.
- 2001-02: *Ibid.*, Internet site <http://www2.faa.gov/index.cfm/apa/1319> as of July 21, 2003.
- 2003: *Ibid.*, Operations Network (OPSNET) database query, Internet site <http://www.apo.data.faa.gov/> as of Oct. 15, 2004.

TABLE 1-62: Major U.S. Air Carrier Delays, Cancellations, and Diversions

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total operations	5,270,893	5,327,435	5,351,983	5,411,843	5,384,721	5,527,884	5,683,047	5,967,780 (R)	5,271,359	6,488,539
Late departures ^a	753,182	(R) 827,934	(R) 973,948	(R) 846,870	(R) 870,395	(R) 937,273	(R) 1,131,663	(R) 953,808	(R) 717,368	834,238
Late arrivals ^b	1,087,774	(R) 1,039,250	(R) 1,220,045	(R) 1,083,834	(R) 1,070,071	(R) 1,152,725	(R) 1,356,040	(R) 1,104,439	(R) 868,225	1,057,504
Cancellations	52,458	91,905	128,536	97,763	144,509	154,311	187,490	231,198	(R) 65,143	101,448
Diversions	15,954	10,492	14,121	12,081	13,161	13,555	14,254	12,909	(R) 8,356	11,750

KEY: R = revised.

^a Prior to 1995, late departures comprises flights departing 15 minutes or more after the scheduled time and flights cancelled. Beginning in 1995, late departures is only flights departing 15 minutes or more after the scheduled departure time.

^b Prior to 1995, late arrivals comprises flights arriving 15 minutes or more after the scheduled arrival time, flights cancelled, and flights diverted. Beginning in 1995, late arrivals is only flights arriving 15 minutes or more after the scheduled arrival time.

NOTES

Late departures and arrivals are strongly seasonal and are affected by weather and heavy demand in winter and summer months. The term "late" is defined as 15 minutes after the scheduled departure or arrival time. Major air carriers are those with 1 percent or more of domestic scheduled-service passenger revenues. In 2003 there were 15 major air carriers. A canceled flight is one that was not operated, but was listed in a carrier's computer reservation system within seven calendar days of the scheduled departure. A diverted flight is one that left from the scheduled departure airport but flew to a destination point other than the scheduled destination point.

SOURCES

1990: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Airline Service Quality Performance data.
 1995-2003: *Ibid.*, 2003 *Airline On-Time Performance* (Washington, DC: 2004), Internet site www.bts.gov/programs/airline_information/annual_airline_on_time_performance as of July 27, 2004.

TABLE 1-63: Annual Person-Hours of Highway Traffic Delay Per Person

Population group	Urban area	Year															Percent change ^a			
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002		Long-term 1982-2002					
		Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Percent	Rank	Percent	Rank				
Medium	Akron, OH	1	1	3	4	6	8	9	9	8	8	6	-25	81	500	29				
Medium	Albany-Schenectady-Troy, NY	3	1	4	4	4	4	5	6	6	6	6	50	11	100	79				
Medium	Albuquerque, NM	2	(R) 4	8	(R) 18	(R) 20	23	25	(R) 27	19	18	15	-35	83	650	19				
Small	Allentown-Beithlehem, PA-NJ	3	4	6	7	10	8	8	7	7	7	7	-13	74	133	76				
Small	Anchorage, AK	2	3	3	2	2	2	2	2	2	(R) 2	3	50	11	50	83				
Large	Atlanta, GA	6	10	11	26	30	31	33	29	(R) 31	(R) 28	32	3	61	433	40				
Medium	Austin, TX	4	8	9	(R) 17	(R) 20	(R) 24	(R) 20	(R) 24	(R) 25	(R) 26	26	8	55	550	26				
Small	Bakersfield, CA	1	1	2	3	3	3	3	3	4	4	4	33	26	300	53				
Large	Baltimore, MD	4	6	15	17	18	19	18	18	(R) 19	(R) 21	26	37	24	550	26				
Small	Beaumont, TX	2	3	3	3	3	4	6	6	6	6	8	100	2	300	53				
Medium	Birmingham, AL	3	4	5	(R) 9	(R) 10	11	13	13	(R) 13	(R) 13	14	27	33	367	50				
Very large	Boston, MA	9	12	18	23	23	25	25	27	(R) 26	(R) 27	27	8	56	200	67				
Small	Boulder, CO	1	2	2	3	3	4	4	4	5	5	5	25	36	400	41				
Medium	Bridgeport-Stamford, CT-NY	2	4	8	10	10	11	13	16	16	16	17	55	9	750	11				
Small	Brownsville, TX	1	1	1	2	2	2	2	(R) 3	3	3	3	50	11	200	67				
Large	Buffalo-Niagara Falls, NY	1	1	2	2	2	3	3	4	5	5	5	67	7	400	41				
Small	Cape Coral, FL	1	2	3	6	6	7	7	7	7	7	8	14	49	700	14				
Small	Charleston-North Charleston, SC	5	6	10	9	9	10	11	12	12	11	12	20	45	140	75				
Medium	Charlotte, NC-SC	4	7	11	12	14	17	18	19	(R) 21	21	24	41	19	500	29				
Very large	Chicago, IL-IN	6	11	17	20	26	24	26	26	(R) 25	(R) 26	29	21	44	383	48				
Large	Cincinnati, OH-KY-IN	2	3	7	12	14	17	17	18	(R) 19	(R) 19	21	24	41	950	5				
Large	Cleveland, OH	1	1	3	9	10	12	9	10	8	7	6	-50	85	500	29				
Small	Colorado Springs, CO	1	2	2	6	6	8	10	12	(R) 12	13	12	50	11	1,100	4				
Small	Columbia, SC	1	2	3	3	3	3	3	4	5	4	4	33	26	300	53				
Large	Columbus, OH	2	2	8	15	17	19	19	20	17	(R) 16	15	-21	79	650	19				

TABLE 1-63: Annual Person-Hours of Highway Traffic Delay Per Person—continued

Population group	Urban area	1982-2002															Percent change ^a	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002		Long-term 1982-2002			
													Percent	Rank	Percent	Rank		
Small	Corpus Christi, TX	2	2	2	2	2	2	2	3	3	4	3	50	11	50	83		
Very large	Dallas-Fort Worth-Arlington, TX	6	(R) 12	(R) 17	(R) 24	(R) 23	(R) 24	(R) 27	(R) 37	(R) 32	(R) 32	36	50	11	500	29		
Medium	Dayton, OH	1	2	3	9	10	11	11	13	11	10	8	-27	82	700	14		
Large	Denver-Aurora, CO	7	8	12	23	26	29	32	32	(R) 34	(R) 35	27	-7	72	286	58		
Very large	Detroit, MI	7	7	20	26	26	27	27	26	(R) 24	(R) 26	27	0	63	286	58		
Medium	El Paso, TX-NM	1	1	2	5	4	5	5	8	(R) 9	11	10	100	2	900	6		
Small	Eugene, OR	1	1	2	(R) 2	3	3	4	5	(R) 6	5	5	67	7	400	41		
Medium	Fresno, CA	3	3	(R) 7	5	6	7	8	10	(R) 10	(R) 8	8	14	49	167	72		
Medium	Grand Rapids, MI	2	2	4	7	8	8	11	11	10	10	11	38	22	450	37		
Medium	Hartford, CT	(R) 1	(R) 2	(R) 3	5	6	(R) 6	8	(R) 8	(R) 8	(R) 9	9	50	11	800	9		
Medium	Honolulu, HI	4	(R) 6	13	14	13	12	12	13	10	(R) 11	10	-17	76	150	74		
Very large	Houston, TX	19	33	(R) 23	25	(R) 26	(R) 32	(R) 29	(R) 35	(R) 31	(R) 32	33	3	62	74	81		
Large	Indianapolis, IN	2	2	4	19	22	24	19	19	(R) 20	(R) 21	20	-17	76	900	6		
Medium	Jacksonville, FL	3	4	(R) 10	18	17	18	15	15	(R) 14	15	17	-6	69	467	36		
Large	Kansas City, MO-KS	1	2	3	6	8	9	9	11	9	9	8	-11	73	700	14		
Small	Laredo, TX	1	1	1	2	2	3	3	4	3	4	4	33	26	300	53		
Large	Las Vegas, NV	3	5	12	13	14	16	16	17	(R) 17	(R) 15	15	-6	71	400	41		
Small	Little Rock, AR	1	1	2	3	3	4	5	6	5	6	5	25	36	400	41		
Very large	Los Angeles-Long Beach-Santa Ana, CA	19	24	53	49	54	52	56	(R) 55	(R) 52	(R) 49	(R) 49	-6	70	158	73		
Medium	Louisville, KY-IN	4	5	5	13	17	19	(R) 19	(R) 21	(R) 20	(R) 18	20	5	58	400	41		
Medium	Memphis, TN-MS-AR	1	2	5	11	11	13	(R) 13	(R) 13	(R) 14	(R) 16	16	23	42	1,500	3		
Very large	Miami, FL	(R) 5	(R) 6	(R) 13	(R) 19	(R) 21	(R) 22	(R) 22	(R) 24	(R) 26	(R) 27	29	32	32	480	35		
Large	Milwaukee, WI	2	3	5	11	12	12	13	15	(R) 14	(R) 13	12	0	63	500	29		
Large	Minneapolis-St. Paul, MN	1	4	8	(R) 17	17	23	23	26	(R) 21	(R) 23	22	-4	68	2,100	1		
Medium	Nashville-Davidson, TN	6	7	9	14	15	18	16	20	(R) 20	(R) 20	22	22	43	267	62		

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TABLE 1-63: Annual Person-Hours of Highway Traffic Delay Per Person—continued

Population group	Urban area	Year															Percent change ^a			
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002		Long-term 1982-2002					
													Percent	Rank	Percent	Rank				
Medium	New Haven, CT	2	2	4	5	4	6	9	11	(R)12	(R)15	11	83	5	450	37				
Large	New Orleans, LA	4	5	6	11	11	11	11	11	10	10	9	-18	78	125	77				
Very large	New York-Newark, NY-NJ-CT	6	7	18	18	18	20	21	23	(R)21	(R)22	23	15	48	283	60				
Large	Oklahoma City, OK	1	2	2	4	5	6	6	(R)8	6	6	7	17	46	600	22				
Medium	Omaha, NE-IA	2	3	5	8	9	(R)9	10	11	(R)10	12	12	33	26	500	29				
Large	Orlando, FL	5	9	11	19	21	24	27	26	(R)31	(R)32	27	13	52	440	39				
Medium	Oxnard-Ventura, CA	2	5	8	11	12	10	12	12	15	17	17	70	6	750	11				
Small	Pensacola, FL-AL	1	2	6	8	8	9	9	10	11	10	10	11	53	900	6				
Very large	Philadelphia, PA-NJ-DE-MD	5	6	9	(R)14	(R)14	(R)15	(R)19	(R)21	(R)18	(R)21	22	47	18	340	52				
Large	Phoenix, AZ	7	8	15	16	21	23	20	25	(R)24	(R)25	24	4	60	243	63				
Large	Pittsburgh, PA	4	5	7	(R)7	7	8	8	9	7	7	(R)7	-13	74	75	80				
Large	Portland, OR-WA	3	3	8	(R)16	(R)18	19	20	21	(R)20	(R)20	20	5	58	567	25				
Medium	Providence, RI-MA	2	(R)3	(R)6	(R)9	(R)10	(R)15	(R)10	(R)13	(R)11	(R)12	17	13	51	750	11				
Medium	Raleigh-Durham, NC	3	5	10	11	11	12	12	11	12	16	14	17	46	367	50				
Medium	Richmond, VA	(R)2	2	4	(R)12	(R)15	(R)13	12	(R)10	(R)7	(R)7	8	-38	84	300	53				
Large	Riverside-San Bernardino, CA	4	7	20	22	24	25	29	28	(R)27	(R)29	31	24	40	675	18				
Medium	Rochester, NY	0	1	2	3	3	3	3	4	3	3	3	0	63	NM	NM				
Large	Sacramento, CA	5	7	14	14	17	15	15	16	(R)17	(R)17	19	27	34	280	61				
Small	Salem, OR	1	1	3	(R)4	(R)5	6	(R)6	6	(R)6	(R)6	8	33	26	700	14				
Medium	Salt Lake City, UT	1	2	4	(R)9	8	7	8	9	10	(R)14	17	143	1	1,600	2				
Large	San Antonio, TX	3	7	6	10	10	10	13	(R)19	(R)21	(R)19	19	90	4	533	28				
Large	San Diego, CA	3	6	16	14	14	17	16	20	(R)20	(R)21	26	53	10	767	10				
Very large	San Francisco-Oakland, CA	12	24	(R)36	(R)31	31	28	32	34	(R)35	(R)36	37	32	31	208	66				
Large	San Jose, CA	10	21	43	26	25	23	26	31	(R)31	(R)32	29	26	35	190	70				
Medium	Sarasota-Bradenton, FL	5	5	5	6	8	8	8	10	9	9	11	38	22	120	78				

TABLE 1-63: Annual Person-Hours of Highway Traffic Delay Per Person—continued

Population group	Urban area	Percent change ^a																	
		Short-term 1997-2002																	
		Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank		
Large	Seattle, WA	(R) 5	(R) 9	(R) 22	(R) 28	(R) 29	(R) 31	(R) 31	(R) 31	(R) 32	(R) 25	(R) 25	(R) 25	(R) 25	(R) 24	-23	80	380	49
Small	Spokane, WA	1	(R) 2	2	4	4	5	5	5	(R) 6	5	5	5	5	5	0	63	400	41
Medium	Springfield, MA-CT	3	3	4	4	4	4	4	4	4	5	4	4	4	5	25	36	67	82
Large	St. Louis, MO-IL	(R) 6	(R) 8	9	(R) 18	(R) 18	(R) 20	(R) 19	(R) 19	(R) 20	21	18	18	20	20	0	63	233	64
Large	Tampa-St. Petersburg, FL	8	9	14	23	22	21	21	21	22	(R) 20	(R) 23	(R) 23	23	23	10	54	188	71
Medium	Toledo, OH-MI	1	1	2	4	4	5	5	5	6	6	7	7	7	7	40	20	600	22
Medium	Tucson, AZ	2	2	5	8	8	11	12	12	12	(R) 11	(R) 13	(R) 13	15	15	36	25	650	19
Medium	Tulsa, OK	1	2	3	3	4	5	6	6	(R) 8	(R) 7	(R) 7	7	7	40	20	600	22	
Large	Virginia Beach, VA	5	7	9	11	12	12	14	14	(R) 10	(R) 12	(R) 12	15	15	25	36	200	67	
Very large	Washington, DC-VA-MD	10	14	21	28	31	31	35	35	37	33	(R) 33	(R) 33	33	33	6	57	230	65
NA	85 Area Average	7	(R) 9	(R) 17	(R) 20	(R) 21	(R) 22	(R) 23	(R) 23	25	(R) 45	(R) 45	24	24	24	9	NA	243	NA
NA	Very Large Area Average	(R) 9	(R) 13	(R) 25	(R) 26	(R) 28	(R) 28	31	(R) 32	(R) 60	(R) 60	(R) 60	32	32	32	14	NA	256	NA
NA	Large Area Average	4	6	12	(R) 16	(R) 17	19	(R) 19	(R) 19	21	(R) 38	(R) 38	20	20	20	5	NA	400	NA
NA	Medium Area Average	(R) 2	(R) 3	6	(R) 9	(R) 10	(R) 11	(R) 11	(R) 11	(R) 12	(R) 23	(R) 24	13	13	13	18	NA	550	NA
NA	Small Area Average	2	2	4	(R) 5	5	5	6	6	(R) 13	(R) 12	(R) 12	7	7	7	40	NA	289	NA

KEY: NA = not applicable; NM = not meaningful; R = revised.

Very large urban areas – over 3 million population.
 Large urban areas – over 1 million and less than 3 million population.
 Medium urban areas – over 500,000 and less than 1 million population.
 Small urban areas – less than 500,000 population.

^a Percent change was calculated using the numbers in this table and were not obtained from the source mentioned below. Rank is based on the calculated percent change with the highest number corresponding to a rank of 1.

NOTE

The cities shown represent the 50 largest metropolitan areas, as well as others chosen by the states sponsoring the Texas Transportation Institute study on mobility.

SOURCE

1982- 2002: Texas Transportation Institute, *The 2004 Annual Urban Mobility Study* (College Station, TX: 2004) from Internet site <http://mobility.tamu.edu> as of Sept. 13, 2004.

TABLE 1-64: Travel Time Index

Population group	Urban area	Points change															
														Short-term 1997-2002		Long-term 1982-2002	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Points	Rank ^a	Points	Rank ^a	
Medium	Akron, OH	1.02	1.02	1.04	1.06	1.09	1.11	1.11	1.11	1.10	1.10	1.09	-2	80	7	68	
Medium	Albany-Schenectady, NY	1.06	1.02	1.04	1.04	1.05	(R) 1.05	1.05	1.06	1.06	(R) 1.06	1.07	2	50	1	85	
Medium	Albuquerque, NM	1.04	1.06	1.10	1.21	1.23	1.24	1.26	1.26	(R) 1.23	(R) 1.22	1.19	-4	84	14	37	
Small	Allentown-Bethlehem, PA-NJ	1.06	1.08	1.11	1.13	1.14	1.15	1.15	1.13	1.14	1.14	1.15	0	65	8	62	
Small	Anchorage, AK	1.04	1.05	1.05	1.03	1.03	1.03	1.04	1.04	1.04	1.05	1.05	2	48	1	84	
Large	Atlanta, GA	1.08	1.11	1.14	1.26	1.29	1.31	1.34	1.32	(R) 1.35	(R) 1.37	1.42	8	8	31	3	
Medium	Austin, TX	1.08	(R) 1.10	1.12	1.20	1.23	1.26	1.24	1.26	(R) 1.26	(R) 1.30	1.31	4	25	21	24	
Small	Bakersfield, CA	1.01	1.01	1.03	1.04	1.05	1.05	1.06	1.05	1.06	1.06	1.06	1	60	5	71	
Large	Baltimore, MD	1.07	1.10	1.21	1.24	1.24	1.26	1.25	1.26	(R) 1.27	(R) 1.30	1.36	8	10	27	13	
Small	Beaumont, TX	1.03	1.03	1.03	1.04	1.04	1.04	1.05	1.06	1.05	1.06	1.07	3	34	4	78	
Medium	Birmingham, AL	1.05	1.05	1.06	1.11	(R) 1.12	1.13	1.15	(R) 1.15	(R) 1.15	(R) 1.15	1.16	3	38	10	51	
Very large	Boston, MA-NH-RI	1.14	1.18	1.27	1.37	1.37	1.39	1.41	1.43	(R) 1.43	(R) 1.45	1.45	4	23	27	11	
Small	Boulder, CO	1.02	1.03	1.03	(R) 1.06	1.06	1.07	1.08	1.08	1.09	(R) 1.09	1.09	2	51	7	68	
Medium	Bridgeport-Stamford, CT-NY	1.05	1.08	1.15	1.19	1.18	1.21	1.24	1.28	1.27	1.28	1.28	6	17	22	21	
Small	Brownsville, TX	1.02	1.03	1.04	1.05	1.05	1.06	1.07	1.07	1.08	1.08	1.07	1	61	5	73	
Large	Buffalo, NY	1.03	1.03	1.04	1.04	1.04	1.04	1.05	1.07	1.08	1.08	1.08	4	26	5	75	
Small	Cape Coral, FL	1.04	1.05	1.09	1.12	1.13	1.14	1.14	1.14	(R) 1.14	(R) 1.14	1.17	3	39	13	42	
Small	Charleston-North Charleston, SC	1.08	1.10	1.15	1.14	1.13	1.15	1.17	1.17	(R) 1.18	(R) 1.17	1.18	3	40	9	54	
Medium	Charlotte, NC-SC	(R) 1.07	1.12	1.16	1.17	(R) 1.19	1.23	1.23	1.24	(R) 1.26	(R) 1.26	1.31	7	15	22	20	
Very large	Chicago, IL-IN	(R) 1.18	1.27	1.36	1.38	1.44	1.43	1.47	1.47	(R) 1.44	(R) 1.47	1.54	8	11	31	6	
Large	Cincinnati, OH-KY-IN	1.04	1.06	1.12	1.18	1.20	1.22	1.22	1.23	(R) 1.25	(R) 1.25	1.25	2	45	20	26	
Large	Cleveland, OH	1.02	1.02	1.06	1.13	1.15	1.17	1.15	1.15	1.13	1.12	1.10	-6	85	8	63	
Small	Colorado Springs, CO	1.02	1.03	1.04	1.10	1.11	1.14	(R) 1.15	1.18	(R) 1.19	(R) 1.20	1.19	4	22	17	34	
Small	Columbia, SC	1.03	1.04	1.04	1.04	1.04	1.04	1.04	1.05	1.06	1.05	1.05	1	59	2	80	
Large	Columbus, OH	1.03	1.04	1.10	1.18	1.20	(R) 1.22	1.22	1.22	1.19	(R) 1.18	1.18	-3	82	15	36	

TABLE 1-64: Travel Time Index—continued

Population group	Urban area	Points change																
												Short-term 1997-2002		Long-term 1982-2002				
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Points	Rank ^a	Points	Rank ^a		
Small	Corpus Christi, TX	1.03	1.03	1.03	1.03	1.03	1.03	1.04	1.05	1.04	1.05	1.04	1.05	1.04	1	58	1	83
Very large	Dallas-Fort Worth-Arlington, TX	1.07	1.12	1.18	1.21	1.22	1.23	(R) 1.26	(R) 1.31	(R) 1.31	(R) 1.31	(R) 1.31	(R) 1.31	1.34	9	5	25	16
Medium	Dayton, OH	1.03	1.04	1.05	1.10	1.11	1.12	1.12	1.13	1.13	1.11	1.10	1.11	1.10	-2	79	7	70
Large	Denver-Aurora, CO	1.10	1.13	1.17	1.30	1.33	1.37	1.39	1.38	1.42	(R) 1.46	1.40	1.40	1.40	2	47	27	10
Very large	Detroit, MI	1.12	1.13	1.28	(R) 1.32	1.33	1.35	1.36	1.35	(R) 1.33	(R) 1.35	1.36	1.36	1.36	1	64	21	23
Medium	El Paso, TX-NM	1.02	1.03	1.04	(R) 1.08	1.07	(R) 1.09	1.10	1.14	(R) 1.16	(R) 1.17	1.16	1.16	1.16	6	16	14	41
Small	Eugene, OR	1.02	1.03	1.04	1.05	1.06	1.06	1.07	1.09	1.12	1.11	1.10	1.10	1.10	4	27	8	63
Medium	Fresno, CA	1.05	1.05	1.13	1.13	1.13	1.16	1.18	1.20	(R) 1.19	(R) 1.16	1.15	1.15	1.15	-1	76	10	53
Medium	Grand Rapids, MI	1.03	1.03	1.07	1.10	1.11	1.12	1.15	1.15	1.14	1.14	1.15	1.15	1.15	3	37	12	46
Medium	Hartford, CT	(R) 1.04	(R) 1.04	(R) 1.05	(R) 1.08	1.07	(R) 1.10	(R) 1.11	(R) 1.11	(R) 1.11	(R) 1.12	1.12	1.12	1.12	2	53	8	65
Medium	Honolulu, HI	1.10	1.12	1.21	1.23	1.23	1.20	1.21	1.21	(R) 1.19	1.19	1.18	1.18	1.18	-2	78	7	66
Very large	Houston, TX	1.28	1.39	(R) 1.31	1.26	1.30	1.34	1.33	1.36	(R) 1.36	(R) 1.37	1.39	1.39	1.39	4	29	9	61
Large	Indianapolis, IN	1.03	1.03	1.06	1.22	1.25	1.26	1.22	1.23	(R) 1.24	(R) 1.25	1.24	1.24	1.24	-2	77	20	25
Medium	Jacksonville, FL	1.04	1.05	1.11	1.18	1.17	1.16	1.14	1.14	1.15	(R) 1.15	1.16	1.16	1.16	0	65	12	48
Large	Kansas City, MO-KS	1.01	1.02	1.04	1.06	1.08	1.09	1.09	1.11	(R) 1.10	(R) 1.10	1.10	1.10	1.10	1	63	9	55
Small	Laredo, TX	(R) 1.03	1.03	1.03	1.05	1.06	1.07	1.07	1.07	1.07	1.08	1.07	1.07	1.07	0	65	4	78
Large	Las Vegas, NV	1.07	(R) 1.10	1.23	1.27	1.30	1.33	1.33	1.34	(R) 1.34	(R) 1.35	1.35	1.35	1.35	2	56	26	14
Small	Little Rock, AK	1.02	1.02	1.02	1.03	1.04	1.04	1.05	1.06	1.05	1.07	1.06	1.06	1.06	2	49	4	77
Very large	Los Angeles-Long Beach-Santa Ana, CA	1.30	1.35	1.80	1.72	1.78	1.77	1.83	1.80	(R) 1.76	(R) 1.77	1.77	1.77	1.77	0	65	36	1
Medium	Louisville, KY-IN	1.09	1.09	1.08	1.16	1.19	1.21	(R) 1.22	1.24	1.24	1.22	1.24	1.24	1.24	2	44	14	39
Medium	Memphis, TN-MS-AR	1.03	1.04	1.09	1.17	1.18	1.20	1.20	1.19	(R) 1.20	(R) 1.21	1.22	1.22	1.22	2	54	18	29
Very Large	Miami, FL	(R) 1.09	(R) 1.11	(R) 1.20	(R) 1.28	(R) 1.29	(R) 1.30	(R) 1.31	(R) 1.34	(R) 1.35	(R) 1.37	1.40	1.40	1.40	8	12	28	8
Large	Milwaukee, WI	1.05	1.07	1.12	1.19	1.20	1.20	1.22	1.25	(R) 1.25	(R) 1.24	1.24	1.24	1.24	3	31	18	31
Large	Minneapolis-St. Paul, MN	1.03	1.06	1.12	1.22	1.23	1.30	1.32	1.35	(R) 1.32	(R) 1.34	1.34	1.34	1.34	3	32	30	7
Medium	Nashville-Davidson, TN	1.07	1.08	(R) 1.09	1.13	1.14	1.16	1.15	1.18	1.18	1.18	1.19	1.19	1.19	3	42	11	49

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TABLE 1-64: Travel Time Index—continued

Population group	Urban area	Points change														
		Points change														
		Short-term 1997-2002					Short-term 1997-2002					Long-term 1982-2002				
1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Points	Rank ^a	Points	Rank ^a	Points	Rank ^a
Medium	New Haven, CT	1.03	1.04	1.06	1.09	1.07	1.09	1.12	1.13	1.14	1.14	1.14	5	21	11	50
Large	New Orleans, LA	1.10	1.14	1.16	1.20	1.20	1.19	1.19	1.20	1.18 (R)	1.18	1.18	-1	75	7	66
Very large	New York-Newark, NY-NJ-CT	1.13	1.16	1.31	1.33	1.34	1.36	1.36	1.40 (R)	1.38 (R)	1.40	1.40	3	33	24	18
Large	Oklahoma City, OK	1.02	1.03	1.03	1.06	1.07	1.09	1.09	1.11	1.09	1.11	1.11	2	52	9	56
Medium	Omaha, NE-IA	1.04	1.06	1.09	1.12	1.14	1.13 (R)	1.14	1.15	1.15 (R)	1.16	1.17	4	30	13	42
Large	Orlando, FL	1.09	1.15	1.16	1.21	1.22	1.24	1.27	1.27 (R)	1.28 (R)	1.31	1.29	4	24	18	30
Medium	Oxnard-Ventura, CA	1.04	1.07	1.10	1.15	1.16	1.14	1.14	1.19	1.19	1.21	1.20	5	18	15	35
Small	Pensacola, FL-AL	1.03	1.04	1.08	1.11	1.10	1.12	1.12	1.12	1.14	1.12	1.12	0	65	9	60
Very large	Philadelphia, PA-NJ-DE-MD	(R) 1.13	1.14	(R) 1.19	(R) 1.23	(R) 1.26	(R) 1.26	(R) 1.33	(R) 1.32	(R) 1.30	(R) 1.35	1.35	7	13	19	27
Large	Phoenix, AZ	1.13	1.15	1.22	1.24	1.30	1.33	1.31	(R) 1.38	(R) 1.38	(R) 1.40	1.35	2	56	19	27
Large	Pittsburgh, PA	1.08	1.09	1.10	1.10	1.10	1.10	1.11	1.12	1.10	1.10	1.10	0	65	2	82
Large	Portland, OR-WA	1.05	1.07	1.16 (R)	1.28	1.31	1.35	1.34	1.37 (R)	1.37 (R)	1.39	1.38	2	46	31	4
Medium	Providence, RI-MA	(R) 1.05	(R) 1.06	(R) 1.10	(R) 1.12	(R) 1.14	(R) 1.21	(R) 1.13	(R) 1.14	(R) 1.15	(R) 1.16	1.20	-1	74	14	38
Medium	Raleigh-Durham, NC	1.05	1.07	1.12	1.14	1.13	1.15	1.15	1.15	1.16	1.19	1.18	3	40	12	44
Medium	Richmond, VA	(R) 1.03	1.03	1.05 (R)	1.11	(R) 1.11	1.10	(R) 1.09	(R) 1.09	(R) 1.07	(R) 1.07	1.08	-2	81	5	75
Large	Riverside-San Bernardino, CA	1.04	1.08	1.24	1.26	1.28	1.27	1.31	1.33 (R)	1.33 (R)	1.35	1.39	9	3	34	2
Medium	Rochester, NY	1.01	1.02	1.03	1.05	1.05	1.06	1.05	1.06	1.06	1.06	1.06	0	65	5	71
Large	Sacramento, CA	1.07	1.09	1.20	1.21	1.24	1.23	1.24	1.26 (R)	1.28 (R)	1.29	1.33	8	9	24	17
Small	Salem, OR	1.02	1.02	1.04 (R)	1.06	(R) 1.07	(R) 1.07	(R) 1.08	(R) 1.08	(R) 1.08	(R) 1.09	1.11	4	28	9	56
Medium	Salt Lake City, UT	1.03	1.05	1.08	1.17	1.17	1.15	1.16	1.17	1.18 (R)	1.24	1.27	10	2	23	19
Large	San Antonio, TX	1.05	1.08	(R) 1.07	1.12	1.12	1.13	1.16	(R) 1.22	(R) 1.24	(R) 1.22	1.23	9	6	17	33
Large	San Diego, CA	1.06	1.09	1.24	1.22	1.23	1.25	1.26	1.32 (R)	1.32 (R)	1.32	1.39	11	1	31	5
Very large	San Francisco-Oakland, CA	1.21	1.36	1.50	1.45	1.45	1.42	1.47	1.49 (R)	1.54 (R)	1.54	1.55	9	4	28	9
Large	San Jose, CA	1.18	1.30	1.44	1.34	1.33	1.30	1.34	1.39	1.42	1.43	1.39	7	14	18	32
Medium	Sarasota-Bradenton, FL	1.12	1.12	1.14	1.15	1.19	1.19	1.20	1.24	1.22	1.22	1.25	5	19	12	47

TABLE 1-64: Travel Time Index—continued

Population group	Urban area	Year													Points change	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002	Long-term 1982-2002		
		Points	Rank ^a	Points	Rank ^a	Points	Rank ^a	Points	Rank ^a	Points	Rank ^a	Points	Rank ^a	Points	Rank ^a	
Large	Seattle, WA	(R) 1.07	(R) 1.13	(R) 1.29	(R) 1.36	(R) 1.36	(R) 1.40	(R) 1.39	(R) 1.41	(R) 1.35	(R) 1.35	1.35	-4	83	26	14
Small	Spokane, WA	1.02	1.03	(R) 1.04	1.06	1.06	1.07	(R) 1.08	1.08	1.08	1.07	1.07	0	65	5	73
Medium	Springfield, MA-CT	1.05	1.05	1.06	1.06	1.06	1.06	1.06	1.07	1.07	1.06	1.07	1	61	2	81
Large	St. Louis, MO-IL	(R) 1.09	(R) 1.12	(R) 1.12	(R) 1.21	(R) 1.21	(R) 1.24	(R) 1.23	(R) 1.24	(R) 1.25	(R) 1.22	1.24	0	65	14	39
Large	Tampa-St. Petersburg, FL	1.19	1.21	1.26	1.32	1.31	1.29	1.28	1.29	(R) 1.27	(R) 1.31	1.31	2	55	10	52
Medium	Toledo, OH-MI	1.02	1.02	1.03	1.06	1.06	1.08	1.08	1.09	1.10	1.11	1.11	3	35	9	56
Medium	Tucson, AZ	1.06	1.06	1.11	1.15	(R) 1.15	1.19	1.21	1.21	(R) 1.20	(R) 1.24	1.29	8	7	22	22
Medium	Tulsa, OK	1.02	1.03	1.05	1.06	1.07	1.08	1.09	(R) 1.09	1.12	(R) 1.12	1.11	3	35	9	56
Large	Virginia Beach, VA	1.08	1.11	(R) 1.14	1.16	1.18	1.18	1.19	1.19	(R) 1.16	(R) 1.18	1.21	3	43	12	45
Very large	Washington, DC-VA-MD	1.18	1.23	1.33	1.40	1.44	1.43	1.46	(R) 1.47	(R) 1.44	(R) 1.46	1.50	5	20	27	12
NA	85-Area Average	(R) 1.12	(R) 1.16	(R) 1.28	(R) 1.30	(R) 1.32	(R) 1.32	(R) 1.34	(R) 1.35	(R) 1.34	(R) 1.35	1.37	4	NA	22	NA
NA	Very Large Area Average	1.19	(R) 1.24	(R) 1.42	(R) 1.42	(R) 1.44	(R) 1.45	(R) 1.48	(R) 1.48	(R) 1.47	(R) 1.48	1.50	3	NA	26	NA
NA	Large Area Average	(R) 1.07	(R) 1.10	(R) 1.17	(R) 1.22	1.24	(R) 1.25	(R) 1.26	(R) 1.28	(R) 1.28	(R) 1.29	1.30	4	NA	21	NA
NA	Medium Area Average	1.05	1.06	1.09	(R) 1.13	(R) 1.14	(R) 1.15	(R) 1.15	(R) 1.16	(R) 1.16	(R) 1.17	1.18	3	NA	12	NA
NA	Small Area Average	(R) 1.04	1.04	1.06	(R) 1.07	1.08	(R) 1.08	(R) 1.09	1.10	(R) 1.10	(R) 1.10	1.10	2	NA	6	NA

KEY: NA = not applicable; R = revised.

Very large urban areas – over 3 million population.

Large urban areas – over 1 million and less than 3 million population.

Medium urban areas – over 500,000 and less than 1 million population.

Small urban areas – less than 500,000 population.

^a Rank is based on the calculated point change with the highest number corresponding to a rank of 1.

NOTE

The Travel Time Index (TTI) is the ratio of peak period travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the peak relative to free-flow travel. A TTI of 1.3, for example, indicates a 20-minute free-flow trip will take 26 minutes during the peak travel time periods, a 6-minute (30 percent) travel time penalty.

SOURCE

1982- 2002: Texas Transportation Institute, *The 2004 Annual Urban Mobility Study* (College Station, TX: 2004), Internet site <http://mobility.tamu.edu> as of Sept. 13, 2004.

TABLE 1-65: Annual Roadway Congestion Index

Population group	Urban area	Points change																	
														Short-term 1997-2002		Long-term 1982-2002			
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Points Rank ^a	Rank ^a	Points Rank ^a	Rank ^a			
Medium	Akron, OH	0.54	0.59	0.73	0.81	0.85	0.88	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.88	0	76	34	39
Medium	Albany-Schenectady, NY	0.46	0.51	0.68	0.72	0.74	0.75	0.75	0.77	0.78	0.80	0.81	0.81	0.81	0.81	6	46	35	33
Medium	Albuquerque, NM	0.62	0.69	0.85	1.00	1.05	1.06	1.08	1.08	1.07	1.05	1.02	1.02	1.02	1.02	-4	81	40	22
Small	Allentown-Bethlehem, PA-NJ	0.65	0.71	0.83	0.93	0.98	0.99	1.00	0.98	0.96	0.94	0.95	0.95	0.95	0.95	-4	81	30	53
Small	Anchorage, AK	0.58	0.63	0.62	0.60	0.59	0.59	0.62	0.61	0.62	0.65	0.67	0.67	0.67	0.67	8	34	9	82
Large	Atlanta, GA	0.77	0.93	0.98	1.13	1.17	1.24	1.28	1.27	(R) 1.34	(R) 1.34	1.35	1.35	1.35	1.35	11	13	58	1
Medium	Austin, TX	0.73	0.81	0.90	0.94	0.97	1.01	1.03	1.07	1.12	(R) 1.16	1.15	1.15	1.15	1.15	14	9	42	18
Small	Bakersfield, CA	0.54	0.56	0.64	0.72	0.74	0.75	0.76	0.78	0.76	0.77	0.77	0.77	0.77	0.77	2	69	23	68
Large	Baltimore, MD	0.75	0.80	0.95	1.03	1.03	1.05	1.06	1.07	1.10	1.14	1.20	1.20	1.20	1.20	15	5	45	13
Small	Beaumont, TX	0.65	0.72	0.74	0.80	0.84	0.85	0.85	0.86	0.84	0.86	0.89	0.89	0.89	0.89	4	58	24	64
Medium	Birmingham, AL	0.69	0.70	0.78	0.87	0.90	0.93	0.96	0.98	0.99	1.00	1.00	1.00	1.00	1.00	7	44	31	46
Very large	Boston, MA-NH-RI	0.88	0.98	1.09	1.21	1.22	1.25	1.27	1.28	1.30	1.31	1.31	1.31	1.31	1.31	6	46	43	14
Small	Boulder, CO	0.55	0.59	0.65	0.74	0.76	0.81	0.83	0.83	(R) 0.83	0.84	0.84	0.84	0.84	0.84	3	68	29	58
Medium	Bridgeport-Stamford, CT-NY	0.78	0.91	1.01	1.05	1.05	1.08	1.11	1.12	1.14	1.17	1.20	1.20	1.20	1.20	12	11	42	18
Small	Brownsville, TX	0.54	0.54	0.62	0.70	0.71	0.73	0.76	(R) 0.78	(R) 0.83	(R) 0.84	0.84	0.84	0.84	0.84	11	17	30	53
Large	Buffalo, NY	0.53	0.55	0.60	0.67	0.66	0.68	0.70	0.72	0.76	0.75	0.76	0.76	0.76	0.76	8	37	23	68
Small	Cape Coral, FL	0.83	0.87	0.95	0.90	0.92	0.94	0.94	0.95	0.96	0.95	1.01	1.01	1.01	1.01	7	40	18	75
Small	Charleston-North Charleston, SC	0.85	0.88	0.96	0.93	0.92	0.93	0.97	0.98	0.98	0.95	0.97	0.97	0.97	0.97	4	63	12	79
Medium	Charlotte, NC-SC	0.86	1.02	1.05	0.95	1.01	1.07	1.09	1.14	1.15	1.17	1.18	1.18	1.18	1.18	11	19	32	43
Very large	Chicago, IL-IN	0.95	1.02	1.18	1.22	1.27	1.27	1.31	1.32	1.33	1.34	1.38	1.38	1.38	1.38	11	19	43	16
Large	Cincinnati, OH-KY-IN	0.70	0.78	0.92	1.00	1.04	1.09	1.11	1.12	1.13	1.12	1.12	1.12	1.12	1.12	3	65	42	17
Large	Cleveland, OH	0.68	0.65	0.83	0.92	0.94	0.96	0.98	0.98	0.97	0.94	0.92	0.92	0.92	0.92	-4	80	24	64
Small	Colorado Springs, CO	0.50	0.60	0.62	0.73	0.76	0.81	0.83	0.85	0.86	0.87	0.86	0.86	0.86	0.86	5	55	36	31
Small	Columbia, SC	0.55	0.62	0.70	0.75	0.74	0.77	0.79	0.81	0.92	0.83	0.85	0.85	0.85	0.85	8	37	30	53
Large	Columbus, OH	0.63	0.68	0.85	0.97	1.00	1.02	1.04	1.04	1.02	1.08	1.08	1.08	1.08	1.08	6	46	45	12

TABLE 1-65: Annual Roadway Congestion Index—Continued

Population group	Urban area	Points change																		
																	1997-2002		1982-2002	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	1997-2002	Points Rank ^a	1982-2002	Points Rank ^a				
Small	Corpus Christi, TX	0.57	0.65	0.67	0.64	0.66	0.70	0.70	0.71	(R)0.70	0.71	0.71	0.71	1	73	14	77			
Very large	Dallas -Fort Worth, TX	0.73	0.86	0.96	0.96	0.98	1.02	(R)1.05	1.06	(R)1.09	(R)1.10	1.13	11	19	40	23				
Medium	Dayton, OH	0.65	0.63	0.74	0.84	0.88	0.89	0.90	0.90	0.91	0.91	0.90	1	73	25	63				
Large	Denver-Aurora, CO	0.82	0.86	0.92	1.07	1.12	1.14	1.18	1.20	1.23	1.28	1.25	11	13	43	14				
Very large	Detroit, MI	0.89	0.91	1.08	1.16	1.18	1.18	1.18	1.20	1.23	1.24	1.26	8	34	37	30				
Medium	El Paso, TX-NM	0.62	0.70	0.73	0.85	0.84	0.86	0.91	0.94	0.98	0.99	0.97	11	17	35	33				
Small	Eugene, OR	0.53	0.58	0.68	0.78	0.82	0.84	0.87	0.91	0.94	0.92	0.91	7	40	38	26				
Medium	Fresno, CA	0.67	0.65	0.86	0.87	0.89	0.92	0.96	0.98	1.00	0.97	0.96	4	63	29	58				
Medium	Grand Rapids, MI	0.57	0.58	0.69	0.85	0.88	0.89	0.93	0.94	0.93	0.95	0.98	9	31	41	20				
Medium	Hartford, CT	0.61	(R)0.67	(R)0.75	(R)0.84	(R)0.85	(R)0.87	(R)0.89	(R)0.89	0.93	(R)0.95	0.96	9	31	35	33				
Medium	Honolulu, HI	0.79	0.84	1.03	1.08	1.07	1.06	1.06	1.06	1.04	1.04	1.03	-3	78	24	64				
Very large	Houston, TX	1.03	1.11	1.04	1.00	1.02	1.06	1.10	1.13	1.17	(R)1.20	1.22	16	3	19	74				
Large	Indianapolis, IN	0.64	0.69	0.83	1.12	1.13	1.16	1.14	1.13	1.16	(R)1.16	1.13	-3	78	49	9				
Medium	Jacksonville, FL	0.75	0.81	0.94	1.04	1.02	1.01	1.01	1.00	(R)1.03	1.02	1.03	2	69	28	60				
Large	Kansas City, MO-KS	0.53	0.62	0.66	0.74	0.77	0.78	0.79	0.81	0.83	0.84	0.84	6	51	31	48				
Small	Laredo, TX	0.55	0.56	0.56	0.53	0.56	0.60	0.63	0.63	0.63	(R)0.65	0.65	5	52	10	80				
Large	Las Vegas, NV	0.69	0.78	1.06	1.12	1.12	1.11	1.13	1.18	1.23	1.20	1.21	10	23	52	6				
Small	Little Rock, AR	0.51	0.59	0.68	0.78	0.81	0.81	0.85	0.88	0.86	0.89	0.86	5	55	35	33				
Very large	Los Angeles-Long Beach-Santa Ana, CA	1.29	1.31	1.59	1.52	1.56	1.54	1.58	1.58	1.59	1.56	1.57	3	65	28	60				
Medium	Louisville, KY-IN	0.78	0.78	0.80	0.99	1.01	1.05	1.08	1.09	1.09	1.08	1.12	7	40	34	38				
Medium	Memphis, TN-MS-AR	0.71	0.70	0.88	0.96	0.98	0.98	0.99	0.98	1.00	1.03	1.04	6	46	33	40				
Very large	Miami, FL	(R)0.77	(R)0.82	(R)1.01	(R)1.13	(R)1.13	(R)1.15	(R)1.17	(R)1.21	(R)1.26	(R)1.27	1.29	14	6	52	6				
Large	Milwaukee, WI	0.71	0.80	0.93	0.94	0.99	1.01	1.02	1.07	1.10	1.08	1.06	5	52	35	32				
Large	Minneapolis-St. Paul, MN	0.66	0.76	0.89	1.06	1.08	1.13	1.18	1.20	1.22	1.25	1.22	9	26	56	2				
Medium	Nashville-Davidson, TN	0.83	0.82	0.85	0.93	0.93	0.96	0.97	0.98	0.98	1.03	1.03	7	40	20	71				

Continued next page

TABLE 1-65: Annual Roadway Congestion Index—Continued

Population group	Urban area	1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Points change			
													1997-2002		1982-2002	
													Points	Rank ^a	Points	Rank ^a
Medium	New Haven, CT	0.70	0.73	0.86	0.84	0.84	0.89	0.92	0.95	0.97	1.00	1.03	14	7	33	40
Large	New Orleans, LA	0.92	0.97	0.94	0.99	0.96	0.97	1.00	0.99	0.97	0.97	1.02	5	52	10	80
Very large	New York-Newark, NY-NJ-CT	0.77	0.86	0.99	1.04	1.06	1.09	1.11	1.14	1.15	1.15	1.16	7	45	39	25
Large	Oklahoma City, OK	0.65	0.71	0.73	0.82	0.84	0.85	0.86	(R) 0.89	(R) 0.88	(R) 0.87	0.89	4	58	24	64
Medium	Omaha, NE-IA	0.62	0.70	0.75	0.81	0.84	0.85	0.87	0.90	0.90	0.92	0.95	10	22	33	42
Large	Orlando, FL	0.82	0.93	0.95	0.97	1.00	1.03	1.05	1.07	1.11	1.14	1.13	10	23	31	48
Medium	Oxnard-Ventura, CA	0.74	0.89	1.05	1.16	1.17	1.18	1.19	1.23	1.25	1.29	1.29	11	13	55	3
Small	Pensacola, FL-AL	0.61	0.69	0.84	0.88	0.86	0.88	0.87	0.88	0.92	0.91	0.91	3	65	30	51
Very large	Philadelphia, PA-NJ-DE-MD	(R) 0.81	(R) 0.84	(R) 0.96	(R) 0.96	(R) 0.98	(R) 1.02	(R) 1.05	(R) 1.06	(R) 1.07	(R) 1.10	1.11	9	26	30	51
Large	Phoenix, AZ	0.95	0.98	1.01	1.08	1.14	1.12	1.16	1.21	1.27	1.29	1.24	12	11	29	56
Large	Pittsburgh, PA	0.70	0.73	0.75	0.76	0.76	0.76	0.78	0.78	0.77	0.78	0.78	2	69	8	84
Large	Portland, OR-WA	0.81	0.90	1.02	1.15	1.20	1.22	1.22	(R) 1.24	(R) 1.26	(R) 1.27	1.28	6	46	47	11
Medium	Providence, RI-MA	(R) 0.64	(R) 0.66	(R) 0.83	(R) 0.83	(R) 0.85	(R) 0.84	(R) 0.88	(R) 0.90	(R) 0.93	(R) 0.95	0.96	12	85	32	43
Medium	Raleigh-Durham, NC	0.60	0.74	0.85	0.94	0.93	0.95	0.95	0.95	0.98	1.01	0.99	4	58	39	24
Medium	Richmond, VA	(R) 0.60	(R) 0.56	(R) 0.79	(R) 0.91	(R) 0.89	(R) 0.84	(R) 0.80	(R) 0.77	(R) 0.77	(R) 0.76	0.79	-5	83	19	73
Large	Riverside-San Bernardino, CA	0.78	0.90	1.14	1.16	1.18	1.16	1.20	1.25	1.26	(R) 1.29	1.31	15	4	53	5
Medium	Rochester, NY	0.51	0.57	0.69	0.77	0.77	0.76	0.77	0.78	0.80	0.80	0.80	4	58	29	56
Large	Sacramento, CA	0.76	0.88	1.05	1.12	1.17	1.14	1.18	1.20	1.25	1.28	1.30	16	2	54	4
Small	Salem, OR	0.56	0.64	0.79	0.77	0.79	0.82	0.86	0.85	0.87	(R) 0.88	0.91	9	84	-47	85
Medium	Salt Lake City, UT	0.66	0.71	0.84	1.04	1.04	1.01	1.01	1.00	1.04	1.08	1.14	13	10	48	10
Large	San Antonio, TX	0.69	0.78	0.74	0.87	0.89	0.92	0.97	1.03	1.05	1.04	1.06	14	7	37	28
Large	San Diego, CA	0.79	0.90	1.19	1.17	1.17	1.18	1.20	1.25	1.32	1.35	1.29	11	13	50	8
Very large	San Francisco-Oakland, CA	1.06	1.17	1.35	1.34	1.35	1.36	1.37	1.39	1.41	(R) 1.38	1.41	5	57	35	37
Large	San Jose, CA	1.07	1.13	1.24	1.13	1.11	1.11	1.13	1.19	1.34	1.36	1.35	24	1	28	60
Medium	Sarasota-Bradenton, FL	0.83	0.85	0.91	0.99	1.04	1.06	1.05	1.13	1.15	1.15	1.15	9	33	32	43

TABLE 1-65: Annual Roadway Congestion Index—Continued

Population group	Urban area	1982-2002												Points change		
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002	Long-term 1982-2002		
		RCI	RCI	RCI	RCI	RCI	RCI	RCI	RCI	RCI	RCI	RCI	Points	Rank ^a	Points	Rank ^a
Large	Seattle, WA	(R) 0.83	(R) 0.90	(R) 1.10	(R) 1.17	(R) 1.17	(R) 1.20	(R) 1.21	(R) 1.23	(R) 1.22	1.23	1.24	4	58	41	20
Small	Spokane, WA	0.53	(R) 0.59	(R) 0.66	(R) 0.79	(R) 0.80	(R) 0.83	(R) 0.84	(R) 0.86	(R) 0.84	(R) 0.83	0.84	1	73	31	48
Medium	Springfield, MA-CT	0.62	0.65	0.71	0.76	0.75	0.76	0.80	0.82	0.83	0.81	0.84	8	37	22	70
Large	St. Louis, MO-IL	(R) 0.92	(R) 0.99	(R) 0.96	(R) 1.08	(R) 1.09	(R) 1.10	(R) 1.07	(R) 1.09	(R) 1.10	(R) 1.08	1.10	0	76	18	75
Large	Tampa-St. Petersburg, FL	1.07	1.12	1.10	1.16	1.14	1.11	1.11	1.12	1.13	1.16	1.21	10	23	14	78
Medium	Toledo, OH-MI	0.53	0.61	0.66	0.77	0.80	0.83	0.85	0.86	0.89	0.91	0.91	8	34	38	26
Medium	Tucson, AZ	0.78	0.76	0.89	0.95	0.97	1.00	1.04	1.05	1.07	1.09	1.09	9	26	31	46
Medium	Tulsa, OK	0.73	0.75	0.76	0.77	0.79	0.80	0.82	0.83	0.87	0.88	0.82	2	72	9	83
Large	Virginia Beach, VA	0.84	0.89	0.91	0.91	0.94	0.95	0.96	0.97	0.95	(R) 0.97	1.04	9	26	20	71
Very large	Washington, DC-VA-MD	0.99	1.13	1.16	1.24	1.26	1.27	1.29	1.29	1.30	1.34	1.36	9	26	37	28
NA	85-Area Average	(R) 0.72	(R) 0.78	(R) 0.88	(R) 0.94	(R) 0.96	(R) 1.00	(R) 1.00	(R) 1.01	(R) 1.03	(R) 1.04	1.05	5	NA	33	NA
NA	Very Large Area Average	(R) 0.92	(R) 1.00	(R) 1.13	(R) 1.16	(R) 1.18	(R) 1.20	(R) 1.23	(R) 1.24	(R) 1.26	(R) 1.27	1.29	9	NA	37	NA
NA	Large Area Average	(R) 0.77	(R) 0.84	(R) 0.94	(R) 1.01	(R) 1.03	(R) 1.04	(R) 1.06	(R) 1.09	(R) 1.11	(R) 1.12	1.13	9	NA	36	NA
NA	Medium Area Average	(R) 0.67	(R) 0.72	(R) 0.83	(R) 0.90	(R) 0.92	(R) 1.00	(R) 0.95	(R) 0.97	(R) 0.98	(R) 1.00	1.00	0	NA	33	NA
NA	Small Area Average	(R) 0.59	(R) 0.65	(R) 0.72	(R) 0.76	0.78	(R) 0.80	0.82	(R) 0.83	0.84	0.84	0.85	5	NA	26	NA

KEY: R = revised.

Very large urban areas – over 3 million population.
 Large urban areas – over 1 million and less than 3 million population.
 Medium urban areas – over 500,000 and less than 1 million population.
 Small urban areas – less than 500,000 population.

^a Rank is based on the calculated point change with the lowest number corresponding to a rank of 1.

NOTE

The Roadway Congestion Index (RCI) is a measure of vehicle travel density on major roadways in an urban area. An RCI exceeding 1.0 indicates an undesirable congestion level, on average, on the freeways and principal arterial street systems during the peak period. The urban areas included are those containing over 500,000 people and several smaller places mostly chosen by previous sponsors of the Texas Transportation Institute study on mobility.

SOURCE

1982-2002: Texas Transportation Institute, *The 2004 Annual Urban Mobility Report* (College Station, TX: 2004), Internet site <http://mobility.tamu.edu> as of Sept. 13, 2004.

TABLE 1-66: Annual Highway Congestion Cost

Population group	Urban area	Annual Congestion cost per capita (\$)										Annual Congestion cost (\$ millions)										
		1999		2000		2001		2002		1999		2000		2001		2002						
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank					
Medium	Akron, OH	144	(R) 30	139	(R) 31	133	(R) 43	116	61	(R) 8	61	(R) 85	69	61	73	64	64	66	66	66	67	
Medium	Albany-Schenectady, NY	(R) 89	(R) 98	(R) 98	(R) 110	(R) 110	(R) 110	(R) 110	(R) 74	(R) 51	(R) 70	(R) 85	71	(R) 73	(R) 57	58	(R) 69	(R) 70	(R) 69	(R) 69	69	
Medium	Albuquerque, NM	(R) 430	(R) 322	(R) 319	267	267	(R) 31	42	(R) 11	(R) 184	(R) 31	(R) 42	42	(R) 181	(R) 181	154	(R) 39	(R) 45	(R) 47	(R) 47	50	
Small	Allentown-Bethlehem, PA-NJ	108	126	121	128	128	67	67	63	69	71	76	76	71	76	76	67	67	67	67	67	66
Small	Anchorage, AK	(R) 30	(R) 31	(R) 43	46	46	(R) 85	84	8	(R) 8	(R) 8	(R) 85	84	(R) 12	(R) 12	13	(R) 83	(R) 84	(R) 83	(R) 83	82	
Large	Atlanta, GA	(R) 468	(R) 527	(R) 491	573	573	(R) 10	6	(R) 1,337	(R) 1,567	(R) 1,467	1,716	11	(R) 1,467	(R) 1,467	1,716	(R) 12	(R) 10	(R) 11	(R) 11	11	
Medium	Austin, TX	(R) 391	(R) 434	(R) 465	461	461	(R) 19	13	(R) 291	(R) 334	(R) 374	387	29	(R) 374	(R) 374	387	(R) 33	(R) 30	(R) 29	(R) 29	29	
Small	Bakersfield, CA	(R) 52	(R) 65	(R) 69	69	69	(R) 82	80	(R) 20	(R) 26	(R) 28	30	30	(R) 28	(R) 28	30	(R) 77	(R) 77	(R) 76	(R) 76	75	
Large	Baltimore, MD	(R) 294	(R) 329	(R) 381	466	466	(R) 32	15	(R) 634	(R) 716	(R) 842	1,069	16	(R) 842	(R) 842	1,069	(R) 22	20	19	19	16	
Small	Beaumont, TX	(R) 98	(R) 103	(R) 105	140	140	(R) 69	61	(R) 14	(R) 15	(R) 15	20	20	(R) 15	(R) 15	20	(R) 81	(R) 80	(R) 81	(R) 81	80	
Medium	Birmingham, AL	(R) 211	(R) 225	(R) 236	248	248	(R) 42	44	(R) 140	(R) 151	(R) 158	168	49	(R) 158	(R) 158	168	(R) 47	(R) 48	(R) 50	(R) 50	49	
Very large	Boston, MA-NH-RI	(R) 430	(R) 451	(R) 480	475	475	(R) 11	13	(R) 1,299	(R) 1,366	(R) 1,453	1,440	12	(R) 1,453	(R) 1,453	1,440	(R) 13	(R) 12	(R) 12	(R) 12	12	
Small	Boulder, CO	(R) 69	(R) 77	(R) 89	88	88	(R) 77	73	8	9	(R) 10	9	9	(R) 10	(R) 10	9	(R) 83	(R) 83	(R) 84	(R) 84	84	
Medium	Bridgeport-Stamford, CT-NY	261	275	303	301	301	36	36	205	220	248	256	41	248	248	256	42	40	37	37	41	
Small	Brownsville, TX	(R) 40	(R) 49	(R) 52	45	45	(R) 84	85	6	(R) 8	(R) 9	8	85	(R) 9	(R) 9	8	(R) 85	(R) 84	(R) 85	(R) 85	85	
Large	Buffalo, NY	(R) 62	(R) 79	(R) 83	85	85	(R) 78	76	(R) 68	(R) 87	(R) 93	95	62	(R) 93	(R) 93	95	(R) 66	(R) 64	(R) 61	(R) 61	62	
Small	Cape Coral, FL	(R) 115	(R) 115	(R) 119	132	132	(R) 66	64	(R) 32	(R) 34	(R) 36	42	72	(R) 36	(R) 36	42	(R) 73	(R) 73	(R) 73	(R) 73	72	
Small	Charleston-North Charleston, SC	(R) 185	(R) 203	(R) 193	205	205	49	51	(R) 81	(R) 93	(R) 89	95	62	(R) 89	(R) 89	95	(R) 62	(R) 62	(R) 63	(R) 63	62	
Medium	Charlotte, NC-SC	(R) 303	(R) 361	(R) 363	420	420	(R) 30	20	(R) 189	(R) 233	(R) 241	303	34	(R) 241	(R) 241	303	(R) 45	(R) 37	(R) 38	(R) 38	34	
Very large	Chicago, IL-IN	(R) 416	(R) 424	(R) 455	520	520	(R) 16	8	(R) 3,363	(R) 3,432	(R) 3,692	4,221	3	(R) 3,692	(R) 3,692	4,221	3	3	3	3	3	
Large	Cincinnati, OH-KY-IN	(R) 290	(R) 326	(R) 339	378	378	(R) 33	26	(R) 371	(R) 419	(R) 437	500	26	(R) 437	(R) 437	500	(R) 27	27	(R) 26	(R) 26	26	
Large	Cleveland, OH	(R) 156	(R) 141	(R) 124	110	110	(R) 57	71	(R) 289	(R) 263	(R) 233	206	43	(R) 233	(R) 233	206	34	(R) 35	41	41	43	
Small	Colorado Springs, CO	(R) 186	(R) 206	(R) 228	215	215	(R) 48	48	(R) 82	(R) 96	(R) 107	102	59	(R) 107	(R) 107	102	(R) 60	(R) 61	(R) 57	(R) 57	59	
Small	Columbia, SC	58	80	70	74	74	80	79	24	33	29	31	74	29	29	31	76	74	75	75	74	
Large	Columbus, OH	(R) 331	(R) 294	(R) 279	276	276	(R) 26	39	(R) 343	(R) 306	(R) 293	291	36	(R) 293	(R) 293	291	(R) 28	(R) 32	(R) 33	(R) 33	36	
Small	Corpus Christi, TX	(R) 50	(R) 43	(R) 65	59	59	(R) 83	82	(R) 16	(R) 14	(R) 21	19	81	(R) 21	(R) 21	19	(R) 80	(R) 81	(R) 79	(R) 79	81	
Very large	Dallas-Fort Worth-Arlington, TX	(R) 597	(R) 549	(R) 559	627	627	(R) 2	3	(R) 2,342	(R) 2,192	(R) 2,268	2,603	5	(R) 2,268	(R) 2,268	2,603	4	5	(R) 6	(R) 6	5	
Medium	Dayton, OH	203	190	173	139	139	45	62	121	113	103	83	65	103	103	83	53	53	58	58	65	
Large	Denver-Aurora, CO	(R) 512	(R) 582	(R) 635	470	470	8	14	(R) 952	(R) 1,113	(R) 1,287	954	18	(R) 1,287	(R) 1,287	954	16	15	14	14	18	
Very large	Detroit, MI	(R) 420	(R) 413	(R) 457	481	481	14	12	(R) 1,690	(R) 1,661	(R) 1,844	1,939	9	(R) 1,844	(R) 1,844	1,939	(R) 9	(R) 9	(R) 9	(R) 9	9	
Medium	El Paso, TX-NM	(R) 123	(R) 155	(R) 188	175	175	(R) 64	54	(R) 80	(R) 102	(R) 124	117	56	(R) 124	(R) 124	117	(R) 63	(R) 58	(R) 55	(R) 55	56	
Small	Eugene, OR	(R) 80	(R) 111	(R) 91	86	86	(R) 75	75	(R) 18	(R) 24	(R) 21	21	79	(R) 21	(R) 21	21	(R) 78	(R) 78	(R) 79	(R) 79	79	
Medium	Fresno, CA	(R) 164	(R) 177	(R) 149	143	143	55	60	(R) 90	(R) 98	(R) 83	84	64	(R) 83	(R) 83	84	(R) 59	(R) 59	(R) 65	(R) 65	64	
Medium	Grand Rapids, MI	178	172	176	191	191	54	51	91	89	92	101	61	92	92	101	58	63	62	62	61	
Medium	Hartford, CT	(R) 127	(R) 134	(R) 161	164	164	(R) 63	56	(R) 110	(R) 116	(R) 140	143	52	(R) 140	(R) 140	143	55	(R) 52	(R) 52	(R) 52	52	

TABLE 1-66: Annual Highway Congestion Cost—Continued

Population group	Urban area	Annual Congestion cost per capita (\$)					Annual Congestion cost (\$ millions)							
		1999 Value	2000 Value	2001 Value	2002 Value	Rank	1999 Value	2000 Value	2001 Value	2002 Value	Rank			
Medium	Honolulu, HI	(R) 218	(R) 181	(R) 197	(R) 175	(R) 40	(R) 50	(R) 50	(R) 54	(R) 54	(R) 46	(R) 50	(R) 53	54
Very large	Houston, TX	(R) 562	(R) 534	(R) 565	586	(R) 5	(R) 7	(R) 6	5	8	(R) 7	(R) 8	(R) 8	8
Large	Indianapolis, IN	(R) 299	(R) 342	(R) 371	357	(R) 31	(R) 26	(R) 23	28	31	(R) 305	(R) 348	(R) 381	369
Medium	Jacksonville, FL	(R) 239	(R) 248	(R) 267	296	(R) 37	(R) 38	(R) 40	37	40	(R) 203	(R) 214	(R) 237	269
Large	Kansas City, MO-KS	(R) 180	(R) 152	(R) 153	145	(R) 52	(R) 59	(R) 59	58	42	(R) 251	(R) 215	(R) 218	215
Small	Laredo, TX	(R) 58	(R) 54	(R) 70	66	(R) 80	(R) 82	(R) 79	81	82	(R) 10	(R) 10	(R) 14	13
Large	Las Vegas, NV	(R) 288	(R) 298	(R) 271	266	(R) 34	(R) 34	(R) 39	43	32	(R) 331	(R) 364	(R) 352	364
Small	Little Rock, AR	99	84	104	84	68	75	73	78	74	32	27	35	29
Very large	Los Angeles-Long Beach-Santa Ana, CA	(R) 922	(R) 896	(R) 883	879	1	1	1	1	1	(R) 11,364	(R) 11,060	(R) 10,915	11,231
Medium	Louisville, KY-IN	(R) 346	(R) 345	(R) 316	357	(R) 22	25	(R) 33	28	35	(R) 289	(R) 290	(R) 265	302
Medium	Memphis, TN-MS-AR	(R) 217	(R) 247	(R) 274	290	(R) 41	(R) 39	(R) 38	38	37	(R) 211	(R) 240	(R) 269	285
Very Large	Miami, FL	(R) 393	(R) 439	(R) 475	512	(R) 18	(R) 13	(R) 12	10	6	(R) 1,814	(R) 2,138	(R) 2,357	2,558
Large	Milwaukee, WI	(R) 237	(R) 242	(R) 232	220	(R) 38	(R) 40	(R) 44	46	33	(R) 315	(R) 331	(R) 325	318
Large	Minneapolis - St. Paul, MN	(R) 429	(R) 363	(R) 407	398	(R) 13	(R) 18	(R) 18	23	17	(R) 1,008	(R) 872	(R) 986	971
Medium	Nashville-Davidson, TN	(R) 324	(R) 341	(R) 348	390	(R) 28	(R) 27	27	24	39	(R) 214	(R) 229	(R) 236	273
Medium	New Haven, CT	187	210	265	207	47	42	41	49	57	97	110	142	113
Large	New Orleans, LA	(R) 182	(R) 172	(R) 174	161	(R) 50	54	54	57	47	(R) 199	(R) 187	(R) 191	177
Very large	New York-Newark, NY-NJ-CT	(R) 374	(R) 357	(R) 392	409	20	(R) 22	21	21	2	(R) 6,143	(R) 6,100	(R) 6,725	7,080
Large	Oklahoma City, OK	(R) 123	(R) 99	(R) 112	132	(R) 64	(R) 72	(R) 69	64	51	(R) 128	(R) 108	(R) 121	144
Medium	Omaha, NE-IA	(R) 179	(R) 179	(R) 204	217	(R) 53	(R) 51	(R) 49	47	53	(R) 109	(R) 111	(R) 128	138
Large	Orlando, FL	(R) 419	(R) 523	(R) 561	486	(R) 15	(R) 9	(R) 7	11	23	(R) 477	(R) 615	(R) 684	613
Medium	Oxnard-Ventura, CA	208	264	319	305	43	37	31	34	48	134	146	177	172
Small	Pensacola, FL-AL	(R) 154	(R) 190	(R) 171	176	(R) 59	(R) 47	56	53	48	(R) 46	(R) 58	(R) 52	55
Very large	Philadelphia, PA-NJ-DE-MD	(R) 337	(R) 308	(R) 369	389	(R) 25	(R) 32	(R) 24	25	70	(R) 1,601	(R) 1,470	(R) 1,772	1,871
Large	Phoenix, AZ	(R) 407	(R) 407	(R) 450	437	(R) 17	(R) 17	16	18	14	(R) 1,099	(R) 1,140	(R) 1,305	1,289
Large	Pittsburgh, PA	(R) 148	(R) 116	(R) 127	115	(R) 60	(R) 66	(R) 63	70	44	(R) 261	(R) 205	(R) 223	203
Large	Portland, OR-WA	(R) 345	(R) 352	(R) 368	367	(R) 23	(R) 23	(R) 25	27	24	(R) 521	(R) 539	(R) 585	589
Medium	Providence, RI-MA	(R) 206	(R) 192	(R) 223	311	(R) 44	(R) 46	(R) 47	33	30	(R) 247	(R) 232	(R) 273	384
Medium	Raleigh-Durham, NC	182	209	283	244	50	43	36	45	45	128	153	214	191
Medium	Richmond, VA	(R) 156	(R) 124	(R) 123	145	(R) 57	(R) 65	(R) 66	58	55	(R) 117	(R) 97	(R) 100	121
Large	Riverside-San Bernardino, CA	(R) 469	(R) 472	(R) 529	561	(R) 9	(R) 10	(R) 9	7	19	(R) 667	(R) 693	(R) 805	904
Medium	Rochester, NY	(R) 60	(R) 59	(R) 57	55	(R) 79	(R) 81	(R) 83	83	73	(R) 38	(R) 38	(R) 37	36
Large	Sacramento, CA	(R) 277	(R) 308	(R) 308	349	(R) 35	(R) 32	(R) 34	30	25	(R) 378	(R) 429	(R) 440	526
Small	Salem, OR	(R) 92	(R) 105	(R) 109	137	(R) 72	(R) 70	(R) 71	63	75	(R) 18	(R) 21	(R) 23	30
Medium	Salt Lake City, UT	(R) 144	(R) 169	(R) 249	304	(R) 61	(R) 56	(R) 42	35	48	(R) 129	(R) 152	(R) 227	277

Continued next page

TABLE 1-66: Annual Highway Congestion Cost—Continued

Population group	Urban area	Annual Congestion cost per capita (\$)						Annual Congestion cost (\$ millions)									
		1999 Value	2000 Value	2001 Value	2002 Value	1999 Rank	2000 Rank	2001 Rank	2002 Rank	1999 Value	2000 Value	2001 Value	2002 Value	1999 Rank	2000 Rank	2001 Rank	2002 Rank
Large	San Antonio, TX	(R) 308	(R) 363	(R) 328	344	(R) 29	(R) 18	(R) 29	32	(R) 382	(R) 454	(R) 414	434	(R) 25	(R) 25	(R) 27	27
Large	San Diego, CA	(R) 339	(R) 349	(R) 395	465	(R) 24	(R) 24	(R) 19	16	(R) 916	(R) 958	(R) 1,098	1,314	17	(R) 16	(R) 16	13
Very large	San Francisco-Oakland, CA	(R) 568	(R) 623	(R) 667	675	(R) 4	2	2	2	(R) 2,285	(R) 2,513	(R) 2,697	2,779	5	4	4	4
Large	San Jose, CA	(R) 516	(R) 548	(R) 578	518	7	6	(R) 5	9	(R) 861	(R) 919	(R) 970	871	18	(R) 17	18	20
Medium	Sarasota-Bradenton, FL	157	157	159	187	56	57	58	52	82	84	85	102	60	65	64	59
Large	Seattle, WA	(R) 540	(R) 440	(R) 442	435	(R) 6	(R) 12	(R) 17	19	(R) 1,401	(R) 1,146	(R) 1,184	1,175	(R) 11	(R) 13	(R) 15	15
Small	Spokane, WA	(R) 95	(R) 95	(R) 84	88	(R) 70	(R) 74	(R) 76	73	(R) 31	(R) 31	(R) 28	29	(R) 75	(R) 75	(R) 76	77
Medium	Springfield, MA-CT	71	78	76	85	76	78	78	76	43	48	47	55	71	71	71	70
Large	St. Louis, MO-IL	(R) 327	(R) 363	(R) 322	348	(R) 27	(R) 18	(R) 30	31	(R) 657	(R) 740	(R) 662	719	(R) 21	(R) 19	(R) 23	22
Large	Tampa-St Petersburg, FL	(R) 355	(R) 339	(R) 395	399	(R) 21	(R) 28	(R) 19	22	(R) 673	(R) 661	(R) 790	808	(R) 19	(R) 22	21	21
Medium	Toledo, OH-MI	95	108	125	124	70	69	64	68	47	54	63	62	68	69	68	68
Medium	Tucson, AZ	(R) 191	(R) 186	(R) 229	269	(R) 46	(R) 49	(R) 45	41	(R) 128	(R) 126	(R) 162	191	(R) 50	50	(R) 49	45
Medium	Tulsa, OK	(R) 91	(R) 139	(R) 128	131	(R) 73	(R) 61	(R) 62	66	(R) 70	(R) 111	(R) 103	106	(R) 65	(R) 54	(R) 58	58
Large	Virginia Beach, VA	(R) 229	(R) 177	(R) 218	270	(R) 39	(R) 52	(R) 48	40	(R) 336	(R) 265	(R) 331	412	(R) 29	(R) 34	(R) 31	28
Very large	Washington, DC-VA-MD	(R) 590	(R) 563	(R) 594	600	(R) 3	(R) 4	(R) 4	4	(R) 2,089	(R) 2,026	(R) 2,216	2,274	6	(R) 7	(R) 7	7
NA	85-Area Average	(R) 401	(R) 399	(R) 420	435	NA	NA	NA	NA	(R) 655	(R) 663	(R) 707	743	NA	NA	NA	NA
NA	Very Large Area Average	(R) 527	(R) 517	(R) 543	567	NA	NA	NA	NA	(R) 3,264	(R) 3,257	(R) 3,454	3,652	NA	NA	NA	NA
NA	Large Area Average	(R) 337	(R) 341	(R) 358	364	NA	NA	NA	NA	(R) 561	(R) 580	(R) 619	639	NA	NA	NA	NA
NA	Medium Area Average	(R) 200	(R) 208	(R) 226	238	NA	NA	NA	NA	(R) 137	(R) 144	(R) 159	170	NA	NA	NA	NA
NA	Small Area Average	(R) 100	(R) 112	(R) 114	116	NA	NA	NA	NA	30	(R) 34	(R) 35	36	NA	NA	NA	NA

KEY: NA = not applicable; R = revised.

Very large urban areas - over 3 million population.
 Large urban areas - over 1 million and less than 3 million population.
 Medium urban areas - over 500,000 and less than 1 million population.
 Small urban areas - less than 500,000 population.

NOTES

The cities shown represent the 50 largest metropolitan areas, as well as others chosen by the states sponsoring the Texas Transportation Institute study on mobility.
 The cost of congestion is estimated with a value for each hour of travel time and each gallon of fuel. For a more detailed explanation of the formulas used, see the source document.

SOURCE

1998-2002: Texas Transportation Institute, *The 2004 Annual Urban Mobility Study* (College Station, TX: 2004), available at <http://mobility.tamu.edu> as of Sept. 13, 2004.

TABLE 1-67: Amtrak On-Time Performance Trends and Hours of Delay by Cause

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
On-time performance, total percent (weighted)	69%	81%	76%	76%	71%	74%	79%	79%	78%	75%	76%	74%
Short distance (<400 miles), percent	71%	82%	82%	81%	76%	79%	81%	80%	^R 82%	79%	80%	77%
Long distance (>=400 miles), percent	64%	78%	53%	57%	49%	53%	59%	55%	^R 55%	52%	52%	53%
Hours of delay by cause, total ^a	N	N	12,126	25,248	25,056	25,825	27,289	29,252	^R 70,396	83,837	85,932	88,413
Amtrak ^b	N	N	3,565	5,527	5,193	5,310	4,796	4,891	^R 23,337	27,822	26,575	25,711
Host railroad ^c	N	N	4,244	11,224	11,438	12,904	14,202	16,158	^R 43,881	52,273	55,090	57,346
Other ^d	N	N	4,316	8,497	8,425	7,611	8,291	8,203	^R 3,176	3,741	4,266	5,355

KEY: N = data do not exist; R = revised.

^a Amtrak changed its method for reporting delays in 2000. Therefore, the data for 2000 and following years are not comparable with prior years.

^b Includes all delays that occur when operating on Amtrak owned tracks and all delays for equipment or engine failure, passenger handling, holding for connections, train servicing, and mail/baggage handling when on tracks of a host railroad.

^c Includes all operating delays not attributable to Amtrak when operating on tracks of a host railroad, such as track and signal related delays, power failures, freight and commuter train interference, routing delays, etc.

^d Includes delays not attributable to Amtrak or other host railroads, such as customs and immigrations, law enforcement action, weather, or waiting for scheduled departure time.

NOTES

Host railroad is a freight or commuter railroad over which Amtrak trains operate for all or part of their trip.

Numbers may not add to totals due to rounding.

All percentages are based on Amtrak's fiscal year (October 1–September 30).

Amtrak trips are considered delayed based on the following chart:

Trip length (miles)	Delayed departure time (minutes)
0-250	10
251-350	15
351-450	20
451-550	25
≥551	30

SOURCES

1980: Amtrak, *National Railroad Passenger Corporation Annual Report* (Washington, DC: 1981).

1985–99: *Ibid.*, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues).

2000–03: Amtrak, personal communication, October 2003.

Chapter 2
Transportation Safety

Section A
Multimodal

TABLE 2-1: Transportation Fatalities by Mode

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001 ^a	2002	2003
TOTAL fatalities	U	U	U	U	U	U	47,347	44,527	(R) 44,334	44,933	45,096	U
Air												
U.S. air carrier ^b	499	261	146	124	1	526	39	168	92	531	0	(P) 22
Commuter carrier ^c	N	N	N	28	37	37	6	9	5	13	0	(P) 2
On-demand air taxi ^d	N	N	N	69	105	76	51	52	71	60	(R) 35	(P) 45
General aviation ^e	787	1,029	1,310	1,252	1,239	956	767	735	(R) 596	562	(R) 581	(P) 631
Highway, total ^f	36,399	47,089	52,627	44,525	51,091	43,825	44,599	41,817	41,945	42,196	42,815	42,643
Passenger car occupants	N	N	N	25,929	27,449	23,212	24,092	22,423	20,699	20,320	20,416	19,460
Motorcyclists	790	1,650	2,280	3,189	5,144	4,564	3,244	2,227	2,897	3,197	3,244	3,661
Truck occupants ^g , light	N	N	N	4,856	7,486	6,689	8,601	9,568	11,526	11,723	12,182	12,444
Truck occupants ^g , large	N	N	N	961	1,262	977	705	648	754	708	684	723
Bus occupants	N	N	N	53	46	57	32	33	22	34	45	40
Pedestrians	7,210	7,990	8,950	7,516	8,070	6,808	6,482	5,584	4,763	4,901	4,808	4,749
Pedalcyclists	490	690	760	1,003	965	890	859	833	693	732	662	622
Other ^h	27,909	36,759	40,637	1,018	669	628	584	501	591	581	774	944
Railroad ⁱ	2,345	2,533	2,225	1,492	1,417	1,036	1,297	1,146	937	971	951	(P) 856
Highway-rail grade crossing	1,421	1,610	1,440	917	833	582	698	579	425	421	(R) 357	(P) 329
Railroad	924	923	785	575	584	454	599	567	512	550	(R) 594	(P) 531
Transit ^j	N	N	N	N	N	N	339	274	295	267	280	U
Waterborne, total ^k	N	N	2,016	2,039	1,847	1,377	1,051	975	838	820	(R) 873	816
Vessel-related ^l	N	N	178	243	206	131	85	51	49	59	(R) 64	(P) 46
Not related to vessel casualties ^l	N	N	420	330	281	130	101	95	88	80	(R) 59	(P) 67
Recreational boating ^m	739	1,360	1,418	1,466	1,360	1,116	865	829	701	681	750	(P) 703
Pipeline, total	N	N	30	15	19	33	9	21	38	7	12	12
Hazardous liquid pipeline	N	N	4	7	4	5	3	3	1	0	1	0
Gas pipeline	N	N	26	8	15	28	6	18	37	7	(R) 11	12

KEY: N = data do not exist; P = preliminary; R = revised; U = data are not available.

^a Carriers operating under 14 CFR 121, all scheduled and nonscheduled service. Since Mar. 20, 1997, 14 CFR 121 include aircraft with 10 or more seats that formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data. 2001 fatalities include passengers and crew aboard the aircraft used in the September 11th terrorist attacks.

TABLE 2-1: Transportation Fatalities by Mode—continued

- b All scheduled service operating under 14 CFR 135 (commuter air carriers). Before Mar. 20, 1997, 14 CFR 135 applied to aircraft with 30 or fewer seats. Since Mar. 20, 1997, 14 CFR 135 includes only aircraft with fewer than 10 seats. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data.
- c Nonscheduled service operating under 14 CFR 135 (on-demand air taxis).
- d All operations other than those operating under 14 CFR 121 and 14 CFR 135.
- e The National Highway Traffic Safety Administration (NHTSA) typically revises its most recent annual estimates the following year. The 2002 highway data here remain unrevised from the date of publication, but may be revised in the future.
- f Large trucks are defined as trucks over 10,000 pounds gross vehicle weight ratings, including single-unit trucks and truck tractors. Light trucks are defined as trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and utility vehicles.
- g Includes occupants of other vehicle types and other nonmotorists. For 1960-70, the U.S. Department of Transportation, National Highway Traffic Safety Administration did not break out fatality data to the same level of detail as in later years, so fatalities for those years also include occupants of passenger cars, trucks, and buses.
- h Includes Amtrak. Highway-rail grade crossing fatalities data for 1970 and before is not comparable with data after 1970 due to change in reporting system. Fatalities include those resulting from train accidents, train incidents, and nontrain incidents. Highway-rail grade crossing fatalities are also counted under highway, except train occupants.
- i Fatalities include those resulting from all reportable incidents, not just from accidents.
- j Vessel-related casualties include those involving damage to vessels such as collisions or groundings. Fatalities not related to vessel casualties include deaths from falling overboard or from accidents involving onboard equipment.
- k 1992-2001 data come from the Marine Safety Management Information System and 2002-03 data come from the Marine Information for Safety and Law Enforcement System. Data for prior years come from other sources and may not be directly comparable.
- l Data are based on information provided by the States, the District of Columbia and the five U.S. Territories to the Coast Guard Boating Accident Report Database (BARD) system. Research on the level of underreporting of fatal accidents in the BARD, based on discrepancies between the BARD and the Coast Guard Search and Rescue Management Information System (SARMIS), found that approximately 6 percent of recreational boating fatalities are not captured by the BARD system. Adjusting the number of recreational boating fatalities included in the BARD in 2001 by 6 percent increases the total to 722.
- m U.S. air carrier figure does not include 12 persons killed aboard a commuter aircraft when it and a US Air airliner collided; commuter air carrier figure does not include 22 persons killed aboard a US Air airliner when it and a commuter aircraft collided.
- n Includes 2 fatalities that have not been assigned to a specific vehicle type.

NOTES

Numbers may not add to the totals because some fatalities are counted in more than one mode. Total fatalities is derived from table 2-4 and earlier editions of this table. To avoid double counting, the following adjustments are made: most (not all) highway-rail grade-crossing fatalities have not been added because most (not all) such fatalities involve motor vehicles and, thus, are already included in highway fatalities; for transit, all commuter rail fatalities and motor-bus, trolley-bus, demand-responsive, and van-pool fatalities arising from accidents have been subtracted because they are counted as railroad, highway, or highway-rail grade-crossing fatalities. The reader cannot reproduce the total fatalities in this table by simply leaving out the number of highway-rail grade-crossing fatalities in the sum and subtracting the above transit submodes, because in so doing, grade-crossing fatalities not involving motor vehicles would be left out (see table 2-35 on rail). An example of such a fatality is a bicyclist hit by a train at a grade crossing.

Caution must be exercised in comparing fatalities across modes because significantly different definitions are used. In particular, rail and transit fatalities include incident-related (as distinct from accident-related) fatalities, such as fatalities from falls in transit stations or railroad employee fatalities from a fire in a workshop. Equivalent fatalities for the air and highway modes (fatalities at airports not caused by moving aircraft or fatalities from accidents in automobile repair shops) are not counted toward the totals for these modes. Thus, fatalities not necessarily directly related to in service transportation are counted for the transit and rail modes, potentially overstating the risk for these modes.

TABLE 2-1: Transportation Fatalities by Mode—continued

SOURCES

Air:

- 1960: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1967* (Washington, DC: December 1968).
- 1965-70: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1975*, NTSB/ARC-77/1 (Washington, DC: January 1977).
- 1975: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1983*, NTSB/ARC-87/01 (Washington, DC: February 1987), table 18.
- 1980: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), tables 2 and 16.
- 1985-2003: Ibid., Internet site www.nts.gov/aviation, table 5 as of Sept. 10, 2004 and personal communication.

Commuter:

- 1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1980*, NTSB/ARC-83/01 (Washington, DC: January 1983), tables 26 and 40.

- 1985-2003: Ibid., Internet site www.nts.gov/aviation, table 8 as of Sept. 10, 2004 and personal communication.

On-demand air taxi:

- 1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), table 61.

- 1985-2003: Ibid., Internet site www.nts.gov/aviation, table 9 as of Sept. 10, 2004 and personal communication.

General aviation:

- 1960-70: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. General Aviation, Calendar Year 1970*, NTSB/ARG-74/1 (Washington, DC: April 1974), table 117.

- 1975-80: Ibid., *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1985*, NTSB/ARG-87/03 (Washington, DC: October 1987), table 21.

- 1985-2003: Ibid., Internet site www.nts.gov/aviation, table 10 as of Sept. 10, 2004 and personal communication.

Highway:

- 1960-65: Estimated by U.S. Department of Transportation, National Highway Traffic Safety Administration from data supplied by U.S. Department of Health and Human Services, National Center for Health Statistics, and individual state accident reports (adjusted to 30-day deaths). Fatalities data prior to 1975 have been adjusted to reflect the Fatality Analysis Reporting System's definition of a fatal crash as one that involves a motor vehicle on a trafficway that results in the death of a vehicle occupant or a nonmotorist within 30 days of the crash.

- 1970: Ibid., *Traffic Safety Facts 2001*, DOT HS 809 100 (Washington, DC: December 2002), table 4, available at Internet site www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSFAnn/TSF2001.pdf as of August 2003.

- 1975-2002: Ibid., *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: 2004), table 4, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSFAnn/TSF2002Final.pdf> as of Sept. 10, 2004.

Continued next page

TABLE 2-1: Transportation Fatalities by Mode—continued

Rail:	
<i>Highway-rail grade crossing:</i>	
1960-70: National Safety Council, <i>Accident Facts, 1974</i> (Washington, DC: 1974).	
1975-80: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, personal communication.	
1985-90: Ibid., <i>Rail-Highway Crossing Accident/Incident and Inventory Bulletin</i> (Washington, DC: Annual issues), table S.	
1995: Ibid., <i>Interim Railroad Safety Statistics Annual Report 2002</i> (Washington, DC: August 2003), table 1-1.	
2000-2003: Ibid., Internet site http://safetydata.fra.dot.gov/officeofsafety/Default.asp as of Sept. 10, 2004.	
<i>Railroad:</i>	
1960-65: National Safety Council, <i>Accident Facts, 1974</i> (Washington, DC: 1974).	
1970-90: U.S. Department of Transportation, Federal Railroad Administration, <i>Highway-Rail Crossing Accident/Incident and Inventory Bulletin</i> (Washington, DC: Annual issues), table 7.	
1995: Ibid., <i>Interim Railroad Safety Statistics Annual Report 2002</i> (Washington, DC: August 2003), table 1-1.	
2000-2003: Ibid., Internet site http://safetydata.fra.dot.gov/officeofsafety/Default.asp as of Sept. 10, 2004.	
Transit:	
1990: U.S. Department of Transportation, Federal Transit Administration, <i>Safety Management Information Statistics 1999</i> (Washington, DC: 2001), p. 41.	
1995-2002: U.S. Department of Transportation, Federal Transit Administration, <i>Transit Safety and Security Statistics and Analysis Annual Report</i> , (Washington, DC: 2004) available at Internet site http://transit-safety.volpe.dot.gov/data/SAMIS.asp as of Sept. 10, 2004.	
Water:	
<i>Vessel- and nonvessel-related:</i>	
1970-90: U.S. Department of Transportation, U.S. Coast Guard, Office of Investigations and Analysis, Compliance Analysis Division, (G-MOA-2), personal communication, Apr. 13, 1999.	
1995-2003: U.S. Department of Homeland Security, U.S. Coast Guard, Data Administration Division (G-MRL-1), personal communication, May 28, 2003 and Oct. 13, 2004.	
<i>Recreational boating:</i>	
1960-2002: Ibid., Office of Boating Safety, <i>Boating Statistics</i> (Washington, DC: Annual issues), also available at Internet site http://www.usegboating.org as of Sept. 10, 2004.	
2003: Ibid., Office of Boating Safety, <i>Comparison of U.S. Recreational Boating Fatalities</i> , Internet site http://www.uscboating.org as of Sept. 10, 2004.	
Hazardous liquid and gas pipeline:	
1970-1985: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, <i>Accident and Incident Summary Statistics by Year</i> , Internet site http://ops.dot.gov as of Nov. 18, 2003.	
1990-2003: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, <i>Accident and Incident Summary Statistics by Year</i> , located at Internet site http://ops.dot.gov as of Sept. 13, 2004.	

TABLE 2-2: Injured Persons by Transportation Mode

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001 ^a	2002	2003
TOTAL injured persons	U	U	U	U	U	U	U	3,539,343	(R) 3,259,613	3,100,052	2,958,841	U
Air ^b												
U.S. air carrier ^c	N	N	107	81	19	30	29	25	(R) 29	(R) 19	(R) 24	30
Commuter carrier ^d	N	N	N	N	14	14	11	17	7	4	0	1
On-demand air taxi ^e	N	N	N	N	43	44	36	14	12	(R) 24	(R) 16	15
General aviation ^f	N	N	715	769	681	501	409	396	(R) 309	(R) 321	(R) 297	326
Highway, total	N	N	N	N	N	N	3,230,666	3,465,279	3,188,750	3,032,672	2,925,758	2,888,601
Passenger car occupants	N	N	N	N	N	N	2,376,439	2,469,358	2,051,609	1,926,625	1,804,788	1,756,495
Motorcyclists	N	N	N	N	N	N	84,285	57,480	57,723	60,236	64,713	67,103
Truck occupants ^g , light	N	N	N	N	N	N	505,144	722,496	886,566	860,527	879,338	889,048
Truck occupants ^g , large	N	N	N	N	N	N	41,822	30,344	30,832	29,424	26,242	26,893
Bus occupants	N	N	N	N	N	N	32,691	19,214	17,769	15,427	18,819	18,174
Pedestrians	N	N	N	N	N	N	104,805	85,837	77,625	77,619	70,664	69,949
Pedalcyclists	N	N	N	N	N	N	74,903	66,572	51,160	45,277	48,011	46,378
Other ^h	N	N	N	N	N	N	10,578	13,977	15,466	17,536	13,182	14,561
Railroad ⁱ												
Highway-rail grade crossing	3,367	3,725	3,272	3,860	3,550	2,687	2,407	1,894	1,219	1,157	999	1,002
Railroad	16,113	21,930	17,934	50,138	58,696	31,617	22,736	12,546	10,424	9,828	(R) 10,104	7,956
Transit ^j	N	N	N	N	N	N	54,556	57,196	56,697	53,945	19,260	U
Waterborne, total ^k	N	N	U	U	U	U	U	6,119	5,052	4,980	(R) 4,784	U
Vessel-related ^l	N	N	105	97	180	172	175	145	130	181	(R) 168	(P) 205
Not related to vessel casualties ^l	N	N	U	U	U	U	U	1,833	567	525	(R) 554	(P) 499
Recreational boating	929	927	780	2,136	2,650	2,757	3,822	4,141	4,355	4,274	4,062	3,888
Pipeline, total	N	N	254	231	192	126	76	64	81	61	49	71
Hazardous liquid pipeline	N	N	21	17	15	18	7	11	4	10	0	5
Gas pipeline	N	N	233	214	177	108	69	53	77	51	(R) 49	66

KEY: N = data do not exist; P = preliminary; R = revised; U = data are not available.

^a Injuries classified as serious. See definitions of injuries in the glossary.

Continued next page

TABLE 2-2: Injured Persons by Transportation Mode—continued

- b All scheduled and nonscheduled service operating under 14 CFR 121. Since March 20, 1997, 14 CFR 121 includes only aircraft with 10 or more seats formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent years' data.
- c All scheduled service operating under 14 CFR 135 (commuter air carriers). Before March 20, 1997, 14 CFR 135 applied to aircraft with 30 or fewer seats. Since March 20, 1997, 14 CFR 135 includes only aircraft with fewer than 10 seats. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent years' data.
- d Nonscheduled service operating under 14 CFR 135 (on-demand air taxis).
- e All operations other than those operating under 14 CFR 121 and 14 CFR 135.
- f Large trucks are defined as trucks over 10,000 pounds gross vehicle weight rating, including single-unit trucks and truck tractors. Light trucks are defined as trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and utility vehicles.
- g Includes occupants of other unknown vehicle types and other nonmotorists.
- h Includes Amtrak. Figures include those injuries resulting from train accidents, train incidents, and nontrain incidents. Injury figures also include occupational illness. Railroad injuries data for 1970 and before are not comparable with post-1970 data due to change in reporting system. Highway-rail grade crossing injuries are counted under highway, except train occupants.
- i Includes motor bus, commuter rail, heavy rail, light rail, demand response, van pool, and automated guideway. Transit injuries include those resulting from all reportable incidents, not just from accidents. Directly Operated (DO) modes only. The drop in the number of injuries in 2002 is due largely to a change in definitions by the Federal Transit Administration. Only injuries requiring immediate medical treatment away from the scene now qualify as reportable. Previously, any injury was reportable.
- j Vessel-related injuries include those involving damage to vessels, such as collisions or groundings. Injuries not related to vessel casualties include those from falls overboard or from accidents involving onboard equipment.
- k 1992-2001 data come from the Marine Safety Management Information System and 2002 data come from the Marine Information for Safety and Law Enforcement System. Data for prior years come from other sources and may not be directly comparable.

NOTES

The motor vehicle injury data in this table come from the U.S. Department of Transportation, National Highway Traffic Safety Administration's General Estimates System (GES). The data from GES, which began operation in 1988, are obtained from a nationally representative probability sample selected from all police-reported crashes. The GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes that were not reported to the police or did not result in property damage.

Numbers may not add to totals because some injuries are counted in more than one mode. To avoid double counting, the following adjustments have been made in the total injured row:

- most (not all) highway-rail grade crossing injuries have not been added because most (not all) such injuries involve motor vehicles and are already included in highway injuries;
- for transit, all commuter rail injuries and motor-bus, trolley-bus, demand-responsive, and van-pool injuries arising from accidents have been subtracted because they are counted as railroad, highway, or highway-rail grade crossing injuries.

The reader cannot reproduce the total injuries count in this table by simply leaving out the number of highway-rail grade crossing injuries in the sum and subtracting the above transit submodes, because in so doing, grade-crossing injuries not involving motor vehicles would be left out (see table 2-35 on rail). An example of such an injury is a bicyclist injured by a train at a grade crossing.

TABLE 2-2: Injured Persons by Transportation Mode—continued

SOURCES**Air:***U.S. air carrier:*

1970-90: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues).
 1995-2003: Ibid., Analysis and Data Division, personal communications, Aug. 8, 1996, Mar. 10, 1999, March 23, 2000, May 7, 2002, Sept. 11, 2002, May 5, 2003, and Sept. 30, 2004.

Commuter carrier, and on-demand air taxi:

1980-90: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues).
 1995-2003: Ibid., Analysis and Data Division, personal communications, 1996, 1997, 1998, 2000, May 7, 2002, Sept. 11, 2002, May 5, 2003, and Sept. 30, 2004.

General aviation:

1970-90: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: General Aviation* (Washington, DC: Annual issues).
 1995-2003: Ibid., Analysis and Data Division, personal communications, 1996, 1997, 1998, 2000, May 7, 2002, Sept. 11, 2002, May 5, 2003, Sept. 30, 2004.

Highway:

1990-95: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 1999*, DOT HS 809 100 (Washington, DC: December 2000), table 4.
 2000-03: Ibid., General Estimates System Database and personal communication, Dec. 9, 2003 and Oct. 12, 2004.

Rail:*Highway-rail grade crossings:*

1960-70: National Safety Council, *Accident Facts, 1974* (Washington, DC: 1974).
 1975: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, personal communication.
 1980-90: Ibid., *Rail-Highway Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table S.
 1995: Ibid., *Interim Railroad Safety Statistics Annual Report 2002* (Washington, DC: August 2003), table 1-1.
 2000-2003: Ibid., Internet site <http://safetydata.fra.dot.gov/officeofsafety/Default.asp> as of Sept. 10, 2004.

Railroad:

1960-70: National Safety Council, *Accident Facts, 1974* (Washington, DC: 1974).
 1970-90: U.S. Department of Transportation, Federal Railroad Administration, *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table 7.
 1995: Ibid., *Interim Railroad Safety Statistics Annual Report 2002* (Washington, DC: August 2003), table 1-1.
 2000-2003: Ibid., Internet site <http://safetydata.fra.dot.gov/officeofsafety/Default.asp> as of Sept. 10, 2004.

Transit:

1990: U.S. Department of Transportation, Federal Transit Administration, *Safety Management Information Statistics* (Washington, DC: Annual issues).
 1995-2002: U.S. Department of Transportation, Federal Transit Administration, *Transit Safety and Security Statistics and Analysis Annual Report* (Washington, DC: 2004), Internet site <http://transit-safety.volpe.dot.gov/data/SAMIS.asp> as of Sept. 10, 2004.

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TABLE 2-2: Injured Persons by Transportation Mode—continued**Water:***Vessel- and nonvessel-related:*

1970-90: U.S. Department of Transportation, U.S. Coast Guard, Office of Investigations and Analysis, Compliance Analysis Division, (G-MOA-2), personal communication, Apr. 13, 1999.
 1995-2003: U.S. Department of Homeland Security, U.S. Coast Guard, Data Administration Division (G-MRI-1), personal communications, Dec. 12, 2001, May 28, 2003, and Oct. 13, 2004.

Recreational boating:

1960-2003: U.S. Department of Transportation, U.S. Coast Guard, Office of Boating Safety, *Boating Statistics* (Washington, DC: Annual issues), also available at Internet site <http://www.usegboating.org> as of Oct. 19, 2004.

Hazardous liquid and gas pipeline:

1970-1985: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, *Accident and Incident Summary Statistics by Year*, Internet site <http://ops.dot.gov> as of Nov. 18, 2003.

1990-2003: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, *Accident and Incident Summary Statistics by Year*, Internet site <http://ops.dot.gov> as of Sept. 13, 2004.

TABLE 2-3: Transportation Accidents^a by Mode

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air												
U.S. air carrier ^b	90	83	55	37	19	21	24	36	56	(R) 46	41	54
Commuter carrier ^c	N	N	N	48	38	18	15	12	12	7	(R) 7	2
On-demand air taxi ^d	N	N	N	152	171	157	107	75	80	72	(R) 60	75
General aviation ^e	4,793	5,196	4,712	3,995	3,590	2,739	2,242	2,056	1,837	1,726	(R) 1,715	1,741
Highway, total crashes ^a	N	N	N	N	N	N	6,471,000	6,699,000	6,394,000	6,323,000	(R) 6,316,000	6,328,000
Passenger car	N	N	N	N	N	N	5,561,000	5,594,000	4,926,000	4,832,000	U	U
Motorcycle	N	N	N	N	N	N	103,000	66,000	69,000	73,000	U	U
Truck ^f , light	N	N	N	N	N	N	2,152,000	2,750,000	3,208,000	3,254,000	U	U
Truck ^f , large	N	N	N	N	N	N	372,000	363,000	438,000	409,000	U	U
Bus	N	N	N	N	N	N	60,000	59,000	56,000	54,000	U	U
Rail												
Highway-rail grade crossing ^{g,h}	3,195	3,820	3,559	12,076	10,612	6,919	5,715	4,633	3,502	3,237	(R) 3,077	2,929
Railroad ^{g,i}	N	N	8,095	8,041	8,205	3,275	2,879	2,459	2,983	3,023	(R) 2,738	2,958
Transit ^j	N	N	N	N	N	N	58,002	25,683	24,261	(R) 23,891	13,968	U
Waterborne												
Vessel-related	N	N	2,582	3,310	4,624	3,439	3,613	4,298	3,887	3,937	(R) 3,619	(P) 3,090
Recreational boating	2,738	3,752	3,803	6,308	5,513	6,237	6,411	8,019	7,740	6,419	5,705	3,888
Pipeline												
Hazardous liquid pipeline	N	N	351	254	246	183	180	188	(R) 146	(R) 130	(R) 144	128
Gas pipeline	N	N	1,077	1,338	1,524	334	198	161	234	(R) 211	(R) 184	241

KEY: N = data do not exist; P = preliminary; R = revised; U = data are not available.

^a The U.S. Department of Transportation, National Highway Traffic Safety Administration uses the term "crash" instead of accident in its highway safety data. Highway crashes often involve more than one motor vehicle, hence "total highway crashes" is smaller than the sum of the components. Estimates of highway crashes are rounded to the nearest thousand in the source document.

^b Carriers operating under 14 CFR 121, all scheduled and nonscheduled service. Since Mar. 20, 1997, 14 CFR 121 includes only aircraft with 10 or more seats formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent years' data.

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TABLE 2-3: Transportation Accidents^a by Mode—Continued

- c All scheduled service operating under 14 CFR 135. Since Mar. 20, 1997, 14 CFR 121 includes only aircraft with 10 or more seats formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent years' data.
- d Nonscheduled service operating under 14 CFR 135.
- e All operations other than those operating under 14 CFR 121 and 14 CFR 135.
- f Large trucks are defined as trucks over 10,000 pounds gross vehicle weight rating, including single-unit trucks and truck tractors. Light trucks are defined as trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and utility vehicles.
- g Includes Amtrak.
- h Includes both accidents and incidents. Data not comparable after 1970 due to change in reporting system. Most highway-rail grade crossing accidents are counted under highway.
- i Train accidents only.
- j Accident figures include collisions with vehicles, objects, and people, derailments / vehicles going off the road. Accident figures do not include fires and personal casualties. The drop in the number of accidents in 2002 is due largely to a change in definitions by the Federal Transit Administration, particularly the definition of injuries. Only injuries requiring immediate medical treatment away from the scene now qualify as reportable. Previously, any injury was reportable.

NOTES

The motor vehicle crash data in this table come from the U.S. Department of Transportation, National Highway Traffic Safety Administrations' General Estimates System (GES), which began operation in 1988. GES data are obtained from a nationally representative probability sample selected from all police-reported crashes. The GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes that were not reported to the police or did not result in property damage.

SOURCES

- Air:**
- Air carrier:*
- 1960: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1967* (Washington, DC: December 1968).
 - 1965-70: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1975*, NTSB/ARC-77/1 (Washington, DC: January 1977).
 - 1975: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1983*, NTSB/ARC-87/01 (Washington, DC: February 1987), table 18.
 - 1980: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), tables 2 and 16.
 - 1985-1995: Ibid., Internet site www.nts.gov/aviation as of June 27, 2003, table 5 and personal communication, July 3, 2003.
 - 2000-2003: Ibid., personal communication, Sept. 30, 2004.
- Commuter air carrier:*
- 1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1980*, NTSB/ARC-83/01 (Washington, DC: January 1983), tables 26 and 40.
 - 1985-1995: Ibid., Internet site www.nts.gov/aviation as of June 27, 2003, table 8 and personal communication, July 3, 2003.
 - 2000-03: Ibid., personal communication, Sept. 30, 2004.

TABLE 2-3: Transportation Accidents^a by Mode—Continued

On-demand air taxi:

1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), table 61.

1985-1995: Ibid., Internet site www.nts.gov/aviation as of June 27, 2003, table 9 and personal communication, July 3, 2003.

2000-03: Ibid., personal communication, Sept. 30, 2004.

General aviation:

1960-70: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1970*, NTSB/ARG-74/1 (Washington, DC: April 1974), table 117.

1975-80: Ibid., *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1985*, NTSB/ARG-87/03 (Washington, DC: October 1987), table 21.

1985-1995: Ibid., Internet site www.nts.gov/aviation as of June 27, 2003, table 10 and personal communication, July 3, 2003.

2000-03: Ibid., personal communication, Sept. 30, 2004.

Highway:

1990-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: 2004), table 38.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: 2004).

Rail:

Highway-rail grade crossings:

1960-70: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Rail-Highway Grade-Crossing Accidents* (Washington, DC: Annual issues).

1975-80: Ibid., Office of Policy and Program Development, personal communication.

1985-90: Ibid., *Rail-Highway Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table S.

1995: Ibid., *Interim Railroad Safety Statistics Annual Report 2002* (Washington, DC: August 2003), table 1-1.

2000-2003: Ibid., Internet site <http://safetydata.fra.dot.gov/officeofsafety/Default.asp> as of Sept. 10, 2004.

Railroad:

1970-90: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Accident/Incident Bulletin* (Washington, DC: Annual issues), table 4.

1995: Ibid., *Interim Railroad Safety Statistics Annual Report 2002* (Washington, DC: August 2003), table 1-1.

2000-2003: Ibid., Internet site <http://safetydata.fra.dot.gov/officeofsafety/Default.asp> as of Sept. 10, 2004.

Transit:

1990: U.S. Department of Transportation, Federal Transit Administration, *Safety Management Information Statistics 2000* (Washington, DC: 2000), pp. 51-54 and personal communication, July 28, 2003.

1995-2002: U.S. Department of Transportation, Federal Transit Administration, *Transit Safety and Security Statistics and Analysis Annual Report* (Washington, DC: 2004) Internet site <http://transit-safety.volpe.dot.gov/data/SAMIS.asp> as of Sept. 10, 2004.

Water:

Vessel-related:

1970-90: U.S. Department of Transportation, U.S. Coast Guard, Office of Investigations and Analysis, Compliance Analysis Division, personal communication, Apr. 13, 1999.

1995-2003: Ibid., Data Administration Division (G-MRI-1), personal communication, May 28, 2003 and Oct. 13, 2004.

Continued next page

TABLE 2-3: Transportation Accidents^a by Mode—continued*Recreational boating:*

1960-2001: Ibid., Office of Boating Safety, *Boating Statistics* (Washington, DC: Annual issues).

2002-03: Ibid., *Boating Statistics 2002: Executive Summary* (Washington, DC: 2003), Internet site <http://www.uscgboating.org/statistics> as of Nov. 20, 2003 and personal communication, Nov. 17, 2004.

Hazardous liquid and gas pipeline:

1970-1985: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, *Accident and Incident Summary Statistics by Year*, Internet site <http://ops.dot.gov> as of Nov. 18, 2003.

1990-2003: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, *Accident and Incident Summary Statistics by Year*, Internet site <http://ops.dot.gov> as of Sept. 13, 2004.

TABLE 2-4: Distribution of Transportation Fatalities by Mode

	1999		2000		2001		2002	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
TOTAL of all modes ^a	44,044	100.0	(R) 44,334	100.0	44,933	100.0	45,096	100.0
Passenger car occupants	20,862	47.4	20,699	46.7	20,320	45.2	20,416	45.3
Light-truck occupants	11,265	25.6	11,526	26.0	11,723	26.1	12,182	27.0
Pedestrians struck by motor vehicles	4,939	11.2	4,763	10.7	4,901	10.9	4,808	10.7
Motorcyclists	2,483	5.6	2,897	6.5	3,197	7.1	3,244	7.2
Recreational boating	734	1.7	701	1.6	681	1.5	750	1.7
Large-truck occupants	759	1.7	754	1.7	708	1.6	684	1.5
Pedalcyclists struck by motor vehicles	754	1.7	693	1.6	732	1.6	662	1.5
Other and unknown motor vehicle occupants	447	1.0	450	1.0	458	1.0	661	1.5
General aviation	619	1.4	(R) 596	1.3	562	1.3	581	1.3
Railroad trespassers ^b (excluding grade crossings)	479	1.1	463	1.0	511	1.1	540	1.2
Other nonoccupants struck by motor vehicles ^c	149	0.34	141	0.32	123	0.27	113	0.25
Heavy rail transit (subway)	84	0.19	80	0.18	59	0.13	73	0.16
Waterborne transportation (vessel-related)	61	0.13	49	0.07	59	0.13	64	0.14
Waterborne transportation (nonvessel-related)	93	0.20	88	0.20	80	0.18	59	0.13
Grade crossings, not involving motor vehicles ^a	57	0.13	64	0.14	76	0.17	47	0.10
Bus occupants (school, intercity, and transit)	59	0.13	22	0.05	34	0.08	45	0.10
Private grade crossings, with motor vehicles	36	0.08	55	0.12	30	0.07	39	0.09
Air taxi	38	0.09	71	0.16	60	0.13	35	0.08
Railroad-related, not otherwise specified (excluding grade crossings)	17	0.02	23	0.05	13	0.03	25	0.06
Railroad employees, contractors, and volunteers on duty (excluding grade crossings)	31	0.09	22	0.06	23	0.05	22	0.05
Transit buses; fatalities not related to accidents ^e	12	0.03	8	0.02	6	0.01	14	0.03
Light rail transit	17	0.04	30	0.07	21	0.05	13	0.03
Gas distribution pipelines	16	0.04	22	0.05	5	0.01	10	0.02
Passengers on railroad trains (excluding grade crossings)	3	<0.01	4	<0.01	3	<0.01	7	0.02
Gas transmission pipelines	2	<0.01	15	0.03	2	<0.01	1	<0.01

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TABLE 2-4: Distribution of Transportation Fatalities by Mode—continued

	1999		2000		2001		2002	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Hazardous liquid pipelines	4	<0.01	1	<0.01	0	-	1	<0.01
Air carriers	12	0.03	92	0.21	(h) 531	1.2	0	-
Commuter air	12	0.03	5	0.01	13	0.03	0	-
Demand response transit, fatalities not related to accidents ^e	0	-	0	-	2	<0.01	0	-
Other counts, redundant with above ^f								
Large-truck occupants and nonoccupants	5,380	NA	5,282	NA	5,111	NA	4,897	NA
Public grade crossings, with motor vehicles	309	NA	306	NA	315	NA	271	NA
Commuter rail	95	NA	87	NA	87	NA	116	NA
Transit buses, accident-related fatalities	90	NA	82	NA	89	NA	64	NA
Outside planes in crashes ^g	5	NA	14	NA	11	NA	6	NA
Demand responsive transit, accident-related fatalities	1	NA	8	NA	3	NA	0	NA

KEY: NA = not applicable; R = revised.

- ^a Unless otherwise specified, includes fatalities outside the vehicle.
- ^b Includes fatalities outside trains, except at grade crossings.
- ^c Includes all nonoccupant fatalities, except pedalcyclists and pedestrians.
- ^d Public grade-crossing fatalities involving motor vehicles are included in counts for motor vehicles.
- ^e Fatalities not related to transit bus and demand responsive transit accidents are not included under highway submodes.
- ^f Fatalities at grade crossings with motor vehicles are included under relevant motor vehicle modes. Commuter rail fatalities are counted under railroad. For transit bus and demand responsive transit accidents, occupant fatalities are counted under "bus" and nonoccupant fatalities are counted under "pedestrians," "pedalcyclists," or other motor vehicle categories.
- ^g Includes nonoccupant fatalities resulting from aviation accidents.
- ^h Other than the persons aboard the aircraft who were killed, fatalities resulting from the September 11 terrorist acts are excluded.

SOURCES

Air data:

National Transportation Safety Board, Internet site www.ntsb.gov/aviation/Stats.htm as of Aug. 17, 2004.

Highway data:

U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: 2003), table 4, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSAAnn/TSF2002Final.pdf> as of Oct. 15, 2004.

Railroad data:

U.S. Federal Railroad Administration, *Railroad Safety Statistics, Annual Report 2002* (Washington, DC: August 2004), tables 1-3 and 7-7.

TABLE 2-4: Distribution of Transportation Fatalities by Mode—continued

Transit data:	U.S. Department of Transportation, Federal Transit Administration, <i>Transit Safety and Security Statistics and Analysis</i> (Washington, DC: Annual issues) and personal communication, July 28, 2003 and Oct 13, 2004.
Waterborne transportation:	U.S. Department of Homeland Security, U.S. Coast Guard, Data Administration Division (G-MRI-1), personal communication, July 2, 2003 and July 16, 2004.
Recreational boating:	Ibid., Office of Boating Safety, <i>Boating Statistics</i> (Washington, DC: Annual issues).
Pipeline data:	U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, and Internet site http://ops.dot.gov as of Aug. 17, 2004.

TABLE 2-5: Highway-Rail Grade-Crossing Safety and Property Damage Data

	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatalities	^a 1,440	917	833	582	698	579	488	461	431	402	425	421	(R) 357	324
Injured persons	3,272	3,860	(R) 3,890	2,687	2,407	1,894	1,610	1,540	1,303	1,396	1,219	1,157	(R) 999	998
Accidents	^a 3,559	(R) 12,126	(R) 10,796	(R) 7,073	5,715	4,633	4,257	3,865	3,508	3,489	3,502	3,237	(R) 3,077	2,928
Property damage, railroad vehicles, and property (\$ millions)	N	(R) 6.9	6.5	8.7	13.1	10.1	8.8	15.0	14.4	23.0	14.8	8.3	(R) 9.6	15.7

KEY: N = data do not exist; R = revised.

^a 1970 data are not comparable to later years due to change in reporting system.

SOURCES

Fatalities, injuries, accidents:

1970: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Rail-Highway Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), tables S and 11.

1975, 1980, 1985, 1990-2003: Ibid. Internet site <http://safetydata.fra.dot.gov/OfficeofSafety/Query/Default.asp> as of June 25, 2004.

Property damage:

1970: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Accident/Incident Bulletin* (Washington, DC: Annual issues), table 5.

1975, 1980, 1985, 1990-2003: Ibid. Internet site <http://safetydata.fra.dot.gov/OfficeofSafety/Query/Default.asp> as of June 25, 2004.

TABLE 2-6: Hazardous Materials Fatalities, Injuries, Accidents, and Property Damage Data

	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL fatalities	27	19	8	8	7	120	12	13	9	16	(R) 11	(R) 9	8
Accident-related	21	14	7	7	6	7	10	8	7	11	(R) 7	(R) 8	7
Air fatalities	0	0	0	0	0	110	0	0	0	0	0	0	0
Accident-related	0	0	0	0	0	0	0	0	0	0	0	0	0
Highway fatalities	27	17	8	8	7	8	12	13	9	16	(R) 11	(R) 8	8
Accident-related	21	12	7	7	6	5	10	8	7	11	(R) 7	(R) 7	7
Rail fatalities	0	2	0	0	0	2	0	0	0	0	0	1	0
Accident-related	0	2	0	0	0	2	0	0	0	0	0	1	0
Water ^a fatalities	0	0	0	0	0	0	0	0	0	0	0	0	0
Accident-related	0	0	0	0	0	0	0	0	0	0	0	0	0
Other ^b fatalities	0	0	0	0	0	0	0	0	0	0	0	0	0
Accident-related	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL injured persons	648	626	253	423	400	1,175	221	195	264	251	(R) 168	(R) 133	117
Accident-related	168	47	16	18	18	864	16	13	15	16	12	(R) 14	15
Air injured persons	5	8	4	39	33	33	24	20	12	5	13	4	1
Accident-related	0	0	0	0	0	0	0	0	0	0	0	0	0
Highway injured persons	527	493	195	311	296	216	152	151	217	164	(R) 126	(R) 115	103
Accident-related	156	43	9	9	14	22	11	9	15	15	12	(R) 13	15
Rail injured persons	99	121	53	73	71	926	45	22	35	82	29	(R) 14	13
Accident-related	12	4	7	9	4	842	5	4	0	1	0	1	0
Water ^a injured persons	2	1	0	0	0	0	0	2	0	0	0	0	0
Accident-related	0	0	0	0	0	0	0	0	0	0	0	0	0
Other ^b injured persons	15	3	1	0	0	0	0	0	0	0	0	0	0
Accident-related	0	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE 2-6: Hazardous Materials Fatalities, Injuries, Accidents, and Property Damage Data—continued

	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL incidents	10,951	15,719	6,019	8,879	(R) 14,853	(R) 14,077	(R) 14,070	(R) 15,497	(R) 17,616	(R) 17,556	(R) 17,830	(R) 15,447	15,191
Accident-related	440	486	364	297	303	335	318	(R) 316	371	390	(R) 411	(R) 355	318
Air incidents	147	223	114	297	817	925	(R) 1,031	1,386	(R) 1,582	(R) 1,419	(R) 1,084	(R) 734	753
Accident-related	0	0	0	0	0	0	1	2	0	1	2	1	0
Highway incidents	10,063	14,161	4,752	7,296	(R) 12,869	12,034	(R) 11,932	(R) 13,111	(R) 14,953	(R) 15,062	(R) 15,841	(R) 13,831	13,615
Accident-related	330	347	302	249	253	292	264	(R) 264	307	(R) 327	(R) 355	(R) 313	276
Rail incidents	694	1,271	842	1,279	1,155	1,112	(R) 1,102	989	(R) 1,073	(R) 1,058	(R) 899	(R) 872	813
Accident-related	109	134	61	48	50	43	53	(R) 50	64	(R) 62	54	(R) 41	42
Water ^a incidents	28	34	7	7	12	6	5	(R) 11	8	17	(R) 6	(R) 10	10
Accident-related	0	2	0	0	0	0	0	0	0	0	0	0	0
Other ^b incidents	19	30	304	0	0	0	0	0	0	0	0	0	0
Accident-related	1	3	1	0	0	0	0	0	0	0	0	0	0
TOTAL property damage (current \$ thousands) ^c	8,090	10,829	22,993	32,353	30,900	46,849	(R) 33,534	(R) 46,193	(R) 65,400	(R) 78,009	(R) 69,397	(R) 53,694	48,585
Accident-related	6,051	6,236	20,268	24,792	23,602	37,775	(R) 25,318	(R) 36,809	(R) 51,721	(R) 61,720	(R) 56,465	(R) 36,640	36,586
Air property damage	8.9	12.3	12.3	142	100	87	336	267	286	272	(R) 309	109	100
Accident-related	0	0	0	0	0	0	0	0	0	42	50	60	0
Highway property damage	5,584	7,324	12,690	20,190	22,141	29,257	(R) 24,741	(R) 28,669	(R) 34,359	(R) 50,907	(R) 47,692	(R) 43,631	44,099
Accident-related	3,694	3,782	10,175	14,132	16,342	22,315	(R) 17,871	21,489	(R) 23,065	(R) 37,700	(R) 36,322	(R) 29,095	33,412
Rail property damage	2,488	2,952	10,274	11,952	8,485	17,385	(R) 8,418	(R) 16,243	(R) 30,694	(R) 26,547	(R) 21,248	(R) 9,706	4,124
Accident-related	2,357	2,357	10,094	10,660	7,260	15,460	7,446	(R) 15,321	(R) 28,656	23,978	20,092	(R) 7,485	3,175
Water ^a property damage	6.1	505	3.2	70	174	120	38	1,015	61	283	(R) 147	(R) 248	261
Accident-related	0	81	0	0	0	0	0	0	0	0	0	0	0
Other ^b property damage	3.5	35	14.4	0	0	0	0	0	0	0	0	0	0
Accident-related	0.3	15.6	<0.1	0	0	0	0	0	0	0	0	0	0

KEY: R = revised.

^a Water category only includes nonbulk marine. Bulk marine hazardous materials incidents are reported to the U.S. Coast Guard and are not included.^b Other category includes freight forwarders and modes not otherwise specified.

TABLE 2-6: Hazardous Materials Fatalities, Injuries, Accidents, and Property Damage Data—continued

^c Property damage under \$30,000 is reported to the nearest \$100. Property damage \$30,000 or greater is reported to the nearest \$1,000, therefore the total may not equal the sum.

NOTES

Hazardous materials transportation incidents required to be reported are defined in the Code of Federal Regulations (CFR), 49 CFR 171.15, 171.16 (Form F 5800.1). Hazardous materials deaths and injuries are caused by the hazardous material in commerce.

Accident-related refers to those data that are collected from incident reports that are submitted due to an accident or derailment. An accident is defined as a collision or crash of a motor vehicle in the highway mode or a collision or crash of an airplane or vessel. A derailment likewise refers to a collision or crash in the railroad mode. In the case of accident related incident, there is generally a police or other report filed because of associated damage, death or injury.

SOURCES

1975-85: U.S. Department of Transportation, Research and Special Programs Administration, Office of Hazardous Materials Safety, Hazardous Materials Information System Database, 1999.

1990: Ibid. Internet site <http://hazmat.dot.gov/10yearfrm.htm>, as of May 2, 2000.

1995-2003: Ibid. Internet site <http://hazmat.dot.gov/files/hazmat/10year/10yearfrm.htm> as of June 14, 2004.

TABLE 2-7: Transportation-Related Occupational Fatalities^a

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001 ^h	2002	2003
ALL occupational fatalities	6,217	6,331	(R) 6,632	(R) 6,275	(R) 6,202	(R) 6,238	(R) 6,055	6,054	5,920	(R) 5,915	5,534	5,559
Transportation-related fatalities, total ^b	2,484	(R) 2,499	(R) 2,762	(R) 2,587	(R) 2,601	(R) 2,605	(R) 2,645	2,618	2,573	(R) 2,524	2,385	2,357
Highway ^c	1,158	(R) 1,242	(R) 1,343	(R) 1,346	(R) 1,346	(R) 1,393	(R) 1,442	1,496	1,365	(R) 1,409	1,373	1,350
Nonhighway ^d	436	392	(R) 409	(R) 387	(R) 374	377	(R) 388	352	399	(R) 326	323	347
Aircraft	353	282	(R) 426	(R) 283	(R) 324	261	(R) 224	228	280	247	194	208
Pedestrian struck by vehicle ^e	346	365	(R) 391	(R) 388	(R) 353	367	413	377	370	383	356	336
Water vehicle ^f	109	(R) 119	(R) 94	(R) 87	(R) 119	109	112	102	84	90	71	68
Railway ^g	(R) 66	86	81	82	(R) 74	93	60	56	71	62	64	43
As a percent of all occupational fatalities												
Transportation-related fatalities, total ^b	40	(R) 39	42	41	42	42	44	43	43	43	43	42
Highway	19	20	20	21	22	22	24	25	23	24	25	24
Nonhighway	7	6	6	6	6	6	6	6	7	(R) 6	6	6
Aircraft	6	4	6	(R) 5	5	4	4	4	5	4	4	4
Pedestrian struck by vehicle	6	6	6	6	6	6	7	6	6	6	6	6
Water vehicle	2	2	1	1	2	2	2	2	1	2	1	1
Railway	1	1	1	1	1	1	1	1	1	1	1	1

KEY: R = revised.

- ^a Based on the 1992 Bureau of Labor Statistics, *Occupational Injury and Illness Classification Manual*.
- ^b Numbers may not add to totals because transportation categories may include subcategories not shown separately.
- ^c Includes collisions between vehicles/mobile equipment moving in the same or opposite directions, such as in an intersection; between moving and standing vehicles/mobile equipment at the side of a roadway; or a vehicle striking a stationary object. Also includes noncollisions, e.g., jack-knifed or overturned vehicle/mobile equipment—no collision; ran off highway—no collision; struck by shifting load; sudden start or stop; not elsewhere classified.
- ^d Refers to farms and industrial premises. Includes collisions between vehicles/mobile equipment; vehicles/mobile equipment striking a stationary object. Also includes noncollisions such as a fall from a moving vehicle/mobile equipment, fall from and struck by vehicle/mobile equipment, overturned vehicle/mobile equipment, and loss of control of vehicle/mobile equipment.
- ^e Includes worker struck by vehicle/mobile equipment in roadway, on side of road, in a parking lot, or nonroad area.
- ^f Includes collisions, explosions, fires, fall from or on ship/boat, and sinking/capsized water vehicles involved in transportation. Does not include fishing boats.
- ^g Includes collisions between railway vehicles, railway vehicle and other vehicle, railway vehicle and other object, and derailment.
- ^h Data do not include fatalities from the terrorist attacks of September 11 which totaled 2,886.

TABLE 2-7: Transportation-Related Occupational Fatalities^a—continued

NOTES

Percentages may not add to totals due to rounding.

The above categories do not define the types of jobs people had, nor the industries in which they worked. The categories define the ways in which they died. For example, a representative traveling for business reasons who is killed in a rail accident would be listed under rail.

SOURCE

U.S. Department of Labor, Bureau of Labor Statistics, *Census of Fatal Occupational Injuries (CFOI)*, Internet site <http://www.bls.gov/iif/oshcfoi1> as of June 17, 2004 and Dec. 16, 2004.

TABLE 2-8: Reporting Thresholds for Property Damage by U.S. Department of Transportation Modal Administrations

Modal administration	Reporting threshold
Federal Aviation Administration	More than \$25,000 damage to property other than the aircraft.
Federal Highway Administration	None; each state defines its own threshold and FHWA collects state reports.
Federal Railroad Administration	More than \$6,700 in damages to railroad on-track equipment, signals, track, track structures, and roadbed for accidents other than at grade-crossings. No threshold for grade-crossing accidents.
National Highway Traffic Safety Administration	None; property-damage-only crashes are recorded through the General Estimates System, a nationally representative sample of police-reported crashes of all severities.
Federal Transit Administration	More than \$7,500.
Research and Special Programs Administration	More than \$50,000 for gas pipelines. More than \$50,000 for hazardous liquid pipelines.
U. S. Coast Guard	More than \$25,000 for commercial vessels. More than \$2,000 or complete loss of vessel for recreational boats.

SOURCES

- Federal Aviation Administration:** 49 CFR 830.5 (as of Oct. 1, 2003).
Federal Highway Administration: U.S. Department of Transportation, Federal Highway Administration, personal communication, 1997.
Federal Railroad Administration: 49 CFR 225.19 (as of Oct. 1, 2003).
National Highway Traffic Safety Administration: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 2001*, DOT HS 809 337 (Washington, DC: 2001).
Federal Transit Administration: U.S. Department of Transportation, Federal Transit Administration, National Transit Database, *Safety and Security Reporting Manual* (Washington, DC: 2003), available at <http://www.ntdprogram.com/NTD/ntd-home.nsf/docs/sshome> as of Jan. 19, 2003.
Research and Special Programs Administration:
 Gas pipeline: 49 CFR 191.3 (as of Oct. 1, 2003).
 Hazardous liquid pipelines: 49 CFR 195.50 (as of Oct. 1, 2003).
U.S. Coast Guard:
 Commercial shipping: 46 CFR 4.05-1 (as of Oct. 1, 2003).
 Recreational boating: 33 CFR 173.55 (as of July 1, 2003).

Section B
Air

TABLE 2-9: U.S. Air Carrier^a Safety Data

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001 ^c	2002	P ₂₀₀₃
TOTAL fatalities	499	261	146	124	1	526	39	168	92	531	0	22
Total seriously injured persons	N	N	107	81	19	30	29	25	29	18	20	30
Total accidents	90	83	55	37	19	21	24	36	56	(R) 46	41	54
Fatal accidents	17	9	8	3	1	7	6	3	3	6	0	2
Aircraft-miles (millions)	1,130	1,536	2,685	2,478	2,924	3,631	4,948	5,654	7,524	(R) 7,294	(R) 7,056	7,037
Rates per 100 million aircraft-miles												
Fatalities	44.159	16.992	5.438	5.004	0.034	14.486	0.788	2.971	1.223	(R) 7.280	0.000	0.313
Seriously injured persons	N	N	3.985	3.269	0.650	0.826	0.586	0.442	0.385	(R) 0.247	0.283	0.426
Total accidents	7.965	5.404	2.048	1.493	0.650	0.578	0.485	0.637	0.744	(R) 0.631	0.581	0.767
Total accidents, fatal	1.504	0.586	0.298	0.121	0.034	0.193	0.121	0.053	0.040	(R) 0.082	0.000	0.028
Aircraft departures (thousands)	N	N	N	N	5,479	6,307	8,092	8,457	11,458	(R) 10,956	(R) 10,138	10,002
Rates per 100,000 aircraft departures												
Fatalities	N	N	N	N	0.018	8.340	0.482	1.987	0.803	(R) 4.847	0.000	0.220
Seriously injured persons	N	N	N	N	0.347	0.476	0.358	0.296	0.253	(R) 0.164	0.197	0.300
Total accidents	N	N	N	N	0.347	0.333	0.297	0.426	0.489	(R) 0.420	0.404	0.540
Total accidents, fatal	N	N	N	N	0.018	0.111	0.074	0.035	0.026	(R) 0.055	0.000	0.020
Flight hours (thousands)	N	4,691	6,470	5,607	7,067	8,710	12,150	13,505	18,299	(R) 17,814	(R) 16,986	17,121
Rates per 100,000 flight hours												
Fatalities	N	5.564	2.257	2.212	0.014	6.039	0.321	1.244	0.503	(R) 2.981	0.000	0.128
Seriously injured persons	N	N	1.654	1.445	0.269	0.344	0.239	0.185	0.158	0.101	0.118	0.175
Total accidents	N	1.769	0.850	0.660	0.269	0.241	0.198	0.267	0.306	(R) 0.258	0.241	0.315
Total accidents, fatal	N	0.192	0.124	0.054	0.014	0.080	0.049	0.022	0.016	0.034	0.000	0.012

KEY: N = data do not exist; P = preliminary; R = revised.

^a Air carriers operating under 14 CFR 121, scheduled and nonscheduled service. Includes all scheduled and nonscheduled service accidents involving all-cargo carriers and commercial operators of large aircraft when those accidents occurred during 14 CFR 121 operations. Since Mar. 20, 1997, 14 CFR 121 includes aircraft with 10 or more seats formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data.

^b Other than the persons aboard the aircraft who were killed, fatalities resulting from the September 11 terrorist acts are excluded.

Continued next page

TABLE 2-9: U.S. Air Carrier^a Safety Data—continued**NOTES**

Miles, departures, and flight hours are compiled by the U.S. Department of Transportation, Federal Aviation Administration. Rates are computed by dividing the number of fatalities, serious injuries, total accidents, and fatal accidents by the number of miles, departures, or flight hours. These figures are based on information provided by airlines to the U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information.

SOURCES**Fatalities, accidents, miles, departures, and flight hours:**

- 1960: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1967* (Washington, DC: December 1968).
- 1965-70: Ibid., *Calendar Year 1975*, NTSB/ARC-77/1 (Washington, DC: January 1977).
- 1975 (all categories except miles): Ibid., *Calendar Year 1983*, NTSB/ARC-87/01 (Washington, DC: February 1987), table 18.
- 1975 (miles): Ibid., *Calendar Year 1975*, NTSB/ARC-77/1 (Washington, DC: January 1977).
- 1980: Ibid., *Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), tables 2 and 16.
- 1985-2003: Ibid., National Transportation Safety Board, Internet site www.nts.gov/aviation/Tables5.htm as of April 2004.

Serious injuries:

- 1970-85: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues).
- 1990-2003: Ibid., Analysis and Data Division, personal communication, Nov. 15, 2002, June 9, 2003, and Apr. 23, 2004.

TABLE 2-10: U.S. Commuter Air Carrier^a Safety Data

	1980	1985	1990	1995	2000	2001	2002	P 2003
TOTAL fatalities	37	37	6	9	5	13	0	2
Total seriously injured persons	14	14	11	17	7	4	0	1
Total accidents	38	18	15	12	12	7	8	2
Total accidents, fatal	8	7	3	2	1	2	0	1
Aircraft-miles (millions)	192	301	450	550	45	43	(R) 36	41
Rates per 100 million aircraft-miles								
Fatalities ^b	19.27	12.29	1.33	1.64	11.12	30.16	0.00	4.86
Seriously injured persons	7.29	4.65	2.44	3.09	15.57	9.28	0.00	2.43
Total accidents ^{b,c}	19.79	5.98	3.33	2.18	26.70	16.24	21.92	4.86
Total accidents ^{b,c} , fatal	4.17	2.33	0.67	0.36	2.22	4.64	0.00	2.43
Aircraft departures (thousands)	1,777	2,561	3,160	3,220	611	559	(R) 479	540
Rates per 100 thousand aircraft departures								
Fatalities ^b	2.08	1.44	0.19	0.28	0.82	2.32	0.00	0.37
Seriously injured persons	0.79	0.55	0.35	0.53	1.15	0.72	0.00	0.19
Total accidents ^c	2.14	0.70	0.47	0.37	1.97	1.25	1.67	0.37
Total accidents ^c , fatal	0.45	0.27	0.09	0.06	0.16	0.36	0.00	0.19
Flight hours (thousands)	1,176	1,737	2,342	2,628	370	300	(R) 251	278
Rates per 100 thousand flight hours								
Fatalities	3.15	2.13	0.26	0.34	1.35	4.33	0.00	0.72
Seriously injured persons	1.19	0.81	0.47	0.65	1.89	1.33	0.00	0.36
Total accidents ^c	3.23	1.04	0.64	0.46	3.25	2.33	3.18	0.72
Total accidents ^c , fatal	0.68	0.40	0.13	0.08	0.27	0.67	0.00	0.36

KEY: P = preliminary; R = revised.

^a Air carriers operating under 14 CFR 135, scheduled service. Includes accidents involving all-cargo air carriers when those accidents occurred during scheduled 14 CFR 135 operations. Before Mar. 20, 1997, 14 CFR 135 applied to aircraft with 30 or fewer seats. Since Mar. 20, 1997, 14 CFR 135 includes only aircraft with fewer than 10 seats. This change makes it difficult to compare pre-1997 data with more recent years' data.

^b Data updated by rounding to two significant digits instead of one.

Continued next page

TABLE 2-10: U.S. Commuter Air Carrier^a Safety Data—Continued

^c Rates are based on all accidents, including some that involve operators not reporting mileage or other traffic data to the U.S. Department of Transportation.

NOTES

Miles, departures, and hours are compiled by the U.S. Department of Transportation, Federal Aviation Administration. Rates are computed by dividing the number of fatalities, serious injuries, total accidents, and fatal accidents by the number of miles, departures, or flight hours. These figures are based on information provided by airlines to the U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information.

SOURCES**Fatalities, accidents, aircraft-miles, aircraft departures, and flight hours:**

1980: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1980*, NTSB/ARC-83/01 (Washington, DC: January 1983), tables 26 and 40.

1985-2003: Ibid., Internet site www.nts.gov/aviation/Table 8.htm as of April 2004.

Serious injuries:

1980-85: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues).

1990-2003: Ibid., Analysis and Data Division, personal communications, Nov. 15, 2002, June 9, 2003, and Apr. 23, 2004.

TABLE 2-11: U.S. Air Carrier^a Fatal Accidents by First Phase of Operation^b

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	(P) 2003
TOTAL fatal accidents	6	4	4	1	4	3	5	4	1	2	3	6	0	2
Phase of operation														
Approach / descent / landing	1	2	1	0	2	(R) 0	0	0	0	1	0	0	0	0
Taxi/takeoff / climb	3	1	2	0	1	0	3	2	0	0	1	(R) 1	0	1
Cruise (in-flight)	1	0	0	0	0	0	1	1	0	0	1	0	0	0
Standing (static)	1	1	1	1	0	0	0	(R) 0	1	1	(R) 0	0	0	0
Maneuvering	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Other / not reported	0	0	0	0	0	(R) 3	1	(R) 1	0	0	(R) 1	(R) ^c 5	0	1

KEY: P = preliminary; R= revised.

^a 14 CFR 121. Before Mar. 20, 1997, 14 CFR 121 applied only to aircraft with more than 30 seats or a maximum payload capacity of more than 7,500 pounds. Since Mar. 20, 1997, 14 CFR 121 includes aircraft with 10 or more seats that formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data with more recent data.

^b First phase of operation is the phase of flight in which the first occurrence leading to the accident happened.

^c Other/not reported numbers for 2001 are unusually high because of the incidents occurring on September 11.

SOURCES

1990-95: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues), table 18.

1996-2003: Ibid., personal communications, Aug. 21, 2002, Nov. 15, 2002, and June 9, 2003.

TABLE 2-12: U.S. Commuter Air Carrier^a Fatal Accidents by First Phase of Operation

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	(P) 2003
TOTAL fatal accidents	3	8	7	4	3	2	1	5	0	5	1	2	0	1
Phase of operation														
Approach / descent / landing	0	3	5	1	2	0	1	2	0	0	1	0	0	0
Taxi/takeoff / climb	0	0	1	1	0	1	0	1	0	2	0	2	0	0
Cruise (in-flight)	2	2	1	1	1	0	0	0	0	3	0	0	0	0
Standing (static)	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Maneuvering ^b	1	1	0	0	0	1	0	2	0	0	0	0	0	0
Other / not reported	0	1	0	0	0	0	0	0	0	0	0	0	0	1

KEY: P = preliminary.

^a 14 CFR 135, scheduled operations. Before Mar. 20, 1997, 14 CFR applied to aircraft with 30 or fewer seats. Since Mar. 20, 1997, 14 CFR 135 includes only aircraft with fewer than 10 seats. This change makes it difficult to compare pre-1997 data with more recent years' data.

^b Includes instructional flights performing turns and agricultural flights for spraying and buzzing (repeated passes over a particular location).

SOURCES

1990-96: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues), table 36.

1997-2003: Ibid., personal communications, Aug. 21, 2002, June 9, 2003, and June 9, 2004.

TABLE 2-13: U.S. On-Demand Air Taxi^a Safety Data

	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL fatalities	69	105	76	51	52	63	39	45	38	71	60	35	45
Total seriously injured persons	N	43	44	36	14	22	23	10	14	12	24	13	19
Total accidents	152	171	157	107	75	90	82	77	73	80	72	59	76
Total accidents, fatal	24	46	35	29	24	29	15	17	12	22	18	18	19
Flight hours (thousands)	2,526	3,618	2,570	2,249	2,486	3,220	3,098	3,802	(R) 3,204	(R) 3,930	(R) 2,997	(R) 2,911	2,955
Rates per 100,000 flight hours ^b													
Fatalities	2.73	2.90	2.96	2.27	2.09	1.96	1.26	1.18	(R) 1.19	(R) 1.81	(R) 2.00	(R) 1.20	1.52
Seriously injured persons	N	1.19	1.71	1.60	0.56	0.68	0.74	0.26	(R) 0.44	(R) 0.31	(R) 0.80	(R) 0.45	0.64
Total accidents	6.02	4.73	6.11	4.76	3.02	2.80	2.65	2.03	(R) 2.28	2.25	(R) 2.40	(R) 2.03	2.57
Total accidents, fatal	0.95	1.27	1.36	1.29	0.97	0.90	0.48	0.45	(R) 0.37	(R) 0.56	(R) 0.60	(R) 0.62	0.64

KEY: N = data do not exist; P = preliminary; R = revised.

^a Air carriers operating under 14 CFR 135, nonscheduled service. Accidents on foreign soil and in foreign waters are excluded.

^b Rates are computed by dividing the number of fatalities, serious injuries, total accidents, and fatal accidents by the number of flight hours.

NOTE

Hours are estimated by the U.S. Department of Transportation, Federal Aviation Administration.

SOURCES

Fatalities and accidents:

1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), table 61.

1985: Ibid., Internet site www.ntsb.gov/aviation/Table9.htm as of July 26, 2002.

1990-2001: Ibid., Analysis and Data Division, personal communications, July 29, 2002.

2002-03: Ibid., Internet site www.ntsb.gov/aviation/Table9.htm as of April 2004.

Flight hours:

1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), table 61.

1985-2003: Ibid., Internet site www.ntsb.gov/aviation/Table9.htm as of April 2004.

Serious injuries:

1980-85: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues).

1990-2003: Ibid., Analysis and Data Division, personal communications, Nov. 15, 2002, June 9, 2003, and Apr. 23, 2004.

TABLE 2-14: U.S. General Aviation^a Safety Data

	1960 ^d	1965 ^d	1970 ^d	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	P 2003
TOTAL fatalities	787	1,029	1,310	1,252	1,239	956	770	735	636	631	624	619	(R) 596	562	581	626
Total seriously injured persons	N	N	715	769	681	501	409	396	365	350	327	322	310	(R) 322	312	322
Total accidents ^b	4,793	5,196	4,712	3,995	3,590	2,739	2,242	2,056	1,908	1,845	1,904	(R) 1,905	1,837	1,726	(R) 1,713	1,732
Total accidents ^b , fatal	429	538	641	633	618	498	444	413	361	350	364	340	(R) 345	325	(R) 345	351
Flight hours (thousands)	13,121	16,733	26,030	28,799	36,402	28,322	28,510	24,906	24,881	25,591	25,518	(R) 29,246	(R) 27,838	(R) 25,431	(R) 25,545	25,800
Rates per 100,000 flight hours ^c																
Fatalities	6.00	6.15	5.03	4.35	3.40	3.38	2.70	2.95	2.56	2.47	2.45	(R) 2.12	(R) 2.14	(R) 2.21	(R) 2.27	2.43
Seriously injured persons	N	N	2.75	2.67	1.87	1.77	1.43	1.59	1.47	1.37	1.28	(R) 1.10	(R) 1.11	(R) 1.27	(R) 1.22	1.25
Total accidents	36.53	31.05	18.10	13.87	9.86	9.67	7.86	8.26	7.67	7.21	7.46	(R) 6.51	(R) 6.60	(R) 6.79	(R) 6.71	6.71
Total accidents, fatal	3.27	3.22	2.46	2.20	1.70	1.76	1.56	1.66	1.45	1.37	1.43	(R) 1.16	(R) 1.24	(R) 1.28	(R) 1.35	1.36

KEY: N = data do not exist; P = preliminary; R = revised.

^a U.S. registered civil aircraft not operated under 14 CFR 121 or 14 CFR 135. Accidents on foreign soil and in foreign waters are excluded. Suicide, sabotage, and stolen/unauthorized cases included in accidents and fatalities but excluded from accident rates in this table are: 1985 (12 accidents, 7 fatal accidents); 1990 (4,1); 1991 (8,5); 1992 (2,1); 1993 (5,4); 1994 (3,2); 1995 (10,6); 1996 (4,0); 1997 (5,2); 1998 (6,4); 1999 (3,1); 2000 (7,7); 2001 (3,1); 2002 (5,5).

^b Since April 1995, the National Transportation Safety Board has been required by law to investigate all public-use accidents, increasing the number of NTSB reported general aviation accidents by approximately 1.75%.

^c Rates are computed by dividing the number of fatalities, serious injuries, total accidents, and fatal accidents by the number of flight hours.

^d Data for 1960, 1965, and 1970 include air taxi.

NOTE

Flight hours are estimated by the U.S. Department of Transportation, Federal Aviation Administration.

SOURCES

Fatalities and accidents:

1960-70: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. General Aviation, Calendar Year 1970*, NTSB/ARG-74/1 (Washington, DC: April 1974), table 117.

1975-80: Ibid., *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1985*, NTSB/ARG-87/03 (Washington, DC: October 1987), table 21.

1985: Ibid., Internet site www.ntsb.gov/aviation/Table10.htm as of July 29, 2002.

1990-2001: Ibid., Analysis and Data Division, personal communications, July 29, 2002 and Nov. 15, 2002.

2002-03: Ibid., Internet site www.ntsb.gov/aviation/Table10.htm as of April 2004.

TABLE 2-14: U.S. General Aviation^a Safety Data—continued**Flight hours:**

1960-70: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. General Aviation, Calendar Year 1970*, NTSB/ARG-74/1 (Washington, DC: April 1974), table 117.

1975-80: *Ibid.*, *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1985*, NTSB/ARG-87/03 (Washington, DC: October 1987), table 21.

1985-2003: *Ibid.*, Internet site www.nts.gov/aviation/Table10.htm as of April 2004.

Serious injuries:

1970-85: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: General Aviation* (Washington, DC: Annual issues).

1990-2003: *Ibid.*, Analysis and Data Division, personal communications, Nov. 15, 2002, June 9, 2003, and Apr. 23, 2004.

TABLE 2-15: Number of Pilot-Reported Near Midair Collisions (NMAC) by Degree of Hazard

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL, degree of hazard	568	758	454	348	311	254	275	238	194	238	211	257	239	211	180	162
Critical ^a	118	180	74	52	46	35	47	32	26	31	22	28	30	37	(R) 26	15
Potential ^b	319	423	266	197	195	158	139	139	101	105	100	110	130	96	(R) 85	87
No hazard ^c	122	133	114	99	70	61	71	63	55	70	53	55	49	51	(R) 42	38
Unclassified ^d	9	22	0	0	0	0	18	4	12	32	36	64	30	27	(R) 27	(P) 22
NMAC involving aircraft operating under 14 CFR 121 ^e	U	U	136	117	76	60	71	50	56	82	70	66	75	48	53	55

KEY: P = preliminary; R = revised; U = data are not available.

^a A situation where collision avoidance was due to chance, rather than an act on the part of the pilot. Less than 100 feet of aircraft separation would be considered critical.

^b An incident that would probably have resulted in a collision if no action had been taken by either pilot. Less than 500 feet would usually be required in this case.

^c When direction and altitude would have made a midair collision improbable, regardless of evasive action taken.

^d No determination could be made due to insufficient evidence or unusual circumstances, or because incident is still under investigation.

^e Before Mar. 20, 1997, 14 CFR 121 applied only to aircraft with more than 30 seats or a maximum payload capacity of more than 7,500 pounds. Since Mar. 20, 1997, 14 CFR 121 includes aircraft with 10 or more seats that formerly operated under 14 CFR 125. This change makes it difficult to compare pre-1997 data with more recent years' data.

NOTE

Includes air carriers, general aviation, military, and other aircraft involved in public-use operations.

SOURCES

1980-2000: U.S. Department of Transportation, Federal Aviation Administration, *Aviation Safety Statistical Handbook Annual Report* (Washington, DC: Annual issues) and personal communication, Aug. 6, 2002.

2001-2003: Ibid., Office of System Safety, National Aviation Safety Data Analysis Center, NMAC database, personal communication, Sept. 27, 2004. *For NMAC involving 121 aircraft:*

1980-2000: Ibid., Air Traffic Resource Management, personal communications, Aug. 6, 2002.

2001-2003: Ibid., Office of System Safety, National Aviation Safety Data Analysis Center, NMAC database, personal communication, Sept. 27, 2004.

TABLE 2-16a: Airline^a Passenger Screening Results by Type of Weapons Detected, Persons Arrested, and Bomb Threats Received

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Persons screened (millions)	585	993	1,145	1,015	1,111	1,150	1,261	1,263	1,497	1,660	1,667	1,767	1,812	U
TOTAL firearms detected	1,914	2,913	2,549	1,644	2,608	2,798	2,994	2,390	2,155	2,067	1,515	1,552	1,937	U
Firearms, handguns	1,878	2,823	2,490	1,597	2,503	2,707	2,860	2,230	1,999	1,905	1,401	1,421	1,643	U
Firearms, long guns	36	90	59	47	105	91	134	160	156	162	114	131	294	U
Other / other dangerous articles ^b	108	74	304	275	N	N	N	N	N	N	N	N	N	N
Explosive / incendiary devices	8	12	15	94	167	251	N	N	N	N	N	N	N	N
Persons arrested														
Carrying firearms / explosives	1,031	1,310	1,336	893	1,282	1,354	1,433	1,194	999	924	660	633	600	U
Giving false information	32	42	18	28	13	31	35	68	131	72	86	58	61	U
Bomb threats received														
Against airports	1,179	477	448	498	188	304	250	346	N	N	N	N	N	N
Against aircraft	268	153	338	388	215	248	218	327	N	N	N	N	N	N

KEY: N = data do not exist; U = data are not available.

^a Includes operators with a U.S. Department of Transportation, Federal Aviation Administration operating certificate engaged in scheduled passenger or public charter passenger operations and airports at which these operations are conducted.

^b In 1980 and 1985, the "other" category was included with firearms; in 1990, "other" became "other dangerous articles."

NOTE

Beginning in 1996, the Office of Civil Aviation Security Policy and Planning stopped keeping records of bomb threats received due to inconsistent reporting. The reporting of other / other dangerous articles was discontinued in 1992 and reporting of explosive / incendiary devices was discontinued in 1994 for the same reasons.

SOURCES

Persons screened, type of weapon detected, and persons arrested:

1980-85: U.S. Department of Transportation, Federal Aviation Administration, *Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program, July 1-December 31, 1985* (Washington, DC: May 1986).

1990-2000: Ibid. Office of Civil Aviation Security Policy and Planning, *Annual Report to Congress on Civil Aviation Security* (Washington, DC: Annual issues), and personal communications, May 27, 1999, Mar. 29, 2000, and Aug. 7, 2001.

Bomb threats received:

U.S. Department of Transportation, Federal Aviation Administration, *Criminal Acts Against Civil Aviation* (Washington, DC: Annual issues).

TABLE 2-16b: Prohibited Items Intercepted at Airport Screening Checkpoints

	2002 ^a	2003
Enplanements (thousands)	574,859	593,974
Total prohibited items	3,775,345	6,114,612
Firearms	927	683
Knives	1,036,697	1,961,849
Box cutters	32,788	20,991
Other cutting instruments	1,846,207	2,973,413
Clubs	11,131	25,139
Incendiaries	79,341	494,123
Other	768,254	638,414

^a All data, except enplanements, for April through December.

SOURCES

All data, except enplanements:

U.S. Department of Homeland Security, Transportation Security Administration, personal communication.

Enplanements:

U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Schedule T-3 data, various years (Washington, DC: 2003).



Section C Highway

TABLE 2-17: Motor Vehicle Safety Data

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002 ^a	2003
Fatalities	36,399	47,089	52,627	44,525	51,091	43,825	44,599	41,817	(R) 43,005	42,196	42,815	42,643
Injured persons ^E	N	N	N	N	N	N	3,230,666	3,465,279	3,188,750	3,032,672	2,926,000	2,889,000
Crashes ^F	N	N	N	N	N	N	6,471,202	6,699,415	6,393,624	6,322,896	6,316,000	6,328,000
Vehicle-miles (millions)	718,763	887,811	1,109,724	1,327,664	1,527,295	1,774,827	2,144,362	2,422,696	2,746,925	2,797,000	2,856,000	2,880,000
Rates per 100 million vehicle-miles												
Fatalities	5.1	5.3	4.7	3.4	3.3	2.5	2.1	1.7	1.5	1.5	1.5	1.5
Injured persons ^E	N	N	N	N	N	N	151	143	116	108	102	100
Crashes ^F	N	N	N	N	N	N	302	277	233	226	221	220

KEY: E = estimated; N = data do not exist; R = revised.

^a The National Highway Traffic Safety Administration (NHTSA) typically revises its most recent annual estimates the following year. The data here remain unrevised from the date of publication, but may be revised in the future.

SOURCES

Fatalities:

1960-70: Estimated by U.S. Department of Transportation, National Highway Traffic Safety Administration from data supplied by U.S. Department of Health and Human Services, National Center for Health Statistics, and individual state accident reports (adjusted to 30-day deaths). Fatalities data prior to 1975 have been adjusted to reflect the Fatality Analysis Reporting System's definition of a fatal crash as one that involves a motor vehicle on a trafficway, which results in the death of a vehicle occupant or a nonmotorist within 30 days of the crash.

1970-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: January 2004), table 2.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: September 2004), table 2 and personal communication Nov. 17, 2004.

Injured persons:

1990-2002: Ibid., *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: January 2004), table 2.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: September 2004), table 2.

Crashes:

1990-2002: Ibid., *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: January 2004), table 1.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: September 2004).

Vehicle-miles:

1960-65: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1975-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: January 2004), table 2.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: September 2004), table 2.

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TABLE 2-17: Motor Vehicle Safety Data—continued**Fatality and injury rates:**

1960-65: Calculated by U.S. Department of Transportation, Bureau of Transportation Statistics.

1970-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: January 2004), table 2.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: September 2004), table 2.

Crash rates:

Calculated by U.S. Department of Transportation, Bureau of Transportation Statistics.

TABLE 2-18: Motor Vehicle Fatalities, Vehicle-Miles, and Associated Rates by Highway Functional System

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatalities												
Rural, total	29,545	24,492	25,786	23,978	24,510	24,889	24,751	25,185	23,640	23,396	25,693	25,203
Interstate	2,263	2,141	2,707	2,675	2,905	3,033	3,105	3,244	3,199	3,105	3,297	3,241
Other arterials ^a	12,268	9,940	9,893	9,947	9,458	9,821	9,594	9,573	8,913	8,692	9,358	9,823
Collector ^b	10,004	8,209	8,852	7,401	7,481	7,578	7,593	7,595	7,147	7,305	7,974	7,726
Local	5,010	4,202	4,334	3,955	4,666	4,457	4,459	4,773	4,381	4,294	5,064	4,413
Urban, total	21,546	19,333	18,813	17,839	17,555	17,078	16,143	15,970	15,695	15,219	16,759	16,825
Interstate	2,184	2,025	2,252	2,154	2,323	2,281	2,283	2,353	2,388	2,371	2,452	2,374
Other arterials ^a	12,752	12,521	11,742	10,916	10,756	10,243	9,902	9,628	9,442	8,838	9,702	9,827
Collector	2,226	1,696	1,427	1,441	1,290	1,399	1,037	1,031	987	1,007	1,136	1,197
Local	4,384	3,091	3,392	3,328	3,186	3,155	2,921	2,958	2,878	3,003	3,469	3,427
Vehicle-miles of travel (VMT) (millions)												
Rural, total	672,030	730,728	868,878	933,289	960,194	999,277	1,032,528	1,062,623	1,084,961	1,105,083	1,128,160	1,085,385
Interstate	135,084	154,357	200,173	223,382	232,565	240,255	251,520	260,166	268,960	274,024	279,962	269,945
Other arterials ^a	262,774	282,803	330,866	368,595	378,847	392,057	403,484	413,320	420,569	426,945	433,805	416,596
Collector ^b	189,468	206,669	240,460	236,148	241,030	254,100	257,868	264,453	267,521	270,962	275,007	263,662
Local	84,704	86,899	97,379	105,164	107,752	112,865	119,656	124,684	127,911	133,152	139,386	135,182
Urban, total	855,265	1,044,098	1,275,484	1,489,534	1,523,886	1,552,956	1,595,620	1,627,618	1,664,842	1,676,379	1,727,596	1,805,508
Interstate	161,242	216,188	278,901	341,528	351,579	361,433	374,622	383,259	393,580	399,890	408,618	432,633
Other arterials ^a	484,189	578,270	699,233	815,170	834,623	846,627	862,996	878,153	900,161	913,726	937,357	973,936
Collector	83,043	89,578	106,297	126,929	129,310	130,146	131,905	131,603	135,371	137,922	141,874	153,751
Local	126,791	160,062	191,053	205,907	208,374	214,750	226,097	234,603	235,730	224,841	239,747	245,188

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TABLE 2-18: Motor Vehicle Fatalities, Vehicle-Miles, and Associated Rates by Highway Functional System—Continued

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatality rates per 100 million vehicle miles												
Rural, total	4.40	3.35	2.97	2.57	2.55	2.49	2.40	2.37	2.18	2.12	2.28	2.32
Interstate	1.68	1.39	1.35	1.20	1.25	1.26	1.23	1.25	1.19	1.13	1.18	1.20
Other arterials ^a	4.67	3.51	2.99	2.70	2.50	2.50	2.38	2.32	2.12	2.04	2.16	2.36
Collector ^b	5.28	3.97	3.68	3.13	3.10	2.98	2.94	2.87	2.67	2.70	2.90	2.93
Local	5.91	4.84	4.45	3.76	4.33	3.95	3.73	3.83	3.43	3.22	3.63	3.26
Urban, total	2.52	1.85	1.47	1.20	1.15	1.10	1.01	0.98	0.94	0.91	0.97	0.93
Interstate	1.35	0.94	0.81	0.63	0.66	0.63	0.61	0.61	0.61	0.59	0.60	0.55
Other arterials ^a	2.63	2.17	1.68	1.34	1.29	1.21	1.15	1.10	1.05	0.97	1.04	1.01
Collector	2.68	1.89	1.34	1.14	1.00	1.07	0.79	0.78	0.73	0.73	0.80	0.78
Local	3.46	1.93	1.78	1.62	1.53	1.47	1.29	1.26	1.22	1.34	1.45	1.40

^a For urban: the sum of other freeways and expressways, other principal arterials, and minor arterials.

For rural: the sum of other principal arterials and minor arterials.

^b Collector is the sum of major and minor collectors (rural only).

NOTES:

Includes the 50 states and the District of Columbia.

Fatality figures reflect original figures received by FHWA from NHTSA, and, when totaled, differ slightly from the revised NHTSA figures that appear in other tables in this volume.

SOURCES:

Fatalities:

1980-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995* (Washington, DC: July 1997), table FI-220, Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of Oct. 25, 2000.

1996-97: Ibid., Highway Statistics, Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of January 2003, table FI 1.

1998-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table FI-20, Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm> as of Dec. 13, 2004

Vehicle miles:

1980-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995* (Washington, DC: July 1997), table VM-202, Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of Oct. 25, 2000.

1996-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-2, Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm> as of Dec. 13, 2004.

Fatality rates:

Calculated by the U.S. Department of Transportation, Bureau of Transportation Statistics.

TABLE 2-19: Occupant Fatalities by Vehicle Type and Nonoccupant Fatalities

	1975	1980	1985	1990	1995	2000	2001	(R) 2002 ^e	2003
TOTAL traffic fatalities	44,525	51,091	43,825	44,599	41,817	41,945	42,196	43,005	42,643
Occupant fatalities (by vehicle type)	35,925	41,927	36,043	37,134	35,291	36,348	36,440	37,375	37,132
Passenger car, total	25,929	27,449	23,212	24,092	22,423	20,699	20,320	20,569	19,460
Subcompact ^a	3,834	7,299	7,993	8,309	6,791	4,773	4,458	4,248	3,681
Compact	614	927	2,635	5,310	6,899	7,022	6,731	7,061	6,663
Intermediate	1,869	3,878	4,391	4,849	4,666	5,204	5,402	5,514	5,502
Full ^b	10,800	11,580	6,586	4,635	3,413	3,184	3,208	3,262	3,191
Unknown	8,812	3,765	1,607	989	654	516	521	484	423
Truck ^c , total	5,817	8,748	7,666	9,306	10,216	12,280	12,431	12,963	13,167
Light	4,856	7,486	6,689	8,601	9,568	11,526	11,723	12,274	12,444
Large	961	1,262	977	705	648	754	708	689	723
Other vehicles, total	4,179	5,730	5,165	3,736	2,652	3,369	3,689	3,843	4,505
Motorcycle	3,189	5,144	4,564	3,244	2,227	2,897	3,197	3,270	3,661
Bus	53	46	57	32	33	22	34	45	40
Other / unknown vehicle type	937	540	544	460	392	450	458	528	804
Nonoccupant fatalities, total	8,600	9,164	7,782	7,465	6,526	5,597	5,756	5,630	5,511
Pedestrian	7,516	8,070	6,808	6,482	5,584	4,763	4,901	4,851	4,749
Pedalcyclist	1,003	965	890	859	833	693	732	665	622
Other	81	129	84	124	109	141	123	114	140

KEY: U = data are not available.

^a Includes minicompact cars (wheelbase under 95 inches) and subcompact cars (wheelbase between 95 and 99 inches).

^b Includes cars with a wheelbase of 110 inches or greater.

^c Large trucks - trucks over 10,000 pounds gross vehicle weight rating, including single-unit trucks and truck tractors. Light trucks - trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and utility vehicles.

^d Includes two fatalities that could not be assigned to a category below.

^e The National Highway Traffic Safety Administration (NHTSA) typically revises its most recent annual estimates the following year. The data here remain unrevised from the date of publication, but may be revised in the future.

Continued next page

TABLE 2-19: Occupant Fatalities by Vehicle Type and Nonoccupant Fatalities—Continued

SOURCES

1975-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: 2004), table 4.
2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: 2004), table 1, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSSA/TSF2003/809767> as of Oct. 13, 2004 and personal communication Nov. 17, 2004.

Breakout of passenger car types:

U.S. Department of Transportation, National Center for Statistics and Analysis, personal communication, Nov. 17, 2004.

TABLE 2-20: Occupant and Nonmotorist Fatalities in Crashes by Number of Motor Vehicles and Alcohol Involvement (AI)

	1985		1990		1995		2000		(R) 2001		(R) 2002		2003	
	Fatal	AI	Fatal	AI	Fatal	AI	Fatal	AI	Fatal	AI	Fatal	AI	Fatal	AI
TOTAL fatalities	43,825	23,167	44,599	22,587	41,817	17,732	41,945	17,380	42,196	17,400	43,005	17,524	42,643	17,013
AI as a percent of total fatalities		53%		51%		42%		41%		41%		41%		40%
Motorist fatalities, TOTAL	36,043	19,271	37,134	18,953	35,291	14,796	36,348	14,834	36,440	14,708	37,375	14,954	37,132	14,476
Single-vehicle crashes	17,130	10,882	18,159	11,162	16,732	8,868	17,471	8,964	17,753	8,973	18,600	9,238	18,175	8,939
Two-vehicle crashes	16,467	7,296	16,262	6,676	15,744	5,017	15,758	4,854	15,618	4,739	15,628	4,744	15,795	4,606
More than two-vehicle crashes	2,446	1,093	2,713	1,115	2,815	911	3,119	1,016	3,069	996	3,147	972	3,162	931
Nonmotorist fatalities, TOTAL	7,782	3,897	7,465	3,636	6,526	2,936	5,597	2,546	5,756	2,693	5,630	2,571	5,511	2,538
Pedestrians fatalities, total	6,808	3,575	6,482	3,264	5,584	2,607	4,763	2,254	4,901	2,371	4,851	2,292	4,749	2,253
Pedestrians, single-vehicle crashes	6,342	3,278	5,990	2,966	5,110	2,364	4,340	2,015	4,480	2,123	4,445	2,069	4,292	2,014
Pedestrians, multiple-vehicle crashes	466	297	492	298	474	243	423	239	421	248	406	223	457	239
Pedalcyclists fatalities, total	890	284	859	315	833	290	693	246	732	283	665	243	622	239
Pedalcyclists, single-vehicle crashes	864	271	832	301	807	279	668	236	709	271	628	229	589	220
Pedalcyclists, multiple-vehicle crashes	26	13	27	14	26	11	25	10	23	12	37	14	33	19
Others / unknown	84	38	124	57	109	39	141	46	123	39	114	36	140	46

KEY: AI = Alcohol involvement; Fatal = fatalities; R = revised.

NOTES

Alcohol involvement pertains to any driver, pedestrian, or pedalcyclist involved in the accident. Alcohol results are determined from positive blood alcohol concentration tests and police-reported alcohol involvement and are adjusted by the U.S. Department of Transportation, National Highway Traffic Safety Administration.

In 2001, NHTSA adopted a new method to estimate missing blood alcohol concentration (BAC) test result data. This new method, multiple imputation, is being used by NHTSA's National Center for Statistics and Analysis (NCSA) to improve the scope of alcohol involvement statistics by the Fatality Analysis Reporting System (FARS). As a result of the methodology change, alcohol involvement fatalities have undergone a complete revision.

Total fatalities may not equal the sum of the categories in each column because NCSA generates a separate estimate for each category of fatalities, including total fatalities.

SOURCE

U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, Fatality Analysis Reporting System (FARS) Database, personal communication, Nov. 17, 2004.

TABLE 2-21: Passenger Car Occupant Safety Data

	1975	1980	1985	1990	1995	2000	2001	2002 ^a	2003
Fatalities	25,929	27,449	23,212	24,092	22,423	20,699	(R) 20,320	(R) 20,569	19,460
Injured persons ^E	N	N	N	2,376,439	2,469,358	2,051,609	1,926,625	1,804,788	1,756,495
Crashes ^E	N	N	N	5,560,592	5,593,685	4,926,243	4,831,727	4,802,056	4,746,307
Vehicle-miles (millions)	1,030,376	1,107,056	1,248,981	1,427,178	1,478,352	1,580,493	(R) 1,593,459	1,608,464	U
Rates per 100 million vehicle-miles									
Fatalities	2.5	2.5	1.9	1.7	1.5	1.3	1.3	1.3	U
Injured persons ^E	N	N	N	166	167	130	(R) 121	112	U
Crashes ^E	N	N	N	390	378	312	(R) 303	299	U

KEY: E = estimated; N = data do not exist; R = revised; U = data are not available.

^a The National Highway Traffic Safety Administration (NHTSA) typically revises its most recent annual estimates the following year. The data here remain unrevised from the date of publication, but may be revised in the future.

NOTE

Vehicle-miles in this table and in table 2-23 are taken from NHTSA revised data and are not based exclusively on USDOT, Federal Highway Administration (FHWA) data. The change was made to reflect the different vehicle classification schemes used by FHWA and NHTSA. Thus, vehicle-miles for passenger cars, and light and large trucks in this table and table 2-23 should not be compared with vehicle-miles in chapter 1, which are taken directly from FHWA.

SOURCES

Fatalities, injuries, vehicle miles, fatality and injury rates:

1975-2003: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: December 2003), table 7. Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSEAnn/TSE2002Final.pdf> as of Oct. 13, 2004 and personal communication Nov. 17, 2004.

2003: *Ibid.*, *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: 2004), table 1. Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSE2003/809767> as of Oct. 13, 2004 and personal communication Nov. 17, 2004.

Crashes:

U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, Fatality Analysis Reporting System Database and General Estimates System Database, personal communication, Nov. 17, 2004.

Crash rates:

Calculated by U.S. Department of Transportation, Bureau of Transportation Statistics by dividing the number of crashes by the vehicle-miles traveled.

TABLE 2-22: Motorcycle Rider Safety Data

	1975	1980	1985	1990	1995	2000	2001	2002 ^b	2003
Fatalities	3,189	5,144	4,564	3,244	2,227	2,897	(R) 3,197	3,270	3,661
Injured persons ^E	N	N	N	84,285	57,480	57,723	60,236	64,713	67,103
Crashes ^F	N	N	N	103,114	66,354	68,783	73,326	76,004	79,081
Vehicle-miles (millions)	5,629	10,214	9,086	9,557	9,797	10,469	(R) 9,639	9,553	U
Rates per 100 million vehicle-miles ^a									
Fatalities	57	50	50	34	23	28	(R) 33	34	U
Injured persons ^E	N	N	N	882	587	551	(R) 625	677	U
Crashes ^E	N	N	N	1,079	677	657	(R) 761	796	U

KEY: E = estimated; N = data do not exist; R = revised; U = data are not available.

^a U.S. Department of Transportation (USDOT), National Highway Traffic Safety Administration (NHTSA) rounds its injury and crash data to the nearest thousand before publishing them, but it calculates injury rates using the unrounded data. NHTSA also calculates fatality and injury rates using vehicle-miles expressed to a higher level of precision than shown here.

^b NHTSA typically revises its most recent annual estimates the following year. The data here remain unrevised from the date of publication, but may be revised in the future.

NOTE

The injury and crash data in this table are from NHTSA's General Estimates System (GES). The data from the GES, which began operation in 1988, are obtained from a nationally representative probability sample selected from all police-reported crashes. The GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes that were not reported to the police or that did not result in property damage.

SOURCES

Fatalities, injuries, and vehicle-miles:

U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 484 (Washington, DC: January 2004), table 10, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSEA/TSEAnn/TSE2002Final.pdf> as of Oct. 13, 2004 and personal communication Nov. 17, 2004.

Crashes:

U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, Fatality Analysis Reporting System Database and General Estimates System Database, personal communication, Nov. 17, 2004.

TABLE 2-23: Truck Occupant Safety Data

	1975	1980	1985	1990	1995	2000	2001	2002 ^b	2003
Fatalities, total	5,817	8,748	7,666	9,306	10,216	12,280	(R) 12,431	12,963	13,167
Light	4,856	7,486	6,689	8,601	9,568	11,526	(R) 11,723	12,274	12,444
Large	961	1,262	977	705	648	754	(R) 708	689	723
Injured persons ^E , total	N	N	N	546,966	752,840	917,398	889,951	905,580	915,941
Light	N	N	N	505,144	722,496	886,566	860,527	879,338	889,048
Large	N	N	N	41,822	30,344	30,832	29,424	26,242	26,893
Crashes ^E , total ^a	N	N	N	2,459,908	3,039,159	3,539,797	3,560,956	3,592,130	3,671,952
Light	N	N	N	2,152,486	2,749,596	3,207,738	3,254,027	3,280,313	3,357,107
Large	N	N	N	371,801	362,883	437,861	409,352	416,477	436,115
Vehicle-miles (millions)									
Light	204,274	295,475	388,778	555,659	749,971	942,853	(R) 978,080	1,016,360	U
Large	81,330	108,491	123,504	146,242	178,156	205,520	(R) 209,032	214,530	U
Rates per 100 million vehicle-miles									
Fatalities									
Light	2.4	2.5	1.7	1.5	1.3	1.2	1.2	1.2	U
Large	1.2	1.2	0.8	0.5	0.4	0.4	0.3	0.3	U
Injured persons ^E									
Light	N	N	N	91	96	94	88	87	U
Large	N	N	N	29	17	15	14	12	U
Crashes ^E									
Light	N	N	N	387	367	340	(R) 333	323	U
Large	N	N	N	254	204	213	(R) 196	194	U

KEY: E = estimated; N = data do not exist; R = revised; U = data are not available.

^a Crashes often involve more than one type of truck (light or large), hence "total truck crashes" is smaller than the sum of the components.

TABLE 2-23: Truck Occupant Safety Data—continued

b The National Highway Traffic Safety Administration (NHTSA) typically revises its most recent annual estimates the following year. The data here remain unrevised from the date of publication, but may be revised in the future.

NOTES

Large trucks - trucks over 10,000 pounds gross vehicle weight rating, including single-unit trucks and truck tractors. Light trucks - trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and utility vehicles. The injury and crash data in this table are from the U.S. Department of Transportation (USDOT), National Highway Traffic Safety Administration's (NHTSA) General Estimates System (GES). The data from GES, which began operation in 1988, are obtained from a nationally representative probability sample selected from all police-reported crashes. The GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes that were not reported to the police or that did not result in property damage.

Vehicle-miles in this table and in table 2-19 are taken from NHTSA revised data and are not based exclusively on USDOT, Federal Highway Administration (FHWA) data, as they have been in earlier reports. The change was made to reflect the different vehicle classification schemes used by FHWA and NHTSA. Thus, vehicle-miles for passenger cars and light and large trucks in table 2-19 and this table should not be compared with vehicle-miles in Chapter 1, which are taken directly from FHWA.

SOURCES**Fatalities, injuries, vehicle-miles, fatality and injury rates:**

1975-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: January 2004), tables 8, 9, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSFAnn/TSF2002Final.pdf> as of Oct. 13, 2004 and personal communication, Nov. 17, 2004.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: 2004), table 1, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2003/809767> as of Oct. 13, 2004 and personal communication Nov. 17, 2004.

Crashes:

Ibid., National Center for Statistics and Analysis, Fatality Analysis Reporting System Database and General Estimates System Database, personal communication, Nov. 17, 2004.

Crash rates:

Calculated by the U.S. Department of Transportation, Bureau of Transportation Statistics.

TABLE 2-24: Bus Occupant Safety Data^a

	1975	1980	1985	1990	1995	2000	2001	2002 ^c	2003
Fatalities	53	46	57	32	33	22	34	45	40
Injured persons ^E	N	N	N	32,691	19,214	17,769	15,427	18,819	18,174
Crashes ^E	N	N	N	60,412	58,847	55,594	54,264	57,958	57,672
Vehicle-miles (millions)	6,055	6,059	4,478	5,726	6,420	7,590	(R) 7,077	(R) 6,845	6,638
Rates per 100 million vehicle-miles ^b									
Fatalities	0.9	0.8	1.3	0.6	0.5	0.3	0.5	0.7	0.6
Injured persons ^E	N	N	N	571	299	234	(R) 218	275	274
Crashes ^E	N	N	N	1,055	917	732	(R) 767	(R) 847	869

KEY: E = estimates; N = data do not exist; R = revised; U = data are not available.

^a Bus includes school, transit, and intercity buses.

^b The U.S. Department of Transportation (USDOT), National Highway Traffic Safety Administration (NHTSA) rounds its injury and crash data to the nearest thousand, but injury and crash rates are calculated using the unrounded data. NHTSA also calculates fatality, injury, and crash rates using vehicle-miles expressed to a higher level of precision than shown here. Thus, injury and crash rates shown in this table may differ slightly from the rates that would be calculated from the data in this table.

^c NHTSA typically revises its most recent annual estimates the following year. The data here remain unrevised from the date of publication, but may be revised in the future.

NOTE

The injury and crash data in this table are from the U.S. Department of Transportation (USDOT), National Highway Traffic Safety Administration's (NHTSA) General Estimates System (GES). The data from GES, which began operation in 1988, are obtained from a nationally representative probability sample selected from all police-reported crashes. The GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes that were not reported to the police or that did not result in property damage.

SOURCES

Fatalities and injuries:

1975-2003: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 484 (Washington, DC: December 2002), tables 4, 51, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSFAnn/TSF2002Final.pdf> as of Oct. 13, 2004 and personal communication, Nov. 17, 2004.

2003: Ibid., *Traffic Safety Facts 2003: Overview*, DOT HS 809 767 (Washington, DC: 2004), table 1, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2003/809767> as of Oct. 13, 2004 and personal communication Nov. 17, 2004.

Crashes:

1990-2003: Ibid., General Estimates System Database, personal communication, Nov. 17, 2004.

Vehicle-miles:

1975-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995* (Washington, DC: July 1997), table VM-201A.

1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 2-25: Fatalities by Highest Blood Alcohol Concentration (BAC) in Highway Crashes

	1985	1990	1995	1996	1997	1998	1999	2000	2001	(R) 2002 ^a	2003
Total fatalities	43,825	44,599	41,817	42,065	42,013	41,501	41,717	41,945	42,196	43,005	42,643
Fatalities in alcohol-related crashes	23,167	22,587	17,732	17,749	16,711	16,673	16,572	17,380	17,400	17,524	17,013
Percent of total	52.9	50.6	42.4	42.2	38.5	40.2	39.7	41.4	41.2	40.7	39.9
BAC = 0.00											
Number	20,659	22,012	24,085	24,316	25,302	24,828	25,145	24,565	24,796	25,481	25,630
Percent of total	47.1	49.4	57.6	57.8	61.5	59.8	60.3	58.6	58.8	59.3	60.1
BAC = 0.01 - 0.07											
Number	3,081	2,980	2,490	2,486	2,290	2,465	2,321	2,511	2,542	2,432	2,383
Percent of total	7.0	6.7	6.0	5.9	8.3	5.9	5.6	6.0	6.0	5.7	5.6
BAC = 0.08+											
Number	20,086	19,607	15,242	15,263	14,421	14,207	14,250	14,870	14,858	15,093	14,630
Percent of total	45.8	44.0	36.4	36.3	30.3	34.2	34.2	35.5	35.2	35.1	34.3

KEY: BAC = blood alcohol concentration; R = revised.

^a The National Highway Traffic Safety Administration (NHTSA) typically revises its most recent annual estimates the following year. The data here remain unrevised from the date of publication, but may be revised in the future.

NOTES

BAC values have been assigned by U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) when alcohol test results are unknown. Alcohol-related crashes pertain to the BAC of the driver and nonoccupants struck by motor vehicles. For some years, numbers may not add to totals due to rounding.

In 2001, NHTSA adopted a new method to estimate missing blood alcohol concentration (BAC) test result data. This new method, multiple imputation, is being used by NHTSA's National Center for Statistics and Analysis (NCSA) to improve the scope of alcohol involvement statistics by the Fatality Analysis Reporting System (FARS). As a result of the methodology change, BAC 0.08 breakouts, which coincide with many state laws, can now be determined. Thus, NHTSA's general reporting categories have been modified to reflect this and are now BAC 0.00, BAC 0.01-0.07, and BAC 0.08+.

SOURCES

1985-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2002*, DOT HS 809 620 (Washington, DC: 2004), table 13.
 2003: Ibid., *Traffic Safety Fact Sheet 2003: Alcohol*, DOT 809 761 (Washington, DC: 2004), Internet site <http://www-nrd.nhtsa.dot/departments/nrd-30/ncsa/AvailInf.html> as of Sept. 21, 2004 and personal communication Nov. 17, 2004.

TABLE 2-26: Number of States with Different Types of Anti-DUI / DWI Legislation in Effect as of January 1 of the Listed Year

	1986	1990	1992	1994	1996	1997	1998	1999	2000	2001	2002	2003	2004
BAC = 0.08 per se laws ^a			5	10	13	13	15	16	(c) 18	(c) 20	(d, R) 29	(d) 33	(d) 47
BAC level 0.02 or less for persons younger than 21 years	0	0	3	12	(c) 28	(c) 38	(c) 51	(c) 51	(c) 51	(c) 51	(c) 51	(c) 51	(c) 51
Administrative license revocation (ALR) for DUI / DWI offenders ^b	(c) 21	(c) 27	(c) 30	(c) 33	(c) 38	(c) 40	(c) 41	(c) 41	(c) 41	(c) 41	(c) 41	(c) 41	(c) 42

KEY: BAC = blood alcohol concentration; DUI = driving under the influence; DWI = driving while intoxicated; R = revised.

^a Per se law makes it illegal in and of itself to drive with an alcohol concentration measured at or above a certain level.

^b States that impose additional thresholds for ALR beyond those imposed for DUI/DWI are not included in these figures.

^c Includes the District of Columbia.

^d Includes the District of Columbia and Puerto Rico.

NOTE

National Uniform Minimum Drinking Age Act, which standardized the minimum drinking age at 21, was enacted in 1984.

SOURCES

0.02 BAC and Administrative license revocation:

1986-98: U.S. Department of Transportation, National Highway Traffic Safety Administration, Traffic Safety Programs, Research and Evaluation Division, personal communications, Apr. 9, 1999 and Oct. 4, 1999.

1999-2000, 2002-03: Ibid., Impaired Driving Division, personal communications, May 22, 2000, Feb. 5, 2004, and Oct. 15, 2004.

2001: Ibid., *Setting Limits, Saving Lives* (Washington, DC: April 2001), DOT HS 809-241.

0.08 BAC:

1986-2000: Ibid., *Presidential Initiative for Making 0.08 BAC the National Legal Limit, A Progress Report*, Internet site <http://www.nhtsa.dot.gov/people/injury/alcohol/limit.08/08progressreport/index.html> as of Aug. 13, 2001.

2001: Ibid., *Setting Limits, Saving Lives* (Washington, DC: April 2001), DOT HS 809-241.

2002: Ibid., Impaired Driving Division, personal communication, Feb. 5, 2004.

2003-04: Ibid., *.08 BAC Laws* (Washington, DC: 2004), Internet site <http://www.nhtsa.dot.gov/people/injury/alcohol/blood.htm> as Oct. 19, 2004 and personal communication, Nov. 22, 2004.

TABLE 2-27: Motor Vehicle Fatal Crashes by Day of Week, Time of Day, and Weather and Light Conditions (Percent)

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL fatal crashes (number)	39,836	37,241	37,494	37,324	37,107	37,140	37,526	(R) 37,862	(R) 38,491	38,252
Day of week										
Sunday	16.1	15.7	15.2	15.8	15.5	15.7	16.1	16.0	15.9	16.0
Monday	11.7	12.4	12.7	12.1	12.4	12.6	12.3	12.6	12.2	12.3
Tuesday	11.5	11.8	12.4	11.9	12.4	11.9	12.0	12.1	(R) 12.4	12.2
Wednesday	11.5	11.9	12.2	13.0	12.4	12.5	12.2	12.2	12.6	12.6
Thursday	12.6	13.0	13.3	13.0	13.5	12.9	13.0	12.7	12.8	12.8
Friday	16.7	16.6	16.1	16.1	15.8	15.9	16.0	16.2	15.8	15.6
Saturday	20.0	18.5	18.2	18.0	18.0	18.5	18.5	18.2	(R) 18.2	18.4
Unknown	0.02	0.03	0.04	0.05	0.04	0.01	0.01	0.04	(R) 0.02	0.05
Time of day										
Midnight to 3 a.m.	15.7	12.8	12.6	12.2	12.3	12.2	12.5	12.5	13.1	12.5
3 a.m. to 6 a.m.	7.7	7.5	7.4	7.2	7.3	7.6	8.0	7.6	8.1	7.8
6 a.m. to 9 a.m.	8.6	9.2	9.5	9.9	9.7	10.1	9.9	9.8	9.7	9.7
9 a.m. to noon	8.5	9.4	9.7	9.9	10.2	10.1	9.9	10.0	9.7	9.8
Noon to 3 p.m.	11.6	12.9	12.7	13.3	13.4	13.2	13.1	13.2	13.1	13.1
3 p.m. to 6 p.m.	15.7	16.8	16.9	16.6	16.8	16.8	16.7	16.6	16.0	16.7
6 p.m. to 9 p.m.	15.6	15.9	15.7	15.9	15.6	15.4	15.3	15.4	15.4	15.4
9 p.m. to midnight	15.9	14.6	14.6	14.1	13.8	13.8	13.7	14.1	14.1	14.0
Unknown	0.8	0.9	0.9	0.9	0.9	0.8	0.9	0.8	0.9	1.0
Atmospheric condition										
Normal	86.7	86.7	86.3	86.4	87.2	89.0	88.0	(R) 88.4	(R) 88.0	86.8
Rain	9.3	8.6	8.4	8.8	8.8	7.3	7.1	7.5	7.8	7.7
Snow/sleet	1.6	2.4	2.7	2.5	1.7	1.6	2.3	1.8	1.9	2.2
Other/unknown	2.3	2.3	2.6	2.3	2.3	2.0	2.6	(R) 2.3	(R) 2.2	2.7
Light condition										
Daylight	45.0	48.7	49.3	50.3	50.5	50.7	50.5	(R) 50.8	(R) 49.2	49.9
Dark, but lighted	17.7	16.0	15.9	15.6	14.9	15.0	15.9	(R) 15.7	(R) 16.1	15.5
Dark	32.7	30.7	30.3	29.5	30.0	29.7	29.2	29.0	(R) 30.2	29.6
Dawn or dusk	4.2	4.2	4.2	4.2	4.3	4.3	4.1	4.1	(R) 4.0	3.9
Unknown	0.3	0.4	0.3	0.4	0.3	0.3	(R) 0.3	(R) 0.4	(R) 0.5	0.5

SOURCE

U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, Fatality Analysis Reporting System (FARS) Web-based encyclopedia, Internet site <http://www-fars.nhtsa.dot.gov/> as of Oct. 15, 2004.

TABLE 2-28: Motor Vehicle Fatal Crashes by Posted Speed Limit

	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL fatal crashes	39,161	45,284	39,196	39,836	(R) 37,241	37,526	37,862	(R) 38,491	38,252
Under 55 mph, total	15,233	20,079	19,278	19,136	(R) 17,439	17,054	17,582	(R) 17,651	17,024
5,10,15, 20, 25 mph ^a	2,617	2,865	2,504	2,234	(R) 1,893	1,827	1,919	(R) 1,897	1,827
30, 35 mph	6,099	8,527	7,890	7,756	(R) 6,681	6,079	6,260	(R) 6,090	5,868
40, 45 mph	4,276	6,256	6,812	7,092	(R) 6,938	7,315	7,576	(R) 7,784	7,574
50 mph	2,241	2,431	2,072	2,054	(R) 1,927	1,833	1,827	(R) 1,880	1,755
55 mph and above, total	16,095	20,352	18,871	19,749	(R) 19,140	19,735	19,416	(R) 19,898	19,854
55 mph	16,094	20,352	18,863	17,556	(R) 16,753	12,143	11,847	(R) 12,268	12,085
60 mph	0	0	2	18	16	1,163	1,221	(R) 1,270	1,346
65 mph	1	0	2	2,175	2,323	3,686	3,721	(R) 3,742	3,803
70 mph	0	0	3	0	38	2,230	2,116	(R) 2,027	2,032
Over 70 mph	0	0	1	0	10	513	511	591	588
Unknown, total	7,833	4,853	1,047	951	649	(R) 698	864	(R) 942	1,099

KEY: mph = miles per hour; R = revised.

^a The "No Statutory Limit" speed limit designation is included in this category.

NOTES

In 1974, Congress enacted a national maximum speed limit of 55 miles per hour (mph). Amendments in 1987 and 1991 allowed states to increase speed limits to 65 mph on rural Interstates and similar highways.

The National Maximum Speed Limit was repealed in late 1995; speed limits are again set by the states, some of which have raised their maximum speed limits to 70 mph or above.

SOURCES

1975-90: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 2000*, DOT HS 809 337 (Washington, DC: December 2001), table 30, and the Fatality Analysis Reporting System (FARS) Web-based Encyclopedia, Internet site <http://www-fars.nhtsa.dot.gov> as of Nov. 19, 2003.

1995-2003: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, Fatality Analysis Reporting System (FARS) Web-based Encyclopedia, Internet site <http://www-fars.nhtsa.dot.gov> as of Oct. 6, 2004.

TABLE 2-29: Safety Belt and Motorcycle Helmet Use (percent)^a

	1994	1996	1998	1999	2000	2001	2002	2003	2004
OVERALL Safety Belt Use	58	61	69	67	71	73	75	79	80
Drivers	59	62	70	67	72	74	76	80	81
Passengers	55	59	65	64	68	72	73	77	76
Passenger cars	63	64	71	70	74	76	77	81	81
Drivers	64	65	72	71	75	77	78	U	U
Passengers	59	62	68	66	70	74	74	U	U
Light trucks ^{b,c}	50	56	66	62	68	69	73	U	U
Drivers	51	58	67	62	69	70	73	U	U
Passengers	49	53	61	60	65	69	72	U	U
Vans and sport utility vehicles ^c	U	U	U	U	U	U	U	83	83
Drivers	U	U	U	U	U	U	U	U	U
Passengers	U	U	U	U	U	U	U	U	U
Pickup trucks ^c	U	U	U	U	U	U	U	69	70
Drivers	U	U	U	U	U	U	U	U	U
Passengers	U	U	U	U	U	U	U	U	U
Motorcycle Helmet Use ^d	63	64	67	N	71	N	58	U	U
Operators	67	66	64	N	72	N	59	U	U
Riders	54	58	84	N	62	N	48	U	U

KEY: U = data are not available.

^a Seat belt use is of Fall each year except in 1999 (December), 2001 (June), 2002 (June), 2003 (June), and 2004 (June). Motorcycle helmet use is of Fall each year except in 2002 (June).

^b Includes pickup trucks, vans, minivans, and sport utility vehicles.

^c Beginning in 2003, the National Highway Traffic Safety Administration (NHTSA) no longer computes an overall light truck belt use estimate. Instead, belt use is computed separately for motorists in: (1) vans and sport utility vehicles, and (2) pickup trucks.

^d In 1994, operators and riders were counted as helmeted if wearing any type of helmet. Since then, only those operators and riders wearing safety helmets that met U.S. Department of Transportation (DOT) standards were counted. Those safety helmets that do not meet DOT standards were treated as if the operator/rider were not wearing a helmet.

NOTE

Occupants of commercial and emergency vehicles are excluded.

SOURCES

Safety belt use:

1994-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Safety Belt and Helmet Use in 2002 -- Overall Results*, DOT HS 809 500 (Washington, DC: 2002), table 1, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/Rpts/2002/809-500.pdf> as of January 2003.

2003-04: Ibid., *Safety Belt Use in 2004: Overall Results*, Traffic Safety Facts, Research Note DOT HS 809 783 (Washington, DC: 2004), Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2004/809783.pdf> as of Oct. 15, 2004.

Continued next page

TABLE 2-29: Safety Belt and Motorcycle Helmet Use (percent)^a—*continued*

Motorcycle helmet use:

1994-98: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Research Note, Observed Safety Belt Use in 1998* (Washington, DC: September 1999), table 3, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/1999/98obbelt.html> as of January 2003.

2000, 2002: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Safety Belt and Helmet Use in 2002 -- Overall Results*, DOT HS 809 500 (Washington, DC: 2002), table 6, Internet site <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/Rpts/2002/809-500.pdf> as of January 2003.

TABLE 2-30: Estimated Number of Lives Saved by Occupant Protection, Motorcycle Helmets, and Drinking Age Law

	1975-1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total 1975-2003
Safety belts ^{a,b}	68,940	(R) 9,882	(R) 10,710	(R) 11,259	(R) 11,680	(R) 11,941	(R) 12,882	(R) 13,295	14,264	14,903	179,756
Air bags ^c	730	(R) 536	(R) 783	(R) 973	(R) 1,208	(R) 1,491	(R) 1,716	(R) 1,978	2,324	2,488	14,227
Motorcycle helmets	(R) 15,077	(R) 624	(R) 617	(R) 862	(R) 660	(R) 745	(R) 872	(R) 947	(R) 992	1,158	(R) 22,554
Age 21 minimum legal drinking age	14,816	851	846	846	861	901	922	927	922	906	22,798
Child restraints	3,107	(R) 408	(R) 480	(R) 444	(R) 438	(R) 447	(R) 479	(R) 388	383	446	7,020

KEY: R = revised.

^a Represents all adults and children age 5 and older. Data are for passenger vehicles, which include cars, light trucks, vans, pickups, and utility vehicles. Excludes medium and heavy trucks.

^b In 2002, the National Highway Traffic Safety Administration (NHTSA) revised its method for estimating lives saved by safety belts. The previous method included survey data from states with and without belt use laws. The current method relies on police-reported restraint use information for each individual occupant fatality. Also, the estimate now includes lives saved in passenger vehicles at all seating positions, where previously it had been front outboard positions only.

^c In 2002, the National Highway Traffic Safety Administration revised the method for calculating lives saved by air bags.

SOURCES

Motorcycle helmets:

1975-2001: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Fact Sheet 2001: Motorcycles*, DOT HS 809 473 (Washington, DC: 2002) and personal communication, Apr. 5, 2000.

2002: Ibid., *Traffic Safety Fact Sheet 2002: Motorcycles*, DOT HS 809 609 (Washington, DC: 2003), Internet site <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html> as of Sept. 21, 2004.

2003: Ibid., *Traffic Safety Fact Sheet 2003: Motorcycles*, DOT HS 809 764 (Washington, DC: 2004), Internet site <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html> as of Sept. 21, 2004 and personal communication Nov. 21, 2004.

Minimum drinking age:

1975-2001: Ibid., *Traffic Safety Fact Sheet 2001: Alcohol*, DOT HS 809 470 (Washington, DC: 2002), and personal communication, Apr. 5, 2000.

2002-03: Ibid., *Traffic Safety Fact Sheet 2003: Young Drivers*, DOT HS 809 774 (Washington, DC: 2004), Internet site <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html> as of Sept. 21, 2004.

Occupant protection:

1975-2001: Ibid., *Traffic Safety Fact Sheet 2001: Occupant Protection*, DOT HS 809 474 (Washington, DC: 2002) and personal communication, Apr. 5, 2000.

2002: Ibid., *Traffic Safety Fact Sheet 2002: Occupant Protection*, DOT 809 610 (Washington, DC: 2003), Internet site <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html> as of Sept. 21, 2004.

2003: Ibid., *Traffic Safety Fact Sheet 2003: Occupant Protection*, DOT 809 765 (Washington, DC: 2004), Internet site <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html> as of Sept. 21, 2004.



Section D

Transit

TABLE 2-31: Transit Safety and Property Damage Data

	1990	1995	1996	1997	1998	1999	2000	2001	2002 ^e
Fatalities ^a	339	274	264	275	286	299	295	267	280
Injuries ^a	54,556	57,196	55,288	56,132	55,990	55,325	56,697	53,945	19,260
Accidents ^b	58,002	25,683	25,166	24,924	23,937	23,310	24,261	23,891	13,968
Incidents ^{ab} (includes accidents)	90,163	62,471	59,392	61,561	60,094	58,703	59,898	58,149	30,331
Vehicle-miles (millions)	2,490	2,620	2,605	2,702	2,833	2,927	3,002	3,090	3,084
Rates per 100 million vehicle-miles ^c									
Fatalities (all reportable incidents)	13.6	10.5	10.1	10.2	10.1	10.2	9.8	8.6	9.1
Injuries (all reportable incidents)	2,191	2,183	2,122	2,078	1,976	1,890	1,889	1,746	624
Accidents	2,329	980	966	922	845	796	808	773	453
Property damage ^d (current \$ millions)	38.0	46.3	57.6	55.5	61.5	55.3	58.9	73.1	32.2

^a Totals do not include data for cable car, inclined plane, jitney, and ferry boat. These data appear in the footnotes for table 2-33.

^b Accidents include collisions with other vehicles, objects, and people (except suicides), and derailments/buses going off the road. Incidents include accidents plus personal casualties (inside vehicles, inside stations, and boarding and alighting vehicle) and fires.

^c Fatality and injury rates are based on total incidents including accidents and were calculated by dividing the number of fatalities, injuries, and incidents in this table by the number of vehicle miles.

^d Total does not include property damage for cable car, inclined plane, jitney, and ferry boat, which were: 1990–\$335,000; 1991–\$410,000; 1992–\$288,000; 1993–\$221,000; 1994–\$322,000; 1995–\$3,263,000; 1996–\$157,000; 1997–\$67,000; 1998–\$24,000; 1999–\$104,000; 2000–\$77,000; 2001–\$1,605,246; 2002–\$254,172.

^e The drop in the number of incidents, accidents, injuries, and property damage is due largely to a change in definitions by the Federal Transit Administration, particularly the definition of injuries. Only injuries requiring immediate medical treatment away from the scene now qualify as reportable. Previously, any injury was reportable. In addition, in 2002 the threshold for reporting property damage was changed from \$1,000 in transit property damage to \$7,500 in total property damage.

NOTES

Data are provided only for transit systems that furnished safety data for inclusion in the U.S. Department of Transportation, Federal Transit Administration, *Transit Safety and Security Statistics and Analysis*, annual reports.

Transit vehicle-miles in this table differ from those reported in Chapter 1. The American Public Transit Association, which is the source for the vehicle-miles table in Chapter 1, includes all transit systems, while *Transit Safety and Security Statistics and Analysis Annual Report* covers only directly operated urban transit systems.

Prior to the 2000 edition, *Transit Safety and Security Statistics and Analysis Report* was entitled *Safety Management Information Statistics* (SAMIS) annual report.

SOURCE

U.S. Department of Transportation, Federal Transit Administration, *2002 Transit Safety and Security Statistics and Analysis Report* (Cambridge, MA: 2004), Internet site <http://transit-safety.volpe.dot.gov/publications/Default.asp#Order> and personal communication as of Sept. 9, 2004.

TABLE 2-32: Transit Safety Data by Mode^a for All Reported Accidents^b

	1990	1995	1996	1997	1998	1999	2000	2001	2002 ^e
Fatalities, total	212	179	152	185	192	190	183	197	109
Motor bus ^c	92	69	82	100	90	91	82	89	64
Light rail	5	10	5	3	14	13	22	15	8
Heavy rail	51	43	32	28	18	21	19	26	30
Commuter rail	63	56	30	52	67	64	56	64	7
Demand responsive	0	1	3	2	2	1	4	3	0
Van pool	0	0	0	0	0	0	0	0	0
Automated guideway	1	0	0	0	1	0	0	0	0
Injured persons, total	20,023	22,159	22,950	21,452	21,341	21,727	22,140	21,260	7,771
Motor bus ^c	18,876	20,879	21,222	20,145	20,136	20,291	20,329	19,532	7,211
Light rail	465	355	680	320	332	427	415	305	177
Heavy rail	296	348	431	336	261	286	425	598	90
Commuter rail	84	159	213	99	66	54	53	108	50
Demand responsive	286	395	379	499	492	632	869	679	200
Van pool	16	23	25	52	53	37	49	38	43
Automated guideway	0	0	0	1	1	0	0	0	0
Accidents, total	58,002	25,683	25,166	24,842	23,937	23,040	24,271	23,891	13,968
Motor bus ^c	55,289	23,819	23,425	22,991	22,277	21,137	22,127	21,799	12,821
Light rail	699	309	341	363	328	300	357	344	558
Heavy rail	144	637	346	278	293	396	364	328	183
Commuter rail	175	216	201	162	193	215	268	237	89
Demand responsive	1,613	647	774	886	664	862	997	976	283
Van pool	81	54	78	160	179	130	157	207	34
Automated guideway	1	1	1	2	3	0	1	0	0
Vehicle-miles (millions), total	2,490	2,620	2,605	2,702	2,833	2,927	3,002	3,090	3,085
Motor bus ^c	1,668	1,702	1,687	1,719	1,779	1,835	1,868	1,911	1,919
Light rail	24	34	37	41	43	48	52	53	60
Heavy rail	529	537	543	558	566	578	595	608	621
Commuter rail	187	217	203	216	242	249	253	257	255
Demand responsive	74	109	108	134	157	167	179	205	172
Van pool	8	19	25	33	44	49	52	54	56
Automated guideway	0.6	1.1	1.4	1.4	1.4	1.4	1.6	1.8	1.8
RATES PER 100 MILLION VEHICLE-MILES ^d									
Fatalities, all modes	8.5	6.8	5.8	6.8	6.8	6.5	6.1	6.4	3.5
Motor bus ^c	5.5	4.1	4.9	5.8	5.1	5.0	4.4	4.7	3.3
Light rail	20.8	29.0	13.3	7.4	32.3	27.1	42.3	28.3	13.3
Heavy rail	9.6	8.0	5.9	5.0	3.2	3.6	3.2	4.3	4.8
Commuter rail	33.6	25.8	14.8	24.1	27.6	25.7	22.1	24.9	2.7

TABLE 2-32: Transit Safety Data by Mode^a for All Reported Accidents^b —continued

	1990	1995	1996	1997	1998	1999	2000	2001	2002 ^e
RATES PER 100 MILLION VEHICLE-MILES ^d									
Fatalities, all modes									
Demand responsive	0	0.9	2.8	1.5	1.3	0.6	2.2	1.5	0
Van pool	0	0	0	0	0	0	0	0	0
Automated guideway	162.0	0	0	0	69.0	0	0	0	0
Injured persons, all modes									
Motor bus ^c	1,132	1,227	1,258	1,172	1,132	1,106	1,088	1,022	376
Light rail	1,933	1,030	1,815	785	767	889	798	575	295
Heavy rail	56	65	79	60	46	50	71	98	14
Commuter rail	45	73	105	46	27	22	21	42	20
Demand responsive	386	361	349	372	313	379	485	331	116
Van pool	208	123	101	158	121	75	94	70	77
Automated guideway	0	0	0	70	69	0	0	0	0
Accidents, all modes									
Motor bus ^c	3,315	1,400	1,389	1,338	1,252	1,152	1,184	1,141	668
Light rail	2,906	897	910	891	758	624	687	649	930
Heavy rail	27	119	64	50	52	69	61	54	29
Commuter rail	93	100	99	75	80	86	106	92	35
Demand response	2,177	591	714	661	423	516	557	476	165
Van pool	1,052	289	314	485	408	263	301	383	61
Automated guideway	162	87	69	139	207	0	62	0	0

^a Accident statistics for cable car, inclined plane, jitney, and ferry boat are not available. The number of incidents, fatalities, and injuries for these modes appear in the footnotes for table 2-33.

^b Accidents include collisions with vehicles, objects, people (except suicides), and derailments/vehicles going off road.

^c Motor bus also includes trolley bus.

^d Rates are based on total incidents including accidents and were calculated by dividing the number of fatalities, injuries, and incidents in this table by the number of vehicle-miles.

^e The drop in the number of incidents, accidents, injuries, and property damage is due largely to a change in definitions by the Federal Transit Administration, particularly the definition of injuries. Only injuries requiring immediate medical treatment away from the scene now qualify as reportable. Previously, any injury was reportable. Also, commuter rail data are now derived from the Federal Railroad Administration's Rail Accident Incident Reporting System (RAIRS).

NOTES

Data are provided only for transit systems that furnished safety data for inclusion in the U.S.

Department of Transportation, Federal Transit Administration *Transit Safety and Security Statistics and Analysis* annual reports. Data covers only direct-operated urban transit systems.

Vehicle-miles for all transit systems including nonurban and purchased can be found in the vehicle-miles table in chapter 1.

Prior to the 2000 edition, *Transit Safety and Security Statistics and Analysis Report* was entitled *Safety Management Information Statistics* (SAMIS) annual report.

SOURCE

U.S. Department of Transportation, Federal Transit Administration, *2002 Safety and Security Statistics*, personal communication, Oct. 8, 2004.

TABLE 2-33: Transit Safety Data by Mode^a for All Reported Incidents^b

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 ^f
Fatalities, total	339	300	273	281	320	274	264	275	286	299	295	267	280
Motor bus ^c	110	88	99	83	108	82	101	109	109	102	90	95	78
Light rail	7	13	9	15	13	15	6	3	23	17	30	21	13
Heavy rail	117	103	91	83	85	79	74	77	54	84	80	59	73
Commuter rail	104	93	74	98	112	92	72	79	94	95	87	87	116
Demand responsive	0	3	0	2	2	6	11	7	4	1	8	5	0
Van pool	0	0	0	0	0	0	0	0	0	0	0	0	0
Automated guideway	1	0	0	0	0	0	0	0	2	0	0	0	0
Injured persons, total	54,556	52,125	55,089	52,668	58,193	57,196	55,288	56,132	55,990	55,325	56,697	53,945	19,260
Motor bus ^c	40,006	38,619	40,090	38,873	42,195	41,297	39,709	39,181	41,035	41,221	40,925	38,840	11,995
Light rail	1,244	1,251	1,268	982	1,181	1,319	1,604	1,087	1,076	1,271	1,338	1,201	557
Heavy rail	10,036	9,285	10,446	10,532	11,673	11,238	11,093	12,285	11,059	9,665	10,848	10,641	4,806
Commuter rail	2,438	2,308	2,546	1,560	2,374	2,374	1,953	2,388	1,677	1,761	1,783	1,813	1,483
Demand responsive	807	622	713	652	731	935	882	1,121	1,064	1,345	1,736	1,374	347
Van pool	21	40	19	59	29	25	27	54	67	41	52	40	44
Automated guideway	4	0	7	10	10	8	20	16	12	21	15	36	28
All incidents, total	90,163	83,139	73,531	64,986	70,693	62,471	59,392	61,561	60,094	58,703	59,898	58,149	30,331
Motor bus ^c	70,437	63,453	52,182	45,580	49,185	42,780	40,456	40,524	41,616	41,094	41,677	40,321	19,892
Light rail	1,465	1,543	1,492	1,136	1,413	1,276	1,350	1,173	1,121	1,182	1,319	1,299	1,105
Heavy rail	12,178	14,102	15,512	15,082	15,869	14,327	13,748	15,151	13,516	12,196	12,782	12,406	7,078
Commuter rail	3,031	2,716	3,160	2,111	3,115	2,847	2,449	3,078	2,410	2,499	2,072	2,159	1,720
Demand responsive	2,965	1,241	1,137	946	1,062	1,173	1,284	1,454	1,221	1,577	1,871	1,719	478
Van pool	84	83	40	121	39	58	80	162	194	135	160	209	35
Automated guideway	3	1	8	10	10	10	25	19	16	20	17	36	23

TABLE 2-33: Transit Safety Data by Mode^a for All Reported Incidents^b—continued

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 ^f
Unlinked passenger trips (millions) ^d , total	7,646	7,380	7,318	7,059	7,335	7,172	7,211	7,615	7,774	8,149	8,337	8,554	8,519
Motor bus ^c	4,912	4,780	4,728	4,585	4,567	4,539	4,464	4,554	4,712	4,926	4,959	5,065	5,078
Light rail	174	184	187	187	274	249	259	259	273	289	316	327	333
Heavy rail	2,252	2,123	2,119	1,960	2,149	2,034	2,157	2,429	2,393	2,521	2,632	2,728	2,688
Commuter rail	286	274	262	303	318	322	302	311	360	374	388	390	380
Demand responsive	14	13	13	15	17	18	17	48	22	23	24	27	23
Van pool	2	2	3	4	5	5	6	8	9	10	10	10	10
Automated guideway	6	4	5	5	6	6	6	6	6	5	6	6	8
Rates per 100 million unlinked passenger trips (millions) ^e													
Fatalities, all modes	4.4	4.1	3.7	4.0	4.4	3.8	3.7	3.6	3.7	3.7	3.5	3.1	3.3
Motor bus ^c	2.2	1.8	2.1	1.8	2.4	1.8	2.3	2.4	2.3	2.1	1.8	1.9	1.5
Light rail	4.0	7.1	4.8	8.0	4.7	6.0	2.3	1.2	8.4	5.9	9.5	6.4	3.9
Heavy rail	5.2	4.9	4.3	4.2	4.0	3.9	3.4	3.2	2.3	3.3	3.0	2.2	2.7
Commuter rail	36.4	33.9	28.3	32.4	35.2	28.6	23.8	25.4	26.1	25.4	22.4	22.3	30.6
Demand responsive	0	22.6	0	13.5	12.0	33.9	65.5	14.6	18.1	4.3	32.8	18.6	0.0
Van pool	0	0	0	0	0	0	0	0	0	0	0	0	0
Automated guideway	17.0	0	0	0	0	0	0	0	32.5	0	0	0	0
Injured persons, all modes	714	706	753	746	793	798	767	737	720	679	680	631	226
Motor bus ^c	815	808	848	848	924	910	890	860	871	837	825	767	236
Light rail	715	682	677	524	432	529	620	419	394	440	423	368	167
Heavy rail	446	437	493	537	543	553	514	506	462	383	412	390	179
Commuter rail	853	843	972	516	747	738	646	769	466	471	459	465	391
Demand responsive	5,835	4,678	5,393	4,401	4,390	5,286	5,251	2,336	4,821	5,846	7,113	5,117	1,524
Van pool	1,037	1,721	584	1,398	638	537	461	701	773	411	524	405	453
Automated guideway	68	0	127	194	160	123	317	272	195	389	239	464	364

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TABLE 2-33: Transit Safety Data by Mode^a for All Reported Incidents^b—continued

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
All incidents, all modes	1,179	1,126	1,005	921	964	871	824	808	773	720	718	680	356
Motor bus ^c	1,434	1,327	1,104	994	1,077	943	906	890	883	834	840	796	392
Light rail	842	841	796	606	516	512	522	452	411	410	417	398	331
Heavy rail	541	664	732	769	738	705	637	624	565	484	486	455	263
Commuter rail	1,060	991	1,207	698	980	885	810	991	670	668	533	554	453
Demand responsive	21,440	9,333	8,600	6,385	6,378	6,632	7,644	3,030	5,532	6,854	7,666	6,402	2,099
Van pool	4,147	3,570	1,229	2,867	858	1,245	1,366	2,104	2,238	1,353	1,611	2,116	360
Automated guideway	51	28	145	194	160	154	396	323	260	371	271	464	299

^a The figures for cable car, inclined plane, jitney, and ferry boat are lumped together and appear in this footnote as follows:

	1990	1995	1996	1997	1998	1999	2000	2001	2002
Fatalities:	2	0	1	0	0	0	0	1	2
Injuries:	378	598	354	357	379	1,091	762	897	35
Incidents:	186	536	301	353	253	1,078	745	891	69

^b Incidents include accidents (collisions with vehicles, objects, people (except suicides), derailments/vehicles going off road), plus personal casualties, fires, and property damage associated with transit agency revenue vehicles and all transit facilities.

^c Motor bus also includes trolley bus.

^d The number of unlinked passenger trips is equivalent to the number of passengers who board public transit vehicles. Passengers are counted each time they board a vehicle regardless of how many vehicles are necessary for a passenger to get to their destination.

^e Rates are based on total incidents including accidents and were calculated by dividing the number of fatalities, injuries, and incidents in this table by the number of unlinked passenger trips.

^f The drop in the number of incidents, accidents, injuries, and property damage is due largely to a change in definitions by the Federal Transit Administration, particularly the definition of injuries. Only injuries requiring immediate medical treatment away from the scene now qualify as reportable. Previously, any injury was reportable. Also, commuter rail data are now derived from the Federal Railroad Administration's Rail Accident Incident Reporting System (RAIRS).

NOTES

Data are provided only for transit systems that furnished safety data for inclusion in the U.S. Department of Transportation, Federal Transit Administration *Transit Safety and Security Statistics and Analysis* annual reports. Data covers only direct-operated urban transit systems. Vehicle-miles for all transit systems including nonurban and purchased can be found in the vehicle-miles table in chapter 1.

Prior to the 2000 edition, *Transit Safety and Security Statistics and Analysis Report* was entitled *Safety Management Information Statistics* (SAMIS) annual report.

SOURCE

U.S. Department of Transportation, Federal Transit Administration, 2002 *Transit Safety and Security Statistics and Analysis Report* (Cambridge, MA: 2004) and personal communication, Oct. 13, 2004.

TABLE 2-34: Reports of Violent Crime, Property Crime, and Arrests by Transit Mode

	1995	1996	1997	1998	1999	2000	2001
REPORTED OFFENSES, VIOLENT CRIME							
Homicide ^a	19	20	19	51	21	12	16
Motor bus	8	9	6	40	7	7	8
Commuter rail	1	1	4	1	3	1	2
Demand responsive	0	0	0	0	0	0	0
Heavy rail	8	9	8	6	11	4	4
Light rail	2	1	1	4	0	0	2
Other ^b	0	0	0	0	0	0	0
Forcible rape ^c	29	38	31	47	27	37	37
Motor bus	11	13	10	16	14	10	7
Commuter rail	5	4	7	1	3	3	5
Demand responsive	0	0	2	4	1	0	1
Heavy rail	13	19	8	24	8	20	9
Light rail	0	2	4	2	0	4	2
Other ^b	0	0	0	0	1	0	13
Robbery ^d	2,811	4,563	4,760	3,684	3,789	3,480	3,308
Motor bus	909	871	870	605	764	916	953
Commuter rail	181	242	187	133	183	144	144
Demand responsive	1	3	0	1	3	4	4
Heavy rail	1,490	3,164	3,394	2,686	2,588	2,174	1,966
Light rail	181	238	222	220	200	213	217
Other ^b	49	45	87	39	51	29	24
Aggravated assault ^e	2,701	3,084	3,105	2,314	2,448	2,217	2,286
Motor bus	1,941	1,677	1,294	1,186	1,268	1,070	1,146
Commuter rail	133	69	92	80	97	58	109
Demand responsive	6	13	13	13	14	16	8
Heavy rail	437	1,074	1,051	837	903	839	786
Light rail	157	199	143	170	135	208	187
Other ^b	27	52	512	28	31	26	50
REPORTED OFFENSES, PROPERTY CRIME							
Theft ^f	10,596	13,238	14,486	11,830	12,896	13,393	13,636
Motor bus	2,738	3,408	2,920	2,327	2,487	2,548	2,826
Commuter rail	2,238	2,262	2,345	2,021	1,872	2,139	2,001
Demand responsive	2	8	40	15	4	19	5
Heavy rail	4,625	6,794	8,321	6,807	7,789	7,856	7,807
Light rail	451	609	479	496	530	724	706
Other ^b	542	157	381	164	214	107	291

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TABLE 2-34: Reports of Violent Crime, Property Crime, and Arrests by Transit Mode—*continued*

	1995	1996	1997	1998	1999	2000	2001
REPORTED OFFENSES, PROPERTY CRIME— <i>continued</i>							
Vehicle theft ^g	2,182	2,261	2,276	2,225	1,876	2,112	1,909
Motor bus	263	306	198	208	198	169	213
Commuter rail	253	125	262	470	272	367	308
Demand responsive	0	1	3	9	28	6	6
Heavy rail	1,536	1,694	1,630	1,234	1,203	1,285	1,143
Light rail	128	135	179	273	156	279	226
Other ^b	2	0	4	31	19	6	13
Burglary ^h	1,759	1,650	1,757	491	415	563	625
Motor bus	156	104	94	75	86	142	120
Commuter rail	178	177	260	217	170	191	188
Demand responsive	2	0	4	3	1	6	2
Heavy rail	1,367	1,278	1,343	110	91	82	119
Light rail	43	78	48	70	42	131	180
Other ^b	13	13	8	16	25	11	16
Arson ⁱ	63	96	75	60	53	50	44
Motor bus	29	67	33	21	15	24	12
Commuter rail	14	1	21	10	12	6	9
Demand responsive	0	0	0	0	0	0	0
Heavy rail	14	22	16	27	20	16	15
Light rail	6	6	5	2	6	4	8
Other ^b	0	0	0	0	0	0	0
REPORTED OFFENSES, ARRESTS							
Other assaults ^j	2,991	3,088	2,697	2,787	2,641	2,799	2,441
Motor bus	1,896	1,571	1,439	1,400	1,217	1,159	1,024
Commuter rail	144	106	140	122	164	142	156
Demand responsive	4	0	16	3	4	3	6
Heavy rail	645	932	881	898	888	1,085	999
Light rail	181	330	195	282	269	354	204
Other ^b	121	149	26	82	99	56	52

TABLE 2-34: Reports of Violent Crime, Property Crime, and Arrests by Transit Mode—continued

	1995	1996	1997	1998	1999	2000	2001
REPORTED OFFENSES, ARRESTS— <i>continued</i>							
Vandalism ^k	17,228	8,627	9,539	6,571	6,895	7,312	2,971
Motor bus	13,343	6,167	5,262	3,656	4,178	4,579	1,410
Commuter rail	1,071	309	659	778	507	264	293
Demand responsive	12	17	8	10	16	7	9
Heavy rail	1,157	1,339	1,128	1,067	1,222	1,200	984
Light rail	1,505	609	2,084	947	892	1,215	246
Other ^b	140	186	398	113	80	47	29
Sex offenses ^l	664	803	1,047	962	1,009	844	798
Motor bus	242	260	363	258	321	220	178
Commuter rail	100	41	82	91	85	84	80
Demand responsive	5	0	6	2	5	1	3
Heavy rail	249	430	517	541	515	477	474
Light rail	59	71	79	68	80	58	60
Other ^b	9	1	0	2	3	4	3
Drug abuse violations ^m	2,578	3,944	4,355	3,792	4,131	4,083	4,339
Motor bus	1,037	2,122	1,970	1,414	1,705	1,443	1,179
Commuter rail	303	393	477	495	303	196	389
Demand responsive	1	0	15	21	8	1	2
Heavy rail	1,078	1,130	1,530	1,550	1,606	1,915	2,015
Light rail	151	298	336	271	501	520	739
Other ^b	8	1	27	41	8	8	15
Driving under the influence ⁿ	466	129	205	176	204	194	284
Motor bus	91	82	101	101	132	67	156
Commuter rail	26	21	22	21	12	44	26
Demand responsive	0	0	1	4	0	0	1
Heavy rail	52	8	22	21	42	39	57
Light rail	292	16	31	21	15	33	22
Other ^b	5	2	28	8	3	11	22
Drunkenness ^o	10,479	6,921	8,632	12,643	11,487	6,087	8,033
Motor bus	6,457	3,936	5,346	3,046	3,609	3,337	4,693
Commuter rail	71	23	226	156	112	170	108
Demand responsive	2	2	46	34	2	1	4
Heavy rail	1,511	1,617	1,601	7,340	5,831	1,240	1,308
Light rail	2,255	1,305	1,258	1,844	1,913	1,316	1,598
Other ^b	183	38	155	223	20	23	322

Continued next page

TABLE 2-34: Reports of Violent Crime, Property Crime, and Arrests by Transit Mode—continued

	1995	1996	1997	1998	1999	2000	2001
REPORTED OFFENSES, ARRESTS— <i>continued</i>							
Disorderly conduct ^p	22,206	26,178	25,325	15,897	15,971	27,314	32,569
Motor bus	4,681	5,025	6,978	4,521	5,471	3,745	3,253
Commuter rail	810	1,085	1,399	1,525	797	706	607
Demand responsive	5	8	47	5	5	6	2
Heavy rail	15,258	19,183	15,309	8,227	7,856	21,087	27,626
Light rail	1,164	800	1,177	1,408	1,767	1,737	1,046
Other ^b	288	77	415	211	75	33	35
Trespassing ^q	3,362	3,497	7,444	6,049	3,670	4,303	4,597
Motor bus	928	604	1,225	1,283	1,065	1,329	1,040
Commuter rail	845	674	4,150	2,850	1,080	709	1,034
Demand responsive	0	0	2	2	0	0	0
Heavy rail	1,155	1,208	1,398	1,254	1,044	1,267	1,228
Light rail	400	653	463	443	436	985	1,278
Other ^b	34	358	206	217	45	13	17
Fare evasion ^r	33,903	47,873	53,406	58,856	55,194	53,863	47,258
Motor bus	3,172	2,372	1,819	1,694	2,388	591	847
Commuter rail	140	334	310	204	167	179	566
Demand responsive	1	1	2	5	1	3	5
Heavy rail	8,247	39,957	46,106	40,350	35,033	28,933	24,852
Light rail	22,212	1,185	912	12,798	17,320	24,124	20,945
Other ^b	131	4,024	4,257	3,805	285	33	43
Curfew and loitering laws ^s	1,878	872	1,960	1,161	3,022	3,630	3,391
Motor bus	1,201	241	1,112	291	495	469	403
Commuter rail	19	27	223	72	172	329	330
Demand responsive	0	1	5	0	0	0	0
Heavy rail	462	493	530	680	1,789	2,324	2,396
Light rail	161	95	80	106	509	498	251
Other ^d	35	15	10	12	57	10	11

^a The killing of one or more human beings by another. This includes murder, non-negligent manslaughter, and manslaughter by negligence.

^b Other transit mode includes automated guideway, cable car, ferryboat, trolleybus, vanpool, mono-rail, inclined plane, and starting in 2001 the Alaska Railroad.

^c The carnal knowledge of a female forcibly and against her will. This includes assault to rape or attempt to rape.

^d The taking or attempting to take anything of value from the care, custody, or control of a person or persons by force or threat of force or violence and/or by putting the victim in fear. The use or threat of force includes firearms, knives or cutting instruments, other dangerous weapons (clubs, acid, explosives), and strong-arm techniques (hands, fists, feet).

^e An unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily injury. This type of assault usually is accompanied by the use of a weapon or by means likely to produce death or great bodily harm.

^f The unlawful taking, carrying, leading, or riding away of property from the possession or constructive possession of another. This includes pocket-picking, purse-snatching, shoplifting, thefts from motor vehicles, thefts of motor vehicle parts and accessories, theft of bicycles, theft from buildings, theft from coin-operated devices or machines, and all other theft not specifically classified.

TABLE 2-34: Reports of Violent Crime, Property Crime, and Arrests by Transit Mode—continued

- ^g The theft or attempted theft of a motor vehicle. A motor vehicle is a self-propelled vehicle that runs on the surface of land and not on rails. Examples of motor vehicles are automobiles, trucks, buses, motor cycles, and motor scooters.
- ^h The unlawful entry of a structure to commit a felony or a theft. This includes offenses known locally as burglary (any degree), unlawful entry with intent to commit a larceny or felony, breaking and entering with intent to commit a larceny, housebreaking, safe-cracking, and all attempts at these offenses.
- ⁱ To unlawfully and intentionally damage, or attempt to damage, any real or personal property by fire or incendiary device.
- ^j An unlawful attack or attempt by one person upon another where no weapon was used or which did not result in serious or aggravated injury to the victim. This includes simple assault, minor assault, assault and battery, injury by culpable negligence, intimidation, coercion, hazing, and all attempts to commit these offenses.
- ^k The willful or malicious destruction, injury, disfigurement, or defacement of any public or private property, real or personal, without consent of the owner or person having custody or control by cutting, tearing, breaking, marking, painting, drawing, covering with filth, or any other such means as may be specified by local law.
- ^l Any sexual acts except forcible rape, prostitution, and commercialized vice. This includes offenses against chastity, common decency, morals, and the like, such as: adultery and fornication, buggery, incest, indecent exposure, indecent liberties, seduction, sodomy or crime against nature, statutory rape (no force), and all attempts to commit any of the above.
- ^m Arrests requested based on the narcotics used. This includes all arrests for violations of state and local laws, specifically those relating to the unlawful possession, sale, use, growing, manufacturing, and making of narcotic drugs.
- ⁿ The driving or operating of any vehicle or common carrier while drunk or under the influence of liquor or narcotics.
- ^o Arrests for all offenses of drunkenness, which is the consumption of alcoholic beverages to the extent that one's mental faculties and physical coordination are substantially impaired. This includes drunkenness, drunk and disorderly, common or habitual drunkard, and intoxication.
- ^p All charges of committing a breach of the peace. This includes, affray; unlawful assembly; disturbing the peace; disturbing meetings; disorderly conduct in state institutions, at court, at fairs, on trains or public conveyances, etc.; blasphemy, profanity, and obscene language; desecrating the flag; refusing to assist an officer; and all attempts to commit any of the above.
- ^q To unlawfully enter land, a dwelling, or other real property.
- ^r The unlawful use of transit facilities by riding without paying the applicable fare.
- ^s All arrests for violations of local curfew or loitering ordinances where such laws exist.

NOTES

Data are from transit agencies in urbanized areas over 200,000 population and include patrons, employees, and others.

The figures for violent and property crime follow the FBI Uniform Crime Reporting Handbook, (Washington, DC: 1984) and are based on records of calls for service, complaints, and/or investigations. These figures are for reported offenses and do not reflect the findings of a court, coroner, jury, or decision of a prosecutor.

Security data was first reported to the Federal Transit Administration in 1995 and were not compiled for earlier years.

SOURCE

1995-2001: U.S. Department of Transportation, Federal Transit Administration, *National Transit Database*, Internet site <http://www.ntdprogram.com>, as of May 6, 2003, tables 25-27 and similar tables in earlier editions.



Section E Railroad

TABLE 2-35: Railroad and Grade-Crossing Fatalities by Victim Class

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 (P)	2003 (P)
Passengers on trains	4	3	3	8	3	58	5	0	12	6	4	14	4	3	7	2
Railroad only	4	3	3	8	3	58	5	0	12	6	2	3	4	3	7	2
Grade crossing	0	0	0	0	0	0	0	0	0	0	2	11	0	0	0	0
Employees on duty	97	46	40	35	34	47	31	34	33	37	27	31	24	22	20	19
Railroad only	97	44	35	34	32	44	30	32	32	37	23	29	22	21	19	18
Grade crossing	0	2	5	1	2	3	1	2	1	0	4	2	2	1	1	1
Employees not on duty	4	2	0	1	1	4	0	2	0	0	2	0	1	0	1	0
Railroad only	3	2	0	1	1	4	0	2	0	0	2	0	1	0	1	0
Grade crossing	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contractor employees	7	4	3	3	11	6	3	7	9	11	5	12	3	4	10	5
Railroad only	7	4	3	3	10	6	3	7	9	11	5	11	3	4	9	4
Grade crossing	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1
Nontrespassers ^a	739	507	551	484	475	489	505	443	365	363	326	305	335	269	(R) 267	196
Railroad only	16	10	15	16	12	18	44	32	27	15	9	8	19	11	(R) 18	7
Grade crossing	723	497	536	468	463	471	461	411	338	348	317	297	316	258	(R) 249	189
Trespassers	566	474	700	663	646	675	682	660	620	646	644	570	570	673	646	634
Railroad only	457	391	543	524	533	523	529	494	471	533	536	479	463	511	540	501
Grade crossing	109	83	157	139	113	152	153	166	149	113	108	91	107	162	106	133
Volunteer employees	N	N	N	N	N	N	N	N	N	0	0	0	0	0	0	0
Railroad only	N	N	N	N	N	N	N	N	N	0	0	0	0	0	0	0
Grade crossing	N	N	N	N	N	N	N	N	N	0	0	0	0	0	0	0
Railroad only and grade crossing, total	1,417	1,036	1,297	1,194	1,170	1,279	1,226	1,146	1,039	1,063	1,008	932	937	971	951	856
Railroad only	584	454	599	586	591	653	611	567	551	602	577	530	512	550	(R) 594	531
Grade crossing	833	582	698	608	579	626	615	579	488	461	431	402	425	421	357	324
Motor vehicles	748	521	614	535	506	554	542	508	415	419	369	345	361	345	(R) 310	263
Nonmotor vehicles	85	61	84	73	73	72	73	71	73	42	62	57	64	76	(R) 47	61

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TABLE 2-35: Railroad and Grade-Crossing Fatalities by Victim Class—continued

KEY: N = data do not exist; P = preliminary; R = revised.

^a Beginning in 1997, nontrespassers off railroad property are also included.

NOTE

"Railroad only" includes fatalities from train accidents, train incidents, and nontrain incidents (excludes highway-rail grade crossings). This table includes information for both freight and passenger railroad operations.

SOURCES

1980-94: U.S. Department of Transportation, Federal Railroad Administration, *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), and the *Accident/Incident Bulletin* (Washington DC: Annual issues).
 1995-2003: Ibid. Internet site <http://safetydata.fra.dot.gov/OfficeofSafety/Query/Default.asp> as of June 17, 2004.

TABLE 2-36: Railroad and Grade-Crossing Injured Persons by Victim Class

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	(P) 2003
Passengers on trains	593	657	473	382	411	559	497	573	513	601	535	481	658	746	(R) 877	639
Railroad only	569	646	462	360	329	515	413	543	489	558	516	438	648	726	(R) 851	580
Grade crossing	24	11	11	22	82	44	84	30	24	43	19	43	10	20	26	59
Employees on duty	56,331	29,822	20,970	19,626	17,755	15,363	13,080	10,777	9,199	8,295	8,398	8,622	8,423	7,815	(R) 6,644	6,024
Railroad only	56,186	29,667	20,801	19,479	17,598	15,220	12,955	10,654	9,120	8,184	8,276	8,482	8,323	7,718	(R) 6,534	5,950
Grade crossing	145	155	169	147	157	143	125	123	79	111	122	140	100	97	110	74
Employees not on duty	671	419	326	362	310	348	306	252	228	263	219	216	286	209	(R) 213	231
Railroad only	669	418	324	362	309	347	305	248	226	260	216	215	283	208	(R) 213	231
Grade crossing	2	1	2	0	1	1	1	4	2	3	3	1	3	1	0	0
Contractor employees	74	110	242	219	226	262	252	269	208	334	380	384	368	383	(R) 375	363
Railroad only	74	109	240	216	224	261	251	268	208	333	379	384	367	380	(R) 374	361
Grade crossing	0	1	2	3	2	1	1	1	0	1	1	0	1	3	1	2
Nontrespassers ^a	3,849	2,562	2,339	2,110	1,909	1,856	1,913	1,869	1,660	1,540	1,236	1,342	1,294	1,201	(R) 2,380	989
Railroad only	384	285	349	423	408	432	475	372	431	370	243	335	381	388	(R) 1,732	353
Grade crossing	3,465	2,277	1,990	1,687	1,501	1,424	1,438	1,497	1,229	1,170	993	1,007	913	813	(R) 648	636
Trespassers	728	734	793	769	772	733	764	700	750	728	677	650	606	627	(R) 609	621
Railroad only	474	492	560	534	540	509	452	461	474	516	513	445	414	404	(R) 395	395
Grade crossing	254	242	233	235	232	224	312	239	276	212	164	205	192	223	(R) 214	226
Volunteer employees	N	N	N	N	N	N	N	N	N	6	14	5	8	4	5	5
Railroad only	N	N	N	N	N	N	N	N	N	6	13	5	8	4	5	5
Grade crossing	N	N	N	N	N	N	N	N	N	0	1	0	0	0	0	0

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TABLE 2-36: Railroad and Grade-Crossing Injured Persons by Victim Class—continued

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	(P) 2003
Railroad only and grade crossing, total	62,246	34,304	25,143	23,468	21,383	19,121	16,812	14,440	12,558	11,767	11,459	11,700	11,643	10,985	(R) 11,103	8,872
Railroad only	58,356	31,617	22,736	21,374	19,408	17,284	14,851	12,546	10,948	10,227	10,156	10,304	10,424	9,828	(R) 10,104	7,875
Grade crossing	3,890	2,687	2,407	2,094	1,975	1,837	1,961	1,894	1,610	1,540	1,303	1,396	1,219	1,157	(R) 999	^b 997
Motor vehicles	3,739	2,561	2,332	2,029	1,891	1,760	1,885	1,825	1,545	1,494	1,257	1,338	1,169	1,110	(R) 939	951
Nonmotor vehicles	151	126	75	65	84	77	76	69	65	46	46	58	50	47	60	47

KEY: N = data do not exist; P = preliminary; R = revised.

^a Beginning in 1997, nontrespassers off railroad property are also included.

^b This total does not add to the sum of its parts because of a discrepancy with the number of injuries resulting from one grade crossing incident. The Federal Railroad Administration is attempting to resolve this problem with the reporting railroad and will revise the data accordingly.

NOTE

"Railroad only" includes fatalities from train accidents, train incidents, and nontrain incidents (excludes highway-rail grade crossings). This table includes information for both freight and passenger railroad operations.

SOURCE

1980-94: U.S. Department of Transportation, Federal Railroad Administration, *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), and *Accident/Incident Bulletin* (Washington, DC: Annual Issues).

TABLE 2-37: Train Fatalities, Injuries, and Accidents by Type of Accident^a

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	(P) 2003
Fatalities, total	29	8	10	19	6	67	12	14	25	18	4	9	10	6	15	4
Derailments	8	2	2	10	2	53	2	2	6	2	1	1	2	1	7	1
Collisions	20	6	8	5	1	14	8	7	16	10	1	7	1	4	4	0
Other	1	0	0	4	3	0	2	5	3	6	2	1	7	1	4	3
Injuries, total	665	476	451	326	171	308	262	294	281	185	129	129	275	310	(R) 1,884	224
Derailments	286	197	272	174	71	179	120	90	98	111	61	41	121	113	(R) 1,691	115
Collisions	341	223	139	103	59	87	118	151	146	55	32	62	89	145	(R) 151	56
Other	38	56	40	49	41	42	24	53	37	19	36	26	65	52	(R) 42	53
Accidents, total	8,205	3,275	2,879	2,658	2,359	2,611	2,504	2,459	2,443	2,397	2,575	2,768	2,983	3,023	(R) 2,738	2,950
Derailments	6,442	2,495	2,146	1,936	1,734	1,930	1,825	1,742	1,816	1,741	1,757	1,961	2,112	2,234	(R) 1,989	2,089
Collisions	1,201	366	315	261	207	205	240	235	205	202	168	205	238	220	(R) 192	202
Other	562	414	418	461	418	476	439	482	422	454	650	602	633	569	(R) 557	659

KEY: P = preliminary; R = revised.

^a Excludes highway-rail grade crossing accidents.

NOTE

Train accidents only. This table includes information for both freight and passenger railroad operations.

SOURCES

1980-96: U.S. Department of Transportation, Federal Railroad Administration, *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), tables 1-1, 1-3.

1997-98: Ibid., *Railroad Safety Statistics Annual Report 1998* (Washington, DC: September 1998), table 1-1, 1-3, 5-6.

1999-2003: Ibid., <http://safetydata.fra.dot.gov/officeofsafety/Query/Default.asp> as of June 17, 2004.

TABLE 2-38: Railroad Passenger Safety Data

	1990	1995	1996	1997	1998	1999	2000	2001	2002
Passenger fatalities	3	0	12	6	4	14	4	3	7
Injured persons	473	573	513	601	535	481	658 (R)	746	848
Train-miles, passenger trains (millions)	72	76	77	78	78	82	84	88	90
Fatalities per 100 million passenger train-miles	4	0	16	8	5	17	5	3	8
Injuries per 100 million passenger train-miles	660	750	663	770	683	584	781 (R)	850	947

KEY: R = revised.

NOTE

A train-mile is the movement of a train (which can consist of many cars) the distance of 1 mile. A train-mile differs from a vehicle-mile, which is the movement of 1 car (vehicle) the distance of 1 mile. A 10-car (vehicle) train traveling 1 mile would be measured as 1 train-mile and 10 vehicle-miles. Caution should be used when comparing train-miles to vehicle miles.

SOURCES

Fatalities and injuries:

1990-2001: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Railroad Safety Statistics Annual Report 2001* (Washington, DC: August 2002), table 1-2.

2002: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Railroad Safety Statistics Interim Report 2002* (Washington, DC: August 2003), table 1-2.

Train-miles, passenger trains:

1990-96: U.S. Department of Transportation, Bureau of Transportation Statistics calculations (sum of all commuter rail train-miles reported to USDOT, Federal Transit Administration, plus Amtrak train-miles).

1997-2001: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Railroad Safety Statistics Annual Report 2001* (Washington, DC: August 2002), table 2-4.

2002: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Railroad Safety Statistics Interim Report 2002* (Washington, DC: August 2003), table 2-4.

TABLE 2-39: Railroad System Safety and Property Damage Data (Excludes highway-rail grade-crossing accidents)

	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatalities	785	575	584	454	599	567	551	602	577	530	512	550	(R) 594	531
Injured persons	^d 17,934	50,138	58,696	31,617	22,736	12,546	10,948	10,227	10,156	10,304	10,424	9,828	(R) 10,104	7,956
Accidents ^a	8,095	8,041	8,205	3,275	2,879	2,459	2,443	2,397	2,575	2,768	2,983	3,023	(R) 2,738	2,958
Train-miles (millions) ^{b,c}	839	755	718	571	609	670	671	677	683	712	723	712	729	744
Rate per 100 million train-miles														
Fatalities	94	76	81	80	98	85	82	89	84	74	71	77	(R) 82	71
Injuries	N	6,641	8,179	5,538	3,735	1,873	1,632	1,511	1,487	1,446	1,442	1,381	(R) 1,387	1,069
Accidents	965	1,065	1,143	574	473	367	364	354	377	389	413	425	(R) 376	398
Property damage (current \$ millions)	121.6	177.4	267.4	179.3	198.7	189.2	212.3	210.7	233.9	245.1	263.2	314.5	(R) 266.5	295.8

KEY: N = data do not exist; R = revised.

- ^a Train accidents only; excludes highway-rail grade-crossing accidents.
- ^b Train-miles in this table differ from train-miles in the vehicle-miles table in Chapter 1. Train-miles reported in Chapter 1 include only Class I rail (see glossary for definition), while this table includes Class I rail, Group II rail, and other rail. For example, in 2003 Group II rail accounted for 82 million train-miles, and other rail for 31 million train-miles. Moreover, the vehicle-miles table in Chapter 1 includes only train-miles between terminals and/or stations, thus excluding yard and switching miles. In 2003, Class I yard/switching train-miles totaled 62 million train-miles. Note that commuter rail safety data are reported in the rail mode and the transit mode. Commuter rail train-miles are included in Class I rail and Group II rail in this table.
- ^c A train-mile is the movement of a train (which can consist of many cars) the distance of 1 mile. A train-mile differs from a vehicle-mile, which is the movement of 1 car (vehicle) the distance of 1 mile. A 10-car (vehicle) train traveling 1 mile would be measured as 1 train-mile and 10 vehicle-miles. Caution should be used when comparing train-miles to vehicle-miles.
- ^d 1970 injuries not comparable to later years due to change in reporting system.

NOTE

This table includes information for both freight and passenger railroad operations.

SOURCES

Fatalities, injuries, accidents, and property damage:
 1970-90: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Accident/Incident Bulletin* (Washington, DC: annual issues), tables 14 and 15.
 1995-2000: *Ibid.*, *Railroad Safety Statistics Annual Report 2000* (Washington, DC: July 2001), tables 1-1 and 3-1.
 2001-03: *Ibid.*, Internet site <http://safetydata.fra.dot.gov/OfficeofSafety/Query/Default.asp> as of Sept. 27, 2004.

Train-miles:

1970-90: U.S. Department of Transportation, Federal Transit Administration, *National Transit Database* (Washington, DC: annual issues), form 406.

Continued next page

TABLE 2-39: Railroad System Safety and Property Damage Data (Excludes highway-rail grade-crossing accidents)—continued

1995-2000: U.S. Department of Transportation, Federal Railroad Administration, Internet site <http://safetydata.fra.dot.gov/OfficeofSafety/Forms/Default.asp> as of Aug. 22, 2002.

2001: Ibid., *Railroad Safety Statistics Annual Report 2001* (Washington, DC: August 2002), table 2-4.

2002-03: Ibid., Internet site <http://safetydata.fra.dot.gov/OfficeofSafety/Query/Default.asp> as of Sept. 27, 2004.

TABLE 2-40: Fatalities and Injuries of On-Duty Railroad Employees

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Employee fatalities accidents / incidents, total	40	34	33	37	27	31	24	22	20	19
Grade-crossing accidents and incidents	5	2	1	0	4	2	2	1	1	1
Train accidents and incidents only (grade-crossing excluded)	35	32	32	37	23	29	22	21	19	18
Employees injured accidents / incidents, total	20,970	10,777	9,199	8,295	8,398	8,622	8,423	7,815	(R) 6,644	6,073
Grade-crossing accidents and incidents	169	123	79	111	122	140	100	97	110	76
Train accidents and incidents only (grade-crossing excluded)	20,801	10,654	9,120	8,184	8,276	8,482	8,323	7,718	(R) 6,534	5,997
Employee hours (millions)	553.6	510.3	504.6	503.9	514.9	510.0	490.9	475.1	(R) 454.1	450.0
Fatality rates per million employee hours										
All accidents / incidents	0.07	0.07	0.07	0.07	0.05	0.06	0.05	0.05	0.04	0.04
Grade-crossing accidents and incidents	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Train accidents and incidents only (grade-crossing excluded)	0.06	0.06	0.06	0.07	0.04	0.06	0.04	0.04	0.04	0.04
Injury rates per million employee hours										
All accidents / incidents	37.9	21.1	18.2	16.5	16.3	16.9	17.2	16.4	(R) 14.6	13.5
Grade-crossing accidents and incidents	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2
Train accidents and incidents only (grade-crossing excluded)	37.6	20.9	18.1	16.2	16.1	16.6	17.0	16.2	(R) 14.4	13.3
Train-miles (millions) ^{a,b}	609	670	671	677	683	712	723	712	729	744
Fatality rates per million train-miles										
All accidents / incidents	0.07	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.03
Grade-crossing accidents and incidents	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Train accidents and incidents only (grade-crossing excluded)	0.06	0.05	0.05	0.05	0.03	0.04	0.03	0.03	0.03	0.02
Injury rates per million train-miles										
All accidents/incidents	34.4	16.1	13.7	12.3	12.3	12.1	11.7	11.0	(R) 9.1	8.2
Grade-crossing accidents and incidents	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1
Train accidents and incidents only (grade-crossing excluded)	34.2	15.9	13.6	12.1	12.1	11.9	11.5	10.8	(R) 9.0	8.1

KEY: R = revised.

Continued next page

TABLE 2-40: Fatalities and Injuries of On-Duty Railroad Employees—continued

- ^a Train-miles in this table differ from train-miles in the vehicle-miles table in Chapter 1. Train-miles reported in Chapter 1 include only Class I rail (see glossary for definition), while this table includes Class I rail, Group II rail, and other rail. In 2003, Group II rail accounted for \$2 million train-miles, and other rail for 31 million train-miles. Moreover, the vehicle-miles table in Chapter 1 includes only train-miles between terminals and/or stations, thus excluding yard and switching miles. In 2003, Class I yard/switching train miles totaled 62 million train-miles. Note that commuter rail safety data are reported in the rail mode and in the transit mode. Commuter rail train-miles are included in Class I rail and Group II rail in this table.
- ^b A train-mile is the movement of a train (which can consist of many cars) the distance of 1 mile. A train-mile differs from a vehicle-mile, which is the movement of 1 car (vehicle) the distance of 1 mile. A 10-car (vehicle) train traveling 1 mile would be measured as 1 train-mile and 10 vehicle-miles. Caution should be used when comparing train-miles to vehicle miles.

NOTE

This table includes information for both freight and passenger railroad operations.

SOURCES

1990-95: U.S. Department of Transportation, Federal Railroad Administration, *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: annual issues).

1996-2000: Ibid., *Railroad Safety Statistics Annual Report* (Washington, DC: annual issues), tables 1-3, 2-4, and 3-1.

2001-03: Ibid., Internet site <http://safetydata.fra.dot.gov/OfficeofSafety/Query/Default.asp> as of Sept. 27, 2004.

Section F
Water

TABLE 2-41: Waterborne Transportation Safety and Property Damage Data Related to Vessel Casualties

	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatalities ^a	178	243	206	131	85	30	96	114	78	51	52	50	71	61	49	59	(R) 59	41
Injured persons	105	97	180	172	175	110	162	166	174	145	223	121	135	131	130	181	(R) 168	205
Accidents ^b	2,582	3,310	4,624	3,439	3,613	2,222	3,238	3,412	3,970	4,298	4,264	4,207	4,397	4,086	3,887	3,937	(R) 3,619	3,090
Vessels ^c	4,063	5,685	7,694	5,694	5,494	3,514	4,789	5,137	6,204	6,724	6,694	6,476	6,433	5,805	5,552	5,524	(R) 6,132	4,741
Property damage (current \$ millions)	U	U	U	U	U	U	199.5	173.6	263.3	157.8	190.1	157.3	234.7	162.6	172.7	204.9	(R) 331.6	121.2

KEY: R = revised; U = data are not available.

^a Fatalities include the number of people who died or were declared missing subsequent to a marine accident.

^b Accidents in this table include the number of "marine casualty cases" reported to the U.S. Coast Guard in accordance with 46 U.S.C. 4.05.

^c More than one vessel may be involved in a marine accident.

NOTES

All deaths and injuries cited result from vessel casualties, such as groundings, collisions, fires, or explosions. The data are for all commercial vessels under U.S. jurisdiction, including U.S. flag vessels anywhere in the world and foreign flag vessels within the jurisdiction of the United States (within 12 miles, or having an interaction with a U.S. entry, such as a platform within 200 miles, or a collision with a U.S. ship). Includes commercial fishing vessels. 2002-2003 data were derived from the Marine Information for Safety and Law Enforcement (MISLE) System. 1992-2001 data were derived from the Marine Safety Information System (MSIS). Data from prior years were derived from other sources and may not be directly comparable.

SOURCE

1970-2003: U.S. Department of Homeland Security (formerly U.S. Department of Transportation), U.S. Coast Guard, Data Administration Division (G-MRI-1), personal communications, June 21, 2004 and Oct. 14, 2004.

TABLE 2-42: Waterborne Transportation Safety Data Not Related to Vessel Casualties

	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatalities ^a	420	330	281	130	101	56	94	95	101	95	95	88	96	93	88	80	48	64
Injuries	U	U	U	U	U	U	1,489	1,448	1,718	1,833	1,327	1,037	541	508	567	525	519	515
Vessels ^b	U	321	274	128	98	51	1,592	1,549	1,823	1,941	1,434	1,135	649	608	662	470	U	U

KEY: U = data are not available.

- ^a Fatalities include people who were declared missing.
- ^b Figures represent the number of vessels involved in nonvessel casualties. These vessels were not part of the accident, but the accident may have occurred on the vessel (e.g., crewmembers swept overboard by a wave).

NOTE

Figures reflect the number of deaths and injuries to people on commercial vessels not resulting from a casualty to the vessel. These injuries and fatalities result from such incidents as slips, falls, or electrocutions. Deaths and injuries from disease, homicides, suicides, fights, and diving accidents have been excluded. The data reflect deaths and injuries to people on both U.S. and foreign flag vessels within the jurisdiction of the United States (within 12 miles of U.S. coast) and on U.S. flag vessels anywhere in the world.

2002 and 2003 data were derived from the Marine Information for Safety and Law Enforcement (MISLE) System. 1992-2001 data were derived from the Marine Safety Information System (MSIS). Data from prior years were derived from other sources and may not be directly comparable.

SOURCE

U.S. Department of Transportation, U.S. Coast Guard, Data Administration Division (G-MRI-1), personal communication, June 29, 2004.

TABLE 2-43: Recreational Boating Safety, Alcohol Involvement, and Property Damage Data

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Fatalities	739	1,360	1,418	1,466	1,360	1,116	865	829	709	821	815	734	^b 701	681	750
Injuries	929	927	780	2,136	2,650	2,757	3,822	4,141	4,442	4,555	4,612	4,315	4,355	4,274	4,062
Accidents	2,738	3,752	3,803	6,308	5,513	6,237	6,411	8,019	8,026	8,047	8,061	7,931	7,740	6,419	5,705
Vessels involved	^a 3,562	^a 4,778	4,762	8,002	6,954	8,305	8,591	11,534	11,306	11,396	11,368	11,190	10,984	8,974	7,907
Numbered boats (thousands)	^E 2,500	4,138	5,128	7,303	8,577	9,589	10,996	11,734	11,877	12,312	12,565	12,738	12,782	12,876	12,854
Rates per 100,000 numbered boats															
Fatalities	32.8	32.9	27.7	20.1	15.9	11.6	7.9	7.1	6.0	6.7	6.5	5.8	5.5	5.3	5.8
Injuries	37.1	22.4	15.2	29.2	30.9	28.8	34.8	35.3	37.4	37.0	36.7	33.9	34.1	33.2	31.6
Accidents	109.5	90.7	74.2	86.4	64.3	65.0	58.3	68.3	67.6	65.4	64.2	62.3	60.6	49.9	44.4
Accident reports citing alcohol involvement	N	N	N	N	N	279	568	472	601	698	704	633	696	594	602
Property damage (current \$ millions)	3.2	4.7	8.2	10.4	16.4	20.0	23.8	^a 21.5	23.2	29.0	31.0	28.9	34.7	31.3	39.2

KEY: E = estimate; N = data do not exist

^a U.S. Department of Transportation, U.S. Coast Guard (CG), Office of Boating Safety, personal communication, May 15, 2002.

^b The numbers for recreational boating safety fatalities are raw numbers--CG reports a 6% addition as instructed by the DOT Inspector General because it found a discrepancy in a review of the Search and Rescue Management Information System (SARMIS) and BARD data. (See the discussion found in the DOT FY2003 Performance Plan/Report on pg. 135 under data details of recreational boating fatalities).

NOTE

Only a small fraction of property damages and nonfatal accidents are reported to the U.S. Coast Guard.

SOURCE

U.S. Department of Transportation, U.S. Coast Guard, Office of Boating Safety, *Boating Statistics* (Washington, DC: Annual issues), Internet site http://www.uscgboating.org/statistics/accident_stats.htm as of June 2004.

TABLE 2-44: Personal Watercraft Safety Data

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatalities	5	20	20	28	26	34	35	56	68	57	84	78	66	68	50	71	U
Injured persons	156	254	402	532	708	730	915	1,338	1,617	1,837	1,812	1,743	1,614	1,580	1,424	1,362	U
Accidents ^a	376	650	844	1,162	1,513	1,650	2,236	3,002	3,986	4,099	4,070	3,607	3,374	3,268	2,562	2,225	U
Sales	29,000	48,000	64,000	72,000	68,000	79,000	107,000	142,000	200,000	191,000	176,000	130,000	106,000	92,000	80,900	79,300	80,600
Number in use	92,756	126,881	178,510	241,376	305,915	372,283	454,545	600,000	760,000	900,000	1,000,000	1,100,000	1,096,000	1,239,400	1,293,900	1,353,700	1,420,000

KEY: U = data are not available

^a Total vessels involved.

NOTES

Personal watercraft are less than 13 feet in length and are designed to be operated by a person or persons sitting, standing, or kneeling on the craft rather than within the confines of the hull.

Data on personal watercraft sales and number in use are estimates.

SOURCES

Fatalities, injuries, and accidents:

U.S. Department of Transportation, United States Coast Guard, Office of Boating Safety, *Boating Statistics - 2002* (Washington, DC: 2003), Internet site http://www.uscgboating.org/statistics/Boating_Statistics_2002.pdf as of June 3, 2004.

Sales:

1987-90: Personal Watercraft Industry Association, Internet site http://www.pwia.org/Abo_PWC.htm as of June 19, 2000.

1991-2003: Ibid., Internet site <http://www.nmma.org/facts/boatingstats/2003/files/market1.asp> as of June 3, 2004.

Use:

1987-96: National Marine Manufacturers Association, data compiled by the United States Coast Guard, personal communications.

1997-98: Ibid., Internet site <http://www.nmma.org/facts/boatingstats/statistic98.html> as of June 19, 2000.

1999-2003: Ibid., Internet site <http://www.nmma.org/facts/boatingstats/2003/files/populationstats3.asp> as of June 3, 2004.

TABLE 2-45: U.S. Coast Guard Search and Rescue Statistics, Fiscal Year

	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Cases	60,775	53,097	49,704	43,553	41,096	37,218	39,844	40,214	39,457	36,763	31,562
Responses ^a	70,237	64,971	63,679	55,710	52,141	46,602	50,622	48,226	49,502	46,643	U
Sorties ^a	88,449	84,033	110,267	98,423	91,722	83,307	89,635	57,697	59,015	54,609	36,471
Search and Rescue resource hours ^b	U	108,282	93,984	85,150	80,507	80,116	84,635	80,533	85,008	75,841	65,077
Lives saved	6,497	4,407	4,453	5,047	3,897	3,194	3,743	3,400	4,010	3,661	5,104
Lives lost, total	1,335	1,085	772	978	744	606	533	1,018	710	635	655
Lives lost before notification ^c	259	622	468	611	454	418	353	⁹ 779	413	399	409
Lives lost after notification ^d	1,076	463	304	367	290	188	180	239	297	236	246
Persons otherwise assisted	138,791	117,327	101,357	85,869	75,357	66,138	70,255	54,866	(R) 59,910	46,503	36,735
Value of property lost (\$ million) ^e	424.3	368.5	222.6	273.8	414.8	84.3	262.3	415.2	441.0	76.0	19.0
Value of property assisted (\$ million)	2,376.8	2,044.9	4,467.2	3,494.2	1,762.1	1,288.2	1,235.0	778.8	1,501.0	1,589.0	468.0
Property loss prevented (\$ million)	905.4	1,673.4	3,882.8	3,087.3	1,353.5	996.8	1,019.0	84.3	73.0	68.0	106.0

KEY: R = revised; U = data are not available.

- ^a Responses are the number of U.S. Coast Guard units involved. Sorties are the number of trips made by boat, aircraft, or cutter.
- ^b Search and Rescue resource hours represent the time that Coast Guard assets (i.e., aircraft, boats, and cutters) perform Search and Rescue operations.
- ^c Those persons whose lives were lost before the U.S. Coast Guard was notified of an incident.
- ^d Those persons whose lives were lost in an incident to which the U.S. Coast Guard was responding, but who were alive at the time the U.S. Coast Guard was notified of the incident.
- ^e Includes several out of the normal high cost incidents.
- ^f The Egypt Air (217 fatalities) and Alaska Air (88 fatalities) crashes account for the increase.

SOURCES

All data except Search and Rescue resource hours:

1985-90: U.S. Department of Transportation, U.S. Coast Guard, Search and Rescue Management Information Systems (SARMIS II) Database, available at <http://www.uscg.mil/hq/g-o/gopr/92-01summary.htm> as of Aug. 8, 2002.

1995-2003: U.S. Department of Transportation, U.S. Coast Guard, *ON SCENE The Journal of U. S. Coast Guard Search Rescue*, available at <http://www.uscg.mil/hq/g-o/gopr/On%20Scene/onscene.htm> as of July 28, 2004.

Search and Rescue resource hours:

1990-2003: U.S. Department of Transportation, U.S. Coast Guard, Office of Command and Control Architecture, personal communication, Sept. 30, 2003 and July 28, 2004.

Section G Pipeline

TABLE 2-46: Hazardous Liquid and Natural Gas Pipeline Safety and Property Damage Data Calculations

	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fatalities														
Total hazardous liquid	4	7	4	5	3	3	5	0	2	4	1	0	(R) 1	0
Total gas	26	8	15	28	6	18	48	10	(R) 19	(R) 18	37	7	10	12
Gas transmission	U	U	1	6	0	2	1	1	1	2	15	2	1	1
Gas distribution	U	U	14	22	6	16	47	9	(R) 18	(R) 16	22	5	9	11
Injured persons														
Total hazardous liquid	21	17	15	18	7	11	13	5	6	20	4	10	0	5
Total gas	233	214	177	108	69	53	114	72	(R) 75	(R) 88	77	51	50	66
Gas transmission	U	U	13	12	17	10	5	5	11	8	18	5	5	8
Gas distribution	U	U	164	96	52	43	109	67	(R) 64	(R) 80	59	46	45	58
Incidents														
Total hazardous liquid	351	254	246	183	180	188	194	171	153	168	147	(R) 130	(R) 144	126
Total gas	1,077	1,338	1,524	334	198	161	187	175	236	(R) 172	234	(R) 210	(R) 184	240
Gas transmission	U	U	389	129	89	64	77	73	99	54	80	86	(R) 82	97
Gas distribution	U	U	1,135	205	109	97	110	102	137	(R) 118	154	(R) 124	102	143
Property damage (current \$ millions)														
Total hazardous liquid	1.2	2.2	5.7	5.1	15.7	32.5	85.1	(R) 55.2	62.9	87.1	(R) 182.7	25.3	(R) 34.8	37.7
Total gas	3.3	5.0	10.0	22.9	18.9	20.9	29.3	24.6	63.5	43.6	41.3	(R) 37.7	(R) 49.2	61.8
Gas transmission	U	U	8.8	13.4	11.3	10.0	13.1	12.1	44.5	17.7	17.9	23.6	(R) 25.5	39.5
Gas distribution	U	U	1.2	9.5	7.6	11.0	16.3	12.5	19.1	25.9	23.4	(R) 14.1	(R) 23.7	22.3

KEY: R = revised; U = data are not available.

^a Includes 1,851 injuries requiring medical treatment reported for accidents caused by severe flooding near Houston, TX, in October 1994.

NOTES

Beginning with 1985 data, pipeline incidents are credited to the year in which they occurred, not the year in which the report was received. Gas numbers represent sum of transmission and gathering and distribution operators.

Property damage includes, but is not limited to, damage to the operator's facilities and to the property of others; gas lost; restoration of service and relighting; facility repair and replacement; leak locating; right-of-way cleanup; and environmental cleanup and damage.

Numbers may not add to totals due to rounding.

SOURCES

1970-85: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, personal communication, 1999.
1990-2003: Ibid., Internet site <http://ops.dot.gov/stats.htm> as of June 7, 2004.

Chapter 3

**Transportation and
the Economy**

Section A

Transportation and the
Total Economy

TABLE 3-1a: U.S. Gross Domestic Product (GDP) Attributed to For-Hire Transportation Services (Current \$ billions)

	1998	1999	2000	2001	2002	2003
TOTAL U.S. GDP	8,747.0	9,268.4	9,817.0	10,128.0	10,487.0	11,004.0
For-hire transportation services GDP, total	273.7	287.4	301.6	296.9	304.4	319.3
Air transportation	52.5	54.9	57.7	50.0	50.0	56.5
Rail transportation	24.5	24.7	25.5	25.6	25.8	26.6
Water transportation	6.5	6.4	7.2	7.4	7.0	7.7
Truck transportation	86.2	89.8	92.8	93.3	95.4	97.2
Transit and ground passenger transportation	13.8	14.4	14.5	15.1	15.8	16.3
Pipeline transportation	9.2	9.2	8.7	9.2	9.7	7.6
Other transportation and support activities	59.9	64.8	70.2	71.4	72.5	75.5
Warehousing and storage	21.1	23.2	25.0	25.1	28.3	31.9
Percent of U.S. GDP for-hire transportation services	3.1%	3.1%	3.1%	2.9%	2.9%	2.9%
Air transportation	0.6%	0.6%	0.6%	0.5%	0.5%	0.5%
Rail transportation	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%
Water transportation	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Truck transportation	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%
Transit and ground passenger transportation	0.2%	0.2%	0.1%	0.1%	0.2%	0.1%
Pipeline transportation	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Other transportation and support activities	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Warehousing and storage	0.2%	0.3%	0.3%	0.2%	0.3%	0.3%
Percent of for-hire transportation services GDP						
Air transportation	19.2%	19.1%	19.1%	16.8%	16.4%	17.7%
Rail transportation	9.0%	8.6%	8.5%	8.6%	8.5%	8.3%
Water transportation	2.4%	2.2%	2.4%	2.5%	2.3%	2.4%
Truck transportation	31.5%	31.2%	30.8%	31.4%	31.3%	30.4%
Transit and ground passenger transportation	5.0%	5.0%	4.8%	5.1%	5.2%	5.1%
Pipeline transportation	3.4%	3.2%	2.9%	3.1%	3.2%	2.4%
Other transportation and support activities	21.9%	22.5%	23.3%	24.0%	23.8%	23.6%
Warehousing and storage	7.7%	8.1%	8.3%	8.5%	9.3%	10.0%

NOTES

Data in this table have been revised from previous editions based on the Comprehensive Revision of the National Income and Product Accounts by the Bureau of Economic Analysis. One element of the revision, reflected in this table, is a switch from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS).

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, Industry Economic Accounts, Internet site <http://www.bea.doc.gov> as of Dec. 20, 2004.

TABLE 3-1b: U.S. Gross Domestic Product (GDP) Attributed to For-Hire Transportation Services (Chained 2000 \$ billions)

	1998	1999	2000	2001	2002	2003
TOTAL U.S. GDP	9,066.9	9,470.3	9,817.0	9,890.7	10,074.8	10,381.3
For-hire transportation services GDP, total	275.8	287.4	301.6	293.6	299.1	314.2
Air transportation	48.7	52.9	57.7	57	61.1	73.8
Rail transportation	24.4	24.8	25.5	24.8	24.2	24.3
Water transportation	7.0	6.4	7.2	6.8	6.3	6.4
Truck transportation	91.0	91.9	92.8	87.9	87.9	88
Transit and ground passenger transportation	14.3	14.7	14.5	14.5	14.7	14.5
Pipeline transportation	6.9	7.7	8.7	8.3	8	7.7
Other transportation and support activities	62.6	66.2	70.2	69.4	69.6	71.2
Warehousing and storage	22.0	23.4	25.0	24.4	27.1	30.3
Percent of U.S. GDP for-hire transportation services	3.0%	3.0%	3.1%	3.0%	3.0%	3.0%
Air transportation	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%
Rail transportation	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%
Water transportation	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Truck transportation	1.0%	1.0%	0.9%	0.9%	0.9%	0.8%
Transit and ground passenger transportation	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%
Pipeline transportation	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Other transportation and support activities	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Warehousing and storage	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%
Percent of for-hire transportation services GDP						
Air transportation	17.7%	18.4%	19.1%	19.4%	20.4%	23.5%
Rail transportation	8.8%	8.6%	8.5%	8.4%	8.1%	7.7%
Water transportation	2.5%	2.2%	2.4%	2.3%	2.1%	2.0%
Truck transportation	33.0%	32.0%	30.8%	29.9%	29.4%	28.0%
Transit and ground passenger transportation	5.2%	5.1%	4.8%	4.9%	4.9%	4.6%
Pipeline transportation	2.5%	2.7%	2.9%	2.8%	2.7%	2.5%
Other transportation and support activities	22.7%	23.0%	23.3%	23.6%	23.3%	22.7%
Warehousing and storage	8.0%	8.1%	8.3%	8.3%	9.1%	9.6%

NOTES

Data in this table have been revised from previous editions based on the Comprehensive Revision of the National Income and Product Accounts by the Economic Analysis. One element of the revision, reflected in this table, is a switch from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS).

For-hire transportation numbers may not equal total due to the nature of the chained dollar calculations. Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, Industry Economic Accounts, Internet site <http://www.bea.doc.gov> as of June 22, 2004.

TABLE 3-2a: U.S. Gross Domestic Product (GDP) Attributed to Transportation-Related Final Demand (Current \$ billions)

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Personal consumption of transportation, total	(R) 471.7	(R) 594.6	(R) 641.8	(R) 685.2	(R) 718.0	(R) 785.1	(R) 853.5	(R) 872.3	877.5	925.4
Motor vehicles and parts	(R) 212.8	(R) 266.7	(R) 284.9	(R) 305.1	(R) 336.1	(R) 370.8	(R) 386.5	(R) 407.9	426.1	440.1
Gasoline and oil	(R) 111.2	(R) 120.2	(R) 130.4	(R) 134.4	(R) 122.4	(R) 137.9	(R) 175.7	(R) 171.6	163.4	191.3
Transport services	(R) 147.7	(R) 207.7	(R) 226.5	(R) 245.7	(R) 259.5	(R) 276.4	(R) 291.3	(R) 292.8	288.0	294.0
Gross private domestic investment, total	(R) 73.0	(R) 120.5	(R) 128.6	(R) 141.6	(R) 151.1	(R) 173.9	(R) 167.4	(R) 148.6	132.6	132.9
Transportation structures	3.0	4.4	5.4	(R) 6.1	(R) 7.1	(R) 6.3	(R) 6.6	(R) 6.9	6.6	6.3
Transportation equipment	(R) 70.0	(R) 116.1	(R) 123.2	(R) 135.5	(R) 144.0	(R) 167.6	(R) 160.8	(R) 141.7	126.0	126.6
Exports (+), total	(R) 105.6	(R) 132.4	(R) 141.5	(R) 162.6	171.6	174.9	(R) 179.0	(R) 174.3	175.5	174.9
Civilian aircraft, engines, and parts	32.2	26.1	30.8	41.4	53.5	52.9	48.1	52.6	50.4	46.7
Automotive vehicles, engines, and parts	(R) 36.1	(R) 61.3	(R) 64.2	(R) 73.3	72.4	75.3	80.4	75.4	78.9	80.7
Passenger fares	15.3	18.9	20.4	20.9	20.1	19.8	(R) 20.7	(R) 17.9	17.0	15.7
Other transportation	22.0	26.1	26.1	27.0	25.6	26.9	(R) 29.8	(R) 28.4	29.2	31.8
Imports (-), total	(R) 134.4	(R) 176.0	(R) 184.6	(R) 203.2	220.9	258.2	(R) 288.0	(R) 282.5	287.6	300.1
Civilian aircraft, engines, and parts	10.5	10.7	12.7	16.6	21.8	23.8	26.4	31.4	25.5	24.1
Automotive vehicles, engines, and parts	(R) 88.4	(R) 123.6	(R) 128.7	(R) 139.5	148.7	179.0	195.9	189.8	203.7	210.2
Passenger fares	10.5	14.7	15.8	18.1	20.0	21.3	24.3	(R) 22.6	20.0	21.0
Other transportation	25.0	27.0	27.4	29.0	30.4	34.1	(R) 41.4	(R) 38.7	38.4	44.8
Net exports of transportation-related goods and services ^a	(R) -28.8	(R) -43.6	(R) -43.1	(R) -40.6	-49.3	-83.3	(R) -109.0	(R) -108.2	-112.1	-125.2
Government transportation-related purchases, total	111.8	134.5	(R) 141.0	(R) 149.4	(R) 156.8	(R) 168.4	176.8	(R) 190.1	202.6	216.9
Federal purchases ^b	12.9	16.3	17.2	17.6	18.3	18.7	19.4	20.9	26.2	29.9
State and local purchases ^b	90.1	109.8	115.2	123.6	130.0	140.7	148.4	159.4	165.8	170.6
Defense-related purchases ^c	8.8	8.4	(R) 8.6	(R) 8.2	(R) 8.5	(R) 9.0	9.0	(R) 9.8	10.6	16.4
Gross Domestic Product	(R) 5,803.1	(R) 7,397.7	(R) 7,816.9	(R) 8,304.3	(R) 8,747.0	(R) 9,268.4	(R) 9,817.0	(R) 10,128.0	10,487.0	11,004.0
Total transportation-related final demand ^d	(R) 627.7	(R) 806.0	(R) 868.3	(R) 935.6	(R) 976.6	(R) 1,044.1	(R) 1,088.7	(R) 1,102.8	1,100.6	1,150.0
Total transportation in GDP (percent)	(R) 10.8	(R) 10.9	(R) 11.1	(R) 11.2	(R) 11.1	(R) 11.2	(R) 11.1	(R) 10.9	10.5	10.5

KEY: R = revised.

Continued next page

TABLE 3-2a: U.S. Gross Domestic Product (GDP) Attributed to Transportation-Related Final Demand (Current \$ billions)—continued

- a Sum of exports and imports.
- b Federal purchases and state and local purchases are the sum of consumption expenditures and gross investment.
- c Defense-related purchases are the sum of transportation of material and travel.
- d Sum of total personal consumption of transportation, total gross private domestic investment, net exports of transportation-related goods and services, and total government transportation-related purchases.

SOURCES

Federal, state, and local government transportation-related purchases:

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/as of Dec. 22, 2003>, table 3.15.5.

GDP:

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/as of Sept. 29, 2004>, table 1.1.5.

All other data:

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/as of Sept. 29, 2004>, tables 2.3.5, 3.1.1.5, 4.2.5, 5.5.5, and 5.4.5B.

TABLE 3-2b: U. S. Gross Domestic Product (GDP) Attributed to Transportation-Related Final Demand (Chained 2000 \$ billions)

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Personal consumption of transportation, total	(R) 593.6	(R) 658.6	(R) 690.8	(R) 730.7	(R) 781.3	(R) 832.1	(R) 853.5	(R) 872.1	889.3	911.8
Motor vehicles and parts	(R) 256.1	(R) 272.3	(R) 285.4	(R) 304.7	(R) 339.0	(R) 372.4	(R) 386.5	(R) 405.8	428.7	452.1
Gasoline and oil	(R) 141.8	(R) 154.5	(R) 157.9	(R) 162.8	(R) 170.3	(R) 176.3	(R) 175.7	(R) 178.3	180.7	182.0
Transport services	(R) 195.7	(R) 231.8	(R) 247.5	(R) 263.2	(R) 272.0	(R) 283.4	(R) 291.3	(R) 288.0	279.9	277.7
Gross private domestic investment, total	(R) 84.7	(R) 125.2	(R) 130.8	(R) 142.5	(R) 152.9	(R) 174.2	(R) 167.4	(R) 149.4	131.8	127.3
Transportation structures	3.7	4.6	5.4	(R) 6.6	(R) 7.5	(R) 6.5	(R) 6.6	(R) 6.6	6.2	5.7
Transportation equipment	(R) 81.0	(R) 120.6	(R) 125.4	(R) 135.9	(R) 145.4	(R) 167.7	(R) 160.8	(R) 142.8	125.6	121.6
Exports (+), total	(R) 131.5	(R) 142.1	(R) 149.4	(R) 170.7	(R) 181.2	(R) 181.0	(R) 179.0	(R) 171.6	170.8	164.8
Civilian aircraft, engines, and parts	(R) 45.7	(R) 30.3	(R) 34.3	(R) 44.6	(R) 57.0	(R) 55.1	(R) 48.1	(R) 49.9	46.5	41.5
Automotive vehicles, engines, and parts	(R) 40.3	(R) 63.4	(R) 65.8	(R) 74.4	(R) 73.4	(R) 75.9	(R) 80.4	(R) 75.2	78.3	79.4
Passenger fares	(R) 19.8	(R) 19.6	(R) 21.2	(R) 22.7	(R) 22.3	(R) 20.3	(R) 20.7	(R) 17.8	16.5	13.5
Other transportation	(R) 25.7	(R) 28.8	(R) 28.1	(R) 29.0	(R) 28.5	(R) 29.7	(R) 29.8	(R) 28.7	29.5	30.4
Imports (-), total	(R) 165.2	(R) 189.0	(R) 195.5	(R) 214.0	(R) 232.5	(R) 264.5	(R) 288.0	(R) 280.1	285.2	290.9
Civilian aircraft, engines, and parts	(R) 15.0	(R) 12.4	(R) 14.0	(R) 17.7	(R) 22.9	(R) 24.5	(R) 26.4	(R) 30.2	24.2	22.8
Automotive vehicles, engines, and parts	(R) 103.3	(R) 126.6	(R) 130.9	(R) 141.6	(R) 150.8	(R) 180.2	(R) 195.9	(R) 189.9	203.3	208.6
Passenger fares	(R) 14.9	(R) 17.3	(R) 18.4	(R) 19.9	(R) 21.7	(R) 22.5	(R) 24.3	(R) 20.7	17.4	17.9
Other transportation	(R) 32.0	(R) 32.7	(R) 32.2	(R) 34.8	(R) 37.1	(R) 37.3	(R) 41.4	(R) 39.3	40.3	41.6
Net exports of transportation-related goods and services ^a	(R) -33.7	(R) -46.9	(R) -46.1	(R) -43.3	(R) -51.3	(R) -83.5	(R) -109.0	(R) -108.5	-114.4	-126.1
Government transportation-related purchases, total	147.9	156.5	157.6	161.2	165.4	173.1	177.6	185.7	191.5	199.8
Federal purchases ^b	(R) 17.1	(R) 18.0	(R) 18.5	(R) 18.8	(R) 19.6	(R) 19.4	(R) 19.2	(R) 20.6	25.0	27.8
State and local purchases ^b	(R) 119.6	(R) 128.8	(R) 129.4	(R) 133.7	(R) 137.0	(R) 144.3	(R) 149.4	(R) 155.8	156.8	157.9
Defense-related purchases ^c	(R) 11.2	(R) 9.7	(R) 9.7	(R) 8.7	(R) 8.8	(R) 9.4	(R) 9.0	(R) 9.3	9.7	14.1
Gross Domestic Product	(R) 7,112.5	(R) 8,031.7	(R) 8,328.9	(R) 8,703.5	(R) 9,066.9	(R) 9,470.3	(R) 9,817.0	(R) 9,890.7	10,074.8	10,381.3
Total transportation-related final demand ^d	(R) 792.5	(R) 893.4	(R) 933.1	(R) 991.1	(R) 1,048.3	(R) 1,095.9	(R) 1,089.5	(R) 1,098.7	1,098.2	1,112.8
Total transportation in GDP (percent)	(R) 11.1	(R) 11.1	(R) 11.2	(R) 11.4	(R) 11.6	(R) 11.6	(R) 11.1	(R) 11.1	10.9	10.7

KEY: R = revised.

Continued next page

TABLE 3-2b: U.S. Gross Domestic Product (GDP) Attributed to Transportation-Related Final Demand (Chained 2000 \$ billions)—continued

- a Sum of exports and imports.
- b Chained 2000 \$ index not available.
- c Defense-related purchases are the sum of transportation of material and travel.
- d Sum of total personal consumption of transportation, total gross private domestic investment, net exports of transportation-related goods and services and total government transportation-related purchases.

NOTES

Chained 2000 \$ value = (Quantity index for year n x 2000 current \$ value)/100.

At the time of this publication the Bureau of Economic Analysis (BEA) had only published chained 2000 dollar estimates from 1990 onward. Current dollar estimates for earlier years can be found in Table 3-2a.

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/bea/dn/nipaweb/> as of Dec. 22, 2004, tables 1.1.6, 2.3.6, 3.11.6, 3.15.6, 4.2.6, 5.5.6, and 5.4.6B .

TABLE 3-3a: U.S. Gross Domestic Demand (GDD) Attributed to Transportation-Related Final Demand (Current \$ billions)

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Gross Domestic Demand	5,881.1	7,489.0	7,913.1	8,405.9	8,906.9	9,528.9	(R) 10,196.4	(R) 10,495.0	10,911.9	11,502.2
Total domestic transportation-related final demand ^c	(R) 642.4	(R) 849.6	(R) 911.4	(R) 976.2	(R) 1,025.9	(R) 1,127.4	(R) 1,197.7	(R) 1,211.0	U	U
Total transportation in GDD (percent)	10.9	(R) 11.3	(R) 11.5	(R) 11.6	(R) 11.5	(R) 11.8	(R) 11.7	(R) 11.5	U	U
Personal consumption of transportation, total	(R) 471.7	(R) 594.6	(R) 641.8	(R) 685.2	(R) 718.0	(R) 785.1	(R) 853.5	(R) 872.3	877.5	925.4
Motor vehicles and parts	(R) 212.8	(R) 266.7	(R) 284.9	(R) 305.1	(R) 336.1	(R) 370.8	(R) 386.5	(R) 407.9	426.1	440.1
Gasoline and oil	(R) 111.2	(R) 120.2	(R) 130.4	(R) 134.4	(R) 122.4	(R) 137.9	(R) 175.7	(R) 171.6	163.4	191.3
Transportation services	(R) 147.7	(R) 207.7	(R) 226.5	(R) 245.7	(R) 259.5	(R) 276.4	(R) 291.3	(R) 292.8	288.0	294.0
Gross private domestic investment, total	(R) 73.0	(R) 120.5	(R) 128.6	(R) 141.6	(R) 151.1	(R) 173.9	(R) 167.4	(R) 148.6	132.6	132.9
Transportation structures	3.0	4.4	5.4	(R) 6.1	(R) 7.1	(R) 6.3	(R) 6.6	(R) 6.9	6.6	6.3
Transportation equipment	(R) 70.0	(R) 116.1	(R) 123.2	(R) 135.5	(R) 144.0	(R) 167.6	(R) 160.8	(R) 141.7	126.0	126.6
Government transportation-related purchases, total	(R) 111.8	134.5	(R) 141.0	(R) 149.4	(R) 156.8	(R) 168.4	(R) 176.8	(R) 190.1	U	U
Federal purchases ^a	12.9	16.3	17.2	17.6	18.3	(R) 18.7	(R) 19.4	(R) 20.9	U	U
State and local purchases ^a	90.1	109.8	115.2	123.6	130.0	140.7	(R) 148.4	(R) 159.4	U	U
Defense-related purchases ^b	8.8	8.4	(R) 8.6	(R) 8.2	(R) 8.5	(R) 9.0	9.0	(R) 9.8	10.6	16.4

KEY: R = revised; U = data are not available.

^a Federal purchases and state and local purchases are the sum of consumption expenditures and gross investment.

^b Defense-related purchases are the sum of the transportation of material and travel.

^c Sum of total personal consumption of transportation, total gross private domestic investment, and total government-related purchases.

SOURCES

Gross Domestic Demand:

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/> as of Sept. 29, 2004, tables 1.4.5.

Federal, state, and local government purchases:

1980-2000: U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/bea/dn/nipaweb/> as of Jan. 30, 2003, table 3.15.

All other data:

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/> as of Sept. 29, 2004, tables 2.3.5, 3.11.5, 5.4.5B, and 5.5.5.

TABLE 3-3b: U.S. Gross Domestic Demand (GDD) Attributed to Transportation-Related Final Demand (Chained 2000 \$ billions)

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Gross Domestic Demand	(R) 7,161.6	(R) 8,098.4	(R) 8,405.7	(R) 8,807.6	(R) 9,272.5	(R) 9,767.7	(R) 10,196.4	(R) 10,290.1	10,544.6	10,895.7
Total domestic transportation-related final demand ^c	U	U	U	U	U	U	U	U	U	U
Total transportation in GDD (percent)	U	U	U	U	U	U	U	U	U	U
Personal consumption of transportation, total	(R) 593.6	(R) 658.6	(R) 690.8	(R) 730.7	(R) 781.3	(R) 832.1	(R) 853.5	(R) 872.1	889.3	911.8
Motor vehicles and parts	(R) 256.1	(R) 272.3	(R) 285.4	(R) 304.7	(R) 339.0	(R) 372.4	(R) 386.5	(R) 405.8	428.7	452.1
Gasoline and oil	(R) 141.8	(R) 154.5	(R) 157.9	(R) 162.8	(R) 170.3	(R) 176.3	(R) 175.7	(R) 178.3	180.7	182.0
Transportation services	(R) 195.7	(R) 231.8	(R) 247.5	(R) 263.2	(R) 272.0	(R) 283.4	(R) 291.3	(R) 288.0	279.9	277.7
Gross private domestic investment, total	(R) 84.7	(R) 125.2	(R) 130.8	(R) 142.5	(R) 152.9	(R) 174.2	(R) 167.4	(R) 149.4	131.8	127.3
Transportation structures	3.7	4.6	5.4	(R) 6.6	(R) 7.5	(R) 6.5	(R) 6.6	(R) 6.6	6.2	5.7
Transportation equipment	(R) 81.0	(R) 120.6	(R) 125.4	(R) 135.9	(R) 145.4	(R) 167.7	(R) 160.8	(R) 142.8	125.6	121.6
Government transportation-related purchases, total	U	U	U	U	U	U	U	U	U	U
Federal purchases ^a	U	U	U	U	U	U	U	U	U	U
State and local purchases ^a	U	U	U	U	U	U	U	U	U	U
Defense-related purchases ^b	(R) 11.2	(R) 9.7	(R) 9.7	(R) 8.7	(R) 8.8	(R) 9.4	(R) 9.0	(R) 9.3	9.7	14.1

KEY: R = revised; U = data are not available.

^a Federal purchases and state and local purchases are the sum of consumption expenditures and gross investments.

^b Defense-related purchases are the sum of the transportation of material and travel.

^c Sum of total personal consumption of transportation, total gross private domestic investment, and total government-related purchases.

NOTE

Chained 2000 \$ value = (Quantity index for year n x 2000 current \$ value)/100.

At the time of this publication the Bureau of Economic Analysis (BEA) had only published chained 2000 dollar estimates from 1990 onward. Current dollar estimates for earlier years can be found in Table 3-3a.

SOURCES

All other data:

1990-2003: U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Internet site <http://www.bea.doc.gov/bea/dn/nipaweb/> as of Sept. 29, 2004, tables 1.4.6, 2.3.6, 3.11.6, 5.5.6, and 5.4.6B.

**TABLE 3-4a: Contributions to Gross Domestic Product (GDP): Selected Industries
(Current \$ billions)**

	1998	1999	2000	2001	2002	2003
GDP by industry, total	8,747	9,268	9,817	10,128	10,487	11,004
Agriculture, forestry, fishing, and hunting	102	94	98	98	97	114
Mining	75	85	121	119	105	130
Utilities	181	186	189	202	211	222
Construction	374	407	436	470	479	501
Manufacturing, durable goods	807	820	865	779	772	798
Manufacturing, nondurable goods	537	553	561	563	575	604
Wholesale trade	543	578	592	607	625	645
Retail trade	599	636	662	692	744	771
Transportation and warehousing	274	287	302	297	304	319
Information	382	439	458	477	470	494
Finance, insurance, real estate, rental, and leasing	1,685	1,798	1,931	2,059	2,148	2,250
Professional and business services	976	1,065	1,141	1,166	1,190	1,244
Educational services, health care, and social assistance	602	635	678	739	799	851
Arts, entertainment, recreation, accomodation, and food services	306	328	350	362	382	396
Other services, except government	211	218	229	242	252	263
Government, total	1,095	1,141	1,203	1,258	1,333	1,400
Government, federal	353	362	379	386	416	447
Government, state and local	742	779	824	873	917	953
Percent of GDP						
Agriculture, forestry, fishing, and hunting	1%	1%	1%	1%	1%	1%
Mining	1%	1%	1%	1%	1%	1%
Utilities	2%	2%	2%	2%	2%	2%
Construction	4%	4%	4%	5%	5%	5%
Manufacturing, durable goods	9%	9%	9%	8%	7%	7%
Manufacturing, nondurable goods	6%	6%	6%	6%	5%	5%
Wholesale trade	6%	6%	6%	6%	6%	6%
Retail trade	7%	7%	7%	7%	7%	7%
Transportation and warehousing	3%	3%	3%	3%	3%	3%
Information	4%	5%	5%	5%	4%	4%
Finance, insurance, real estate, rental, and leasing	19%	19%	20%	20%	20%	20%
Professional and business services	11%	11%	12%	12%	11%	11%
Educational services, health care, and social assistance	7%	7%	7%	7%	8%	8%
Arts, entertainment, recreation, accomodation, and food services	3%	4%	4%	4%	4%	4%
Other services, except government	2%	2%	2%	2%	2%	2%
Government, total	13%	12%	12%	12%	13%	13%
Government, federal	4%	4%	4%	4%	4%	4%
Government, state and local	8%	8%	8%	9%	9%	9%

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TABLE 3-4a: Contributions to Gross Domestic Product (GDP): Selected Industries (Current \$ billions)—*continued*

NOTES

Data in this table are revised from last year based on the Comprehensive Revision of the National Income and Product Accounts by the Bureau of Economic Analysis. One element of the revision, reflected in this table, is a switch from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS).

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, Industry Economic Accounts, Internet site <http://www.bea.doc.gov> as of Dec. 22, 2004.

**TABLE 3-4b: Contributions to Gross Domestic Product (GDP): Selected Industries
(Chained 2000 \$ billions)**

	1998	1999	2000	2001	2002	2003
GDP by industry	9,067	9,470	9,817	9,891	10,075	10,381
Agriculture, forestry, fishing, and hunting	85	87	98	92	98	104
Mining	123	127	121	115	112	105
Utilities	171	179	189	180	191	202
Construction	423	433	436	437	425	424
Manufacturing, durable goods	730	776	865	814	824	875
Manufacturing, nondurable goods	560	568	561	533	553	566
Wholesale trade	565	594	592	633	643	631
Retail trade	599	634	662	709	746	788
Transportation and warehousing	276	287	302	294	299	314
Information	377	438	458	477	476	502
Finance, insurance, real estate, rental, and leasing	1,742	1,834	1,931	2,005	2,033	2,099
Professional and business services	1,049	1,106	1,141	1,133	1,148	1,188
Educational services, health care, and social assistance	649	660	678	700	727	747
Arts, entertainment, recreation, accomodation, and food services	327	339	350	348	354	361
Other services, except government	233	230	229	225	223	225
Government, total	1,166	1,179	1,203	1,212	1,230	1,247
Government, federal	376	373	379	373	381	390
Government, state and local	790	806	824	840	850	857
Percent of GDP						
Agriculture, forestry, fishing, and hunting	1%	1%	1%	1%	1%	1%
Mining	1%	1%	1%	1%	1%	1%
Utilities	2%	2%	2%	2%	2%	2%
Construction	5%	5%	4%	4%	4%	4%
Manufacturing, durable goods	8%	8%	9%	8%	8%	8%
Manufacturing, nondurable goods	6%	6%	6%	5%	5%	5%
Wholesale trade	6%	6%	6%	6%	6%	6%
Retail trade	7%	7%	7%	7%	7%	8%
Transportation and warehousing	3%	3%	3%	3%	3%	3%
Information	4%	5%	5%	5%	5%	5%
Finance, insurance, real estate, rental, and leasing	19%	19%	20%	20%	20%	20%
Professional and business services	12%	12%	12%	11%	11%	11%
Educational services, health care, and social assistance	7%	7%	7%	7%	7%	7%
Arts, entertainment, recreation, accomodation, and food services	4%	4%	4%	4%	4%	3%
Other services, except government	3%	2%	2%	2%	2%	2%
Government, total	13%	12%	12%	12%	12%	12%
Government, federal	4%	4%	4%	4%	4%	4%
Government, state and local	9%	9%	8%	8%	8%	8%

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TABLE 3-4b: Contributions to Gross Domestic Product (GDP): Selected Industries (Chained 2000 \$ billions)—*continued*

NOTES

Data in this table are revised from last year based on the Comprehensive Revision of the National Income and Product Accounts by the Bureau of Economic Analysis. One element of the revision, reflected in this table, is a switch from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS).

Numbers may not add to totals due to rounding.

SOURCES

U.S. Department of Commerce, Bureau of Economic Analysis, Industry Economic Accounts, Internet site <http://www.bea.doc.gov> as of Dec. 22, 2004.

TABLE 3-5: Gross Domestic Product (GDP) by Major Social Function^R (Current \$ billions)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total GDP	5,996	6,338	6,657	7,072	7,398	7,817	8,304	8,747	9,268	9,817	10,128	10,487	11,004
Housing	1,416	1,501	1,600	1,723	1,803	1,917	2,023	2,152	2,298	2,436	2,535	2,633	2,787
Percent of total	23.6	23.7	24.0	24.4	24.4	24.5	24.4	24.6	24.8	24.8	25.0	25.1	25.3
Healthcare	843	920	980	1,036	1,099	1,154	1,226	1,305	1,384	1,491	1,596	1,713	1,842
Percent of total	14.1	14.5	14.7	14.7	14.9	14.8	14.8	14.9	14.9	15.2	15.8	16.3	16.7
Food	796	826	844	894	906	965	992	1,030	1,092	1,163	1,203	1,234	1,297
Percent of total	13.3	13.0	12.7	12.6	12.3	12.3	11.9	11.8	11.8	11.8	11.9	11.8	11.8
Transportation ^a	623	668	715	778	810	868	938	976	1,054	1,102	1,095	1,119	1,156
Percent of total	10.4	10.5	10.7	11.0	11.0	11.1	11.3	11.2	11.4	11.2	10.8	10.7	10.5
Education	413	432	453	478	512	542	577	613	654	710	758	795	823
Percent of total	6.9	6.8	6.8	6.8	6.9	6.9	6.9	7.0	7.1	7.2	7.5	7.6	7.5
Other	1,906	1,991	2,066	2,162	2,267	2,369	2,548	2,672	2,787	2,915	2,940	2,993	3,099
Percent of total	31.8	31.4	31.0	30.6	30.6	30.3	30.7	30.6	30.1	29.7	29.0	28.5	28.2

KEY: R = revised.
^a Transportation-related final demand.

NOTES

Numbers may not add to totals due to rounding.

All data in this table are revised due to the 2003 comprehensive revision of the National Income and Product Accounts (NIPAs) by the Bureau of Economic Analysis.

SOURCE

 U.S. Department of Transportation, Bureau of Transportation Statistics, calculated from data in the U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business* (Washington, DC: Various issues from 1991 to 2003).

TABLE 3-6: National Transportation and Economic Trends

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Passenger-miles (billions)	1,327	1,630	2,170	2,561	2,895	3,326	3,946	4,309	4,953	(R) 5,179	5,248	U
Index (1980 = 100)	46	56	75	88	100	115	136	149	171	(R) 179	181	U
Ton-miles (billions)	1,562	1,854	2,207	2,285	2,989	2,949	3,196	3,648	3,778	3,758	U	U
Index (1980 = 100)	52	62	74	76	100	99	107	122	126	126	U	U
Population ^a (millions)	181	194	205	216	228	238	250	267	282	(R) 285	(R) 288	291
Index (1980 = 100)	79	85	90	95	100	105	110	117	124	125	127	128
Industrial Production Index ^b (1992=100)	37	50	(R) 60	(R) 65	80	(R) 87	99	114	(R) 148	(R) 143	(R) 142	(P) 142
Gross Domestic Product												
Current \$ (billions)	(R) 526	(R) 719	(R) 1,039	(R) 1,638	(R) 2,790	(R) 4,220	5,803	(R) 7,398	(R) 9,817	(R) 10,101	(R) 10,481	10,988
Index for current \$ (1980 = 100)	19	26	37	(R) 59	100	151	208	265	(R) 352	(R) 362	(R) 376	394
Chained (2000) \$ (billions)	(R) 2,502	(R) 3,191	(R) 3,772	(R) 4,311	(R) 5,162	(R) 6,054	7,113	(R) 8,032	(R) 9,817	(R) 9,867	(R) 10,083	10,398

KEY: P = preliminary; R = revised; U = data are not available.

^a Annual estimates as of July 1. Includes Armed Forces abroad.

^b Industrial Production Index covers manufacturing, mining, and utilities.

SOURCES

Passenger-miles:

1960-2002: Summation of all modes from the passenger-miles table in chapter 1, less transit motor bus.

Ton-miles:

1960-2001: Summation of all modes from the ton-miles table in chapter 1.

Population:

1960-95: U.S. Department of Commerce, Census Bureau, *Statistical Abstract of the United States, 2000* (Washington, DC: 2001), table 2.

2000-03: Ibid., *Monthly National Population Estimates*, available at Internet site <http://www.census.gov> as of June 29, 2004.

Industrial Production Index:

1960-2003: Council of Economic Advisors, *Economic Report of the President*, available at www.gpoaccess.gov/eop/tables04.html as of June 29, 2004, table B-51.

Gross Domestic Product:

1960-95: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business* (Washington, DC: August 1998), table 1, pp. 147-148 and table 2A, pp. 151-152.

2000-2003: Ibid., <http://www.bea.gov/bea/dn/gdplev.xls> as of June 29, 2004.

Section B
Transportation and
Consumer Expenditures

TABLE 3-7: Passenger and Freight Transportation Expenditures (Current \$ millions)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001
TOTAL passenger and freight transportation expenditures	107,461	146,523	195,871	299,221	569,879	780,232	967,746	(R) 1,190,009	1,267,010	1,341,796	1,395,875	1,498,672	1,566,965	1,589,782
PASSENGER transportation expenditures total	59,694	81,592	111,893	183,382	356,143	506,620	616,796	(R) 747,412	799,807	846,731	867,445	936,917	991,190	1,010,172
Highway total	55,099	74,967	100,577	163,025	314,722	451,825	537,840	(R) 657,410	709,738	745,726	762,367	827,468	859,697	886,697
Highway, auto purchases	51,610	71,064	94,978	152,238	297,128	426,796	507,308	(R) 619,433	672,416	706,064	722,484	787,407	809,429	835,560
Local, bus and transit ^b	1,337	1,454	1,841	4,697	9,297	13,548	16,721	21,647	21,318	21,932	21,445	21,702	30,586	30,591
Local, taxi	1,107	1,113	1,740	2,900	2,755	3,770	4,030	4,960	5,425	5,735	6,355	6,200	5,580	5,735
Local, school bus	486	707	1,219	2,174	3,833	5,722	8,031	9,889	9,082	10,353	10,326	10,340	12,104	12,624
Intercity, bus	559	629	799	1,016	1,709	1,989	1,750	1,481	1,497	1,642	1,757	1,819	1,998	2,187
Air total ^c	3,555	5,682	10,565	18,851	38,135	50,319	73,045	81,155	82,331	93,268	97,358	101,750	119,997	111,866
Rail total ^d	759	598	464	1,212	2,976	3,875	4,521	6,693	5,895	5,763	5,691	5,611	6,834	7,421
Water total (includes international)	281	345	287	294	310	601	1,391	(R) 2,155	1,843	1,974	2,029	2,088	4,663	4,187
FREIGHT transportation expenditures total	47,767	64,931	83,978	115,839	213,736	273,612	350,950	(R) 442,597	467,203	495,065	528,430	561,755	575,775	579,610
Highway total	32,289	47,477	62,494	84,843	155,331	205,645	270,776	348,109	368,545	396,668	427,231	456,781	460,841	467,299
Local, truck	14,289	23,779	28,819	37,287	60,545	82,200	108,350	128,352	132,973	138,727	144,276	152,067	155,530	157,707
Intercity bus	42	70	122	156	235	245	126	130	132	134	141	151	146	148
Intercity truck	17,958	23,628	33,553	47,400	94,551	123,200	162,300	219,627	235,440	257,807	282,814	304,563	305,165	309,444
Air (domestic and international) total	354	708	1,171	1,838	4,013	6,817	13,706	18,755	20,448	22,831	24,222	25,277	27,648	25,810
Rail total	9,028	9,923	11,869	16,509	27,858	29,150	30,067	(R) 34,605	35,059	35,349	35,294	35,893	36,454	36,736
Water total	3,487	3,903	5,257	8,221	15,498	18,448	20,121	22,709	24,564	21,031	22,503	24,494	28,670	27,632
Oil pipeline total	895	1,051	1,396	2,220	7,548	8,910	8,506	9,077	8,637	8,632	8,579	9,067	8,958	9,066
Other total ^e	1,714	1,869	1,791	2,208	3,488	4,642	7,774	(R) 9,342	9,950	10,554	10,601	10,243	13,204	13,068

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TABLE 3-7: Passenger and Freight Transportation Expenditures (Current \$ millions)—continued

KEY: R = revised.

- ^a Includes business expenditures for passenger cars.
- ^b Includes federal / state operating subsidies, and federal capital grants. Beginning in 1994, includes taxes levied directly by transit agencies and local subsidies such as bridge and tunnel tolls, and nontransit parking lot funds.
- ^c Air includes aircraft and operating costs, plus domestic and international air passenger federal excise taxes.
- ^d Data from 1980 include federal / state / local operating subsidies and capital grants.
Figures also include federal operating subsidies and capital grants for Amtrak and the Northeast Corridor.
- ^e Domestic freight forwarder's revenues after payment to live-haul carriers plus other shipper costs such as loading and unloading freight cars.

NOTE

Previously published data are revised only for the selected years included in the most recent source publication.

SOURCE

Passenger and freight:

1960-2001: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), pp. 38-41, and similar tables in earlier editions.

TABLE 3-8: Sales Price of Transportation Fuel to End-Users (Current ¢/gallon)

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Aviation fuel (excluding taxes)																
Aviation gasoline ^a	108.4	120.1	112.0	104.7	102.7	99.0	95.7	100.5	111.6	112.8	97.5	105.9	130.6	132.3 (R)	128.8	149.3
Jet fuel kerosene ^a	86.8	79.6	76.6	65.2	61.0	58.0	53.4	54.0	65.1	61.3	45.2	54.3	89.9	77.5 (R)	72.1	87.3
Highway fuel (including taxes)																
Gasoline, premium ^b	N	134.0	134.9	132.1	131.6	130.2	130.5	133.6	141.3	141.6	125.0	135.7	169.3	165.7 (R)	155.6	177.7
Gasoline, regular ^b	124.5	120.2	116.4	114.0	112.7	110.8	111.2	114.7	123.1	123.4	105.9	116.5	151.0	146.1	135.8	159.1
Gasoline, all types	122.1	119.6	121.7	119.6	119.0	117.3	117.4	120.5	128.8	129.1	111.5	122.1	156.3	153.1	144.1	163.8
Diesel no. 2 (excluding taxes) ^a	81.8	78.9	72.5	64.8	61.9	60.2	55.4	56.0	68.1	64.2	49.4	58.4	93.5	84.2	76.2	94.3
Railroad fuel																
Diesel	82.6	77.8	69.2	67.2	63.3	63.1	59.9	60.0	67.7	67.8	57.0	55.5	87.5	85.5 (R)	73.3	89.3

KEY: N = data do not exist; R = revised.

^a Sales to end-users (those sales made directly to the ultimate consumer, including bulk customers in agriculture, industry, and utility).

^b Average retail price.

SOURCES

All data except railroad fuel:

U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review* (Washington, DC: May 2004), tables 9.4 and 9.7 and Internet site <http://www.eia.doe.gov/emeu/mer/prices.html> as of June 2004.

Railroad fuel:

Association of American Railroads, *Railroad Facts* (Washington, DC: Annual issues), p. 61.

TABLE 3-9: Price Trends of Gasoline v. Other Consumer Goods and Services

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Retail price of motor gasoline, all types (constant 2004 dollars per gallon)												
Total service station price	2.76	2.07	1.73	1.47	1.53	1.50	1.27	1.37	1.69	1.61	1.49	1.62
Service station price excluding taxes	2.45	1.69	1.35	0.98	1.05	1.03	0.80	0.91	1.23	1.17	1.06	1.19
Average motor fuel taxes ^a	0.31	0.38	0.38	0.49	0.48	0.47	0.47	0.46	0.46	0.44	0.43	0.43
Retail price of motor gasoline, all types (current dollars per gallon)												
Total service station price	1.22	1.20	1.22	1.21	1.29	1.29	1.12	1.22	1.56	1.53	1.44	1.64
Consumer price indices (1982-84 = 100)												
All items	82	108	131	152	157	161	163	167	172	177	180	184
Food	87	106	132	148	153	157	161	164	168	173	176	180
Shelter	81	110	140	166	171	176	182	187	193	201	208	213
Apparel	91	105	124	132	132	133	133	131	130	127	124	121
Motor fuel	97	99	101	100	106	106	92	101	129	125	117	136
Medical care	75	114	163	221	228	235	242	251	261	273	286	297

^a State and federal taxes are weighted averages computed by the American Petroleum Institute, based on gasoline sold in the 50 states. Local taxes are excluded, but additional state sales taxes levied on motor fuel are included.

SOURCES

Retail price (constant 2004 dollar):

American Petroleum Institute, Policy Analysis and Statistics, *Changes in the Major Components of Gasoline Prices, 1968-2004* (Washington, DC: March 2004).

Retail price (current dollar):

U.S. Department of Energy, Energy Information Agency, *Annual Energy Review 2003* (Washington, DC: 2004), table 5.24.

Consumer price indices:

1980-2003: Council of Economic Advisors, *Economic Report of the President 2004* (Washington, DC: Annual Issues), tables B-60 and B-61, Internet site <http://www.gpoaccess.gov/eop/download.html> as of Sept. 29, 2004.

TABLE 3-10a: Producer Price Indices for Transportation Services (Base date = 100)

	Base date	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Railroads, line-haul operating (SIC 4011)	12/84	107.5	111.7	111.5	112.1	113.4	113.0	114.5	116.6	118.9	121.4
Motor freight transportation and warehousing (SIC 42)	06/93	U	104.5	106.3	108.9	111.6	114.8	119.4	123.1	124.5	127.9
Water transportation (SIC 44)	12/92	U	103.0	103.7	104.2	105.6	113.0	122.6	129.8	134.6	147.1
Air transportation (SIC 45)	12/92	U	113.7	121.1	125.3	124.5	130.8	147.7	157.2	157.8	162.1
Pipelines, except natural gas (SIC 46)	12/86	95.8	110.8	104.6	98.8	99.2	98.3	102.3	110.3	111.9	111.7
Travel agencies (SIC 4724)	12/89	107.3	111.3	109.9	114.5	112.1	112.0	121.8	123.3	114.0	112.5
Freight transportation arrangement (SIC 4731)	12/94	U	99.8	101.5	101.4	99.7	99.2	100.3	100.3	99.5	99.9

KEY: SIC = Standard Industrial Classification; U = data are not available.

NOTE

Data are reported monthly from January to December. The monthly indices, however, are available for fewer than 12 months for some years. In both cases, a simple average of the available monthly indices is reported for each year. Data are not seasonally adjusted.

SOURCE

U.S. Department of Labor, Bureau of Labor Statistics, Producer Price Index Industry Data, Internet site www.bls.gov/data/sa.htm as of June 21, 2004.

TABLE 3-10b: Producer Price Indices for Selected Transportation and Warehousing Services (North American Industry Classification System [NAICS] basis) (Base date = 100)—continued

	Base date	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
General Freight Trucking, Long Distance, Less Than Truckload (NAICS 484122)	12/03	U	U	U	U	U	U	U	U	U	100.0
Specialized Freight Trucking (NAICS 4842)	12/03	U	U	U	U	U	U	U	U	U	100.0
Used Household and Office Goods Moving (NAICS 48421)	12/03	U	U	U	U	U	U	U	U	U	100.0
Used Household and Office Goods Moving (NAICS 484210)	12/03	U	U	U	U	U	U	U	U	U	100.0
Specialized Freight (except Used Goods) Trucking, Local (NAICS 48422)	12/03	U	U	U	U	U	U	U	U	U	100.0
Specialized Freight (except Used Goods) Trucking, Local (NAICS 484220)	12/03	U	U	U	U	U	U	U	U	U	100.0
Specialized Freight (except Used Goods) Trucking, Long Distance (NAICS 48423)	12/03	U	U	U	U	U	U	U	U	U	100.0
Specialized Freight (except Used Goods) Trucking, Long Distance (NAICS 484230)	12/03	U	U	U	U	U	U	U	U	U	100.0
Pipeline Transportation (NAICS 486)	NA	U	U	U	U	U	U	U	U	U	U
Pipeline Transportation of Crude Oil (NAICS 4861)	12/03	U	U	U	U	U	U	U	U	U	100.0
Pipeline Transportation of Crude Oil (NAICS 48611)	12/03	U	U	U	U	U	U	U	U	U	100.0
Pipeline Transportation of Crude Oil (NAICS 486110)	06/86	94.2	113.4	104.7	96.0	96.8	95.5	101.0	111.1	112.3	111.1
Other Pipeline Transportation (NAICS 4869)	12/03	U	U	U	U	U	U	U	U	U	100.0
Pipeline Transportation of Refined Petroleum Products (NAICS 48921)	12/03	U	U	U	U	U	U	U	U	U	100.0
Pipeline Transportation of Refined Petroleum Products (NAICS 489210)	06/86	100.8	104.6	104.3	105.3	104.8	104.9	105.3	108.5	111.0	112.7
Support Activities for Transportation (NAICS 488)	12/03	U	U	U	U	U	U	U	U	U	100.0
Support Activities for Air Transportation (NAICS 4881)	12/96	U	U	100.0	102.5	105.2	108.6	114.2	117.5	121.4	125.1
Airport Operations (NAICS 48811)	12/03	U	U	U	U	U	U	U	U	U	100.0
Air Traffic Control (NAICS 488111)	NA	U	U	U	U	U	U	U	U	U	U
Other Airport Operations (NAICS 488119)	12/03	U	U	U	U	U	U	U	U	U	100.0
Other Support Activities for Air Transportation (NAICS 48819)	12/03	U	U	U	U	U	U	U	U	U	100.0
Other Support Activities for Air Transportation (NAICS 488190)	12/03	U	U	U	U	U	U	U	U	U	100.0
Support Activities for Water Transportation (NAICS 4883)	12/03	U	U	U	U	U	U	U	U	U	100.0
Port and Harbor Operations (NAICS 48831)	12/03	U	U	U	U	U	U	U	U	U	100.0
Port and Harbor Operations (NAICS 488310)	12/03	U	U	U	U	U	U	U	U	U	100.0
Marine Cargo Handling (NAICS 48832)	12/03	U	U	U	U	U	U	U	U	U	100.0
Marine Cargo Handling (NAICS 488320)	12/91	U	102.1	101.6	103.7	104.9	106.7	109.1	111.4	110.9	111.5
Navigational Services to Shipping (NAICS 48833)	12/03	U	U	U	U	U	U	U	U	U	100.0

Continued next page

TABLE 3-10b: Producer Price Indices for Selected Transportation and Warehousing Services (North American Industry Classification System [NAICS] basis) (Base date = 100)—continued

	Base date	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Navigational Services to Shipping (NAICS 488330)	12/92	U	107.2	110.9	113.3	115.6	119.7	124.2	125.4	127.4	129.3
Freight Transportation Arrangement (NAICS 4885)	12/96	U	U	100.0	99.4	97.7	97.3	98.3	98.2	97.5	97.9
Freight Transportation Arrangement (NAICS 48851)	12/96	U	U	100.0	99.4	97.7	97.3	98.3	98.2	97.5	97.9
Freight Transportation Arrangement (NAICS 488510)	12/94	U	99.8	101.5	101.4	99.7	99.2	100.3	100.3	99.5	99.9
Postal Service (NAICS 491)	06/89	100.0	132.2	132.3	132.3	132.3	135.3	135.2	143.4	150.2	155.0
Postal Service (NAICS 4911)	06/89	100.0	132.2	132.3	132.3	132.3	135.3	135.2	143.4	150.2	155.0
Couriers and Messengers (NAICS 492)	12/03	U	U	U	U	U	U	U	U	U	100.0
Couriers (NAICS 4921)	12/03	U	U	U	U	U	U	U	U	U	100.0
Local Messengers and Local Delivery (NAICS 4922)	12/03	U	U	U	U	U	U	U	U	U	100.0
Warehousing and Storage (NAICS 493)	NA	U	U	U	U	U	U	U	U	U	U
Warehousing and Storage (NAICS 4931)	NA	U	U	U	U	U	U	U	U	U	U
General Warehousing and Storage (NAICS 49311)	NA	U	U	U	U	U	U	U	U	U	U
General Warehousing and Storage (NAICS 493110)	12/03	U	U	U	U	U	U	U	U	U	100.0
Refrigerated Warehousing and Storage (NAICS 49312)	12/03	U	U	U	U	U	U	U	U	U	100.0
Refrigerated Warehousing and Storage (NAICS 493120)	12/91	U	104.2	104.6	105.1	105.4	106.4	108.1	109.8	109.8	109.8
Farm Product Warehousing and Storage (NAICS 49313)	12/03	U	U	U	U	U	U	U	U	U	100.0
Farm Product Warehousing and Storage (NAICS 493130)	12/92	U	104.0	102.4	102.9	104.1	107.1	110.6	114.2	115.6	116.1

KEY: NAICS = North American Industry Classification System; NA = not applicable; U = data are not available.

NOTE

Data are reported monthly from January to December. The monthly indices, however, are available for fewer than 12 months for some years. In both cases, a simple average of the available monthly indices is reported for each year. Data are not seasonally adjusted.

SOURCE

U.S. Department of Labor, Bureau of Labor Statistics, Producer Price Index Industry Data, Internet site www.bls.gov/data/sa.htm as of July 19, 2004.

**TABLE 3-11a: Producer Price Indices for Transportation Equipment (Standard Industrial Classification [SIC] basis)
(Base date = 100)**

	Base date	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Transportation equipment (SIC 37)	12/84	115.6	132.2	134.2	134.1	133.6	134.5	136.8	137.9	137.3	138.4
Motor vehicles and motor vehicle equipment (SIC 371)	12/84	113.0	129.1	130.4	129.0	127.7	128.3	129.2	128.5	126.7	126.6
Motor vehicles and passenger car bodies (SIC 3711)	06/82	119.9	139.1	140.4	138.7	136.8	137.6	138.7	137.6	134.9	135.1
Truck and bus bodies (SIC 3713)	12/82	125.4	145.5	149.9	153.5	155.3	157.0	160.3	163.3	165.6	167.5
Motor vehicle parts and accessories (SIC 3714)	12/82	108.9	113.5	114.0	113.1	112.6	112.0	111.6	111.5	111.1	110.0
Truck trailers (SIC 3715)	12/79	125.6	148.6	147.8	147.7	152.2	153.6	156.6	156.1	155.6	157.0
Motor homes built on purchased chassis (SIC 3716)	06/84	125.8	137.8	141.6	143.1	145.0	147.6	149.4	151.8	154.8	157.8
Aircraft (SIC 3721)	12/85	116.0	137.3	140.5	142.3	142.7	144.1	150.5	155.7	158.8	164.2
Aircraft engines and engine parts (SIC 3724)	12/85	112.6	130.9	133.4	134.8	135.8	136.8	139.7	144.0	145.7	152.9
Aircraft parts and auxiliary equipment, NEC (SIC 3728)	06/85	116.3	131.7	136.3	139.0	140.8	142.2	143.3	146.6	148.1	147.6
Shipbuilding and repairing (SIC 3731)	12/85	114.0	127.6	130.1	133.3	134.8	135.4	137.6	140.1	144.1	151.7
Boatbuilding and repairing (SIC 3732)	12/81	136.0	154.6	159.6	165.0	168.6	172.7	179.4	186.3	190.5	194.2
Railroad equipment (SIC 3743)	06/84	114.2	127.6	129.6	127.4	127.5	128.1	128.6	128.2	127.7	128.9
Motorcycles, bicycles, and parts (SIC 3751)	12/84	109.9	122.2	123.3	123.3	124.2	125.5	127.7	127.9	128.6	128.6
Travel trailers and campers (SIC 3792)	06/84	118.1	127.2	129.0	129.6	130.3	132.0	133.2	134.2	136.6	139.5
Transportation equipment, NEC (SIC 3799)	06/85	112.5	123.3	126.6	128.7	131.3	132.2	135.5	138.1	138.7	139.7

KEY: NEC = not elsewhere classified; SIC = Standard Industrial Classification.

NOTE

Bureau of Labor Statistics data are reported monthly from January to December. The monthly indices, however, are available for fewer than 12 months for some years. In both cases, a simple average of the available monthly indices is reported for each year. Data are not seasonally adjusted.

SOURCE

U.S. Department of Labor, Bureau of Labor Statistics, Producer Price Index Revision-Current Series, Internet site www.bls.gov/data/sa.htm as of June 22, 2004.

TABLE 3-11b: Producer Price Indices for Transportation Equipment (North American Industry Classification System [NAICS] basis) (Base date = 100)

	Base date	1990	1995	2000	2001	2002	2003
Transportation Equipment Manufacturing (NAICS 336)							
Motor Vehicle Manufacturing (NAICS 3361)	12/03	U	U	U	U	U	U 100.0
Automobile and Light Duty Motor Vehicle Manufacturing (NAICS 33611)	12/03	U	U	U	U	U	U 100.0
Automobile Manufacturing (NAICS 336111)	06/82	119.9	139.1	138.7	137.6	134.9	135.1
Light Truck and Utility Vehicle Manufacturing (NAICS 336112)	NA	U	U	U	U	U	U
Heavy Duty Truck Manufacturing (NAICS 33612)	NA	U	U	U	U	U	U
Heavy Duty Truck Manufacturing (NAICS 336120)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Body and Trailer Manufacturing (NAICS 3362)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Body and Trailer Manufacturing (NAICS 33621)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Body Manufacturing (NAICS 336211)	NA	U	U	U	U	U	U
Truck Trailer Manufacturing (NAICS 336212)	12/82	125.4	145.5	160.3	163.3	165.6	167.5
Motor Home Manufacturing (NAICS 336213)	12/79	125.6	148.6	156.6	156.1	155.6	157.0
Travel Trailer and Camper Manufacturing (NAICS 336214)	06/84	125.8	137.8	149.4	151.8	154.8	157.8
Motor Vehicle Parts Manufacturing (NAICS 3363)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing (NAICS 33631)	12/03	U	U	U	U	U	U 100.0
Carburetor, Piston, Piston Ring, and Valve Manufacturing (NAICS 336311)	NA	U	U	U	U	U	U
Gasoline Engine and Engine Parts Manufacturing (NAICS 336312)	12/82	118.6	124.8	127.8	128.5	129.1	128.7
Motor Vehicle Electrical and Electronic Equipment Manufacturing (NAICS 33632)	12/03	U	U	U	U	U	U 100.0
Vehicular Lighting Equipment Manufacturing (NAICS 336321)	NA	U	U	U	U	U	U
Other Motor Vehicle Electrical and Electronic Equipment Manufacturing (NAICS 336322)	12/83	112.8	124.1	122.7	122.5	122.7	122.1
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing (NAICS 33633)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing (NAICS 336330)	NA	U	U	U	U	U	U
Motor Vehicle Brake System Manufacturing (NAICS 33634)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Brake System Manufacturing (NAICS 336340)	NA	U	U	U	U	U	U
Motor Vehicle Transmission and Power Train Parts Manufacturing (NAICS 33635)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Transmission and Power Train Parts Manufacturing (NAICS 336350)	NA	U	U	U	U	U	U
Motor Vehicle Seating and Interior Trim Manufacturing (NAICS 33636)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Seating and Interior Trim Manufacturing (NAICS 336360)	12/03	U	U	U	U	U	U 100.0
Motor Vehicle Metal Stamping (NAICS 33637)	NA	U	U	U	U	U	U

TABLE 3-11b: Producer Price Indices for Transportation Equipment (North American Industry Classification System [NAICS] basis) (Base date = 100)—continued

	Base date	1990	1995	2000	2001	2002	2003
Motor Vehicle Metal Stamping (NAICS 336370)	12/82	112.6	111.7	110.6	110.1	110.3	113.0
Other Motor Vehicle Parts Manufacturing (NAICS 33639)	NA	U	U	U	U	U	U
Motor Vehicle Air-Conditioning Manufacturing (NAICS 336391)	12/03	U	U	U	U	U	100.0
All Other Motor Vehicle Parts Manufacturing (NAICS 336399)	12/03	U	U	U	U	U	100.0
Aerospace Product and Parts Manufacturing (NAICS 3364)	06/85	117.7	137.3	149.9	154.7	157.3	162.2
Aerospace Product and Parts Manufacturing (NAICS 33641)	06/85	117.7	137.3	149.9	154.7	157.3	162.2
Aircraft Manufacturing (NAICS 336411)	12/85	116.0	137.3	150.5	155.7	158.8	164.2
Aircraft Engine and Engine Parts Manufacturing (NAICS 336412)	12/85	112.6	130.9	139.7	144.0	145.7	152.9
Other Aircraft Parts and Auxiliary Equipment Manufacturing (NAICS 336413)	06/85	116.3	131.7	143.3	146.6	148.1	147.6
Guided Missile and Space Vehicle Manufacturing (NAICS 336414)	NA	U	U	U	U	U	U
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing (NAICS 336415)	NA	U	U	U	U	U	U
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing (NAICS 336419)	NA	U	U	U	U	U	U
Railroad Rolling Stock Manufacturing (NAICS 3365)	06/84	114.2	127.6	128.6	128.3	127.7	129.0
Railroad Rolling Stock Manufacturing (NAICS 336510)	06/84	114.2	127.6	128.6	128.2	127.7	128.9
Ship and Boat Building (NAICS 3366)	12/84	120.1	135.0	149.0	152.6	156.8	163.0
Ship and Boat Building (NAICS 33661)	12/84	120.1	135.0	149.0	152.6	156.8	163.0
Ship Building and Repairing (NAICS 336611)	12/85	114.0	127.6	137.6	140.1	144.1	151.7
Boat Building (NAICS 336612)	12/81	136.0	154.6	179.4	186.3	190.5	194.2
Other Transportation Equipment Manufacturing (NAICS 3369)	12/03	U	U	U	U	U	100.0
Other Transportation Equipment Manufacturing (NAICS 33699)	NA	U	U	U	U	U	U
Motorcycle, Bicycle, and Parts Manufacturing (NAICS 336991)	12/84	109.9	122.2	127.7	127.9	128.6	128.6
Military Armored Vehicle, Tank, and Tank Component Manufacturing (NAICS 336992)	NA	U	U	U	U	U	U
All Other Transportation Equipment Manufacturing (NAICS 336999)	12/03	U	U	U	U	U	100.0

KEY: NA = not applicable; NAICS = North American Industry Classification System; U = data are not available.

NOTE

Bureau of Labor Statistics data are reported monthly from January to December. The monthly indices, however, are available for fewer than 12 months for some years. In both cases, a simple average of the available monthly indices is reported for each year. Data are not seasonally adjusted.

SOURCE

U.S. Department of Labor, Bureau of Labor Statistics, Producer Price Index Revision-Current Series, Internet site www.bls.gov/data/sa.htm as of Sept. 1, 2004.

TABLE 3-12: Personal Expenditures by Category (Current \$ millions)

	1960	1965	1970	1975	1980	1985	1990	1995	2001	2001	2002	2003
Total expenditures	331,700	443,800	648,500	1,034,400	1,757,100	2,720,300	3,839,900	4,975,800	6,739,400 (R)	7,055,000 (R)	7,376,100 (R)	7,760,900
Transportation	42,800	59,400	81,500	132,400	238,900	377,700	471,700	594,600	853,400 (R)	872,400 (R)	877,500 (R)	925,500
Transportation as a percent of total expenditures	12.9%	13.4%	12.6%	12.8%	13.6%	13.9%	12.3%	11.9%	12.7%	12.4%	11.9%	11.9%
Food and tobacco	89,200	108,800	154,600	238,300	376,800	498,400	677,800	790,100	1,003,700 (R)	1,052,000 (R)	1,095,000 (R)	1,152,600
Clothing, accessories, and jewelry	32,700	41,400	57,600	85,600	132,300	188,300	261,500	314,500	397,000 (R)	397,100 (R)	404,400 (R)	412,300
Personal care	5,600	8,100	11,500	16,100	25,500	38,800	56,900	72,800	93,400 (R)	94,500 (R)	95,800 (R)	96,900
Housing	48,200	65,400	94,100	147,700	256,200	412,700	597,900	764,400	1,006,500	1,073,700 (R)	1,144,800 (R)	1,188,400
Household operation	46,700	62,100	84,800	135,700	233,300	343,600	433,300	553,500	719,300 (R)	740,300 (R)	746,000 (R)	779,600
Medical care	22,200	34,700	61,300	109,900	209,600	376,400	635,100	905,000	1,218,300 (R)	1,327,300 (R)	1,444,900 (R)	1,557,200
Personal business	14,100	20,100	31,800	54,900	95,200	177,500	250,900	349,600	539,100 (R)	536,500 (R)	552,100 (R)	577,700
Recreation	18,500	26,900	43,100	70,500	117,500	189,700	290,200	418,100	585,700 (R)	604,000 (R)	628,300 (R)	660,700
Education and research	4,400	7,000	12,700	20,600	33,500	53,900	83,700	114,300	163,800 (R)	178,100 (R)	190,700 (R)	201,700
Religious and welfare activities	5,200	7,100	11,000	18,300	34,800	55,700	88,700	120,400	172,300 (R)	186,500 (R)	202,900 (R)	211,200
Foreign travel and other, net	2,100	2,900	4,500	4,400	3,500	7,700	-7,700	-21,400	-13,000 (R)	-7,400 (R)	-6,400 (R)	-2,700
Disposable Personal Income (DPI)	(R) 365,400 (R)	498,100 (R)	735,700 (R)	1,187,400 (R)	2,009,000 (R)	3,109,300 (R)	4,285,800 (R)	5,408,200 (R)	7,194,000 (R)	7,486,800 (R)	7,827,700 (R)	8,159,900
Transportation as a percent of DPI	11.7%	11.9%	11.1%	11.2%	11.9%	12.1%	11.0%	11.0%	11.9%	11.7%	11.2%	11.3%

KEY: R = revised.

SOURCESDPI: 1960-2003: U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, table 2.9, Internet site <http://www.bea.doc.gov> as of Oct. 4, 2004.All but DPI: Ibid., *National Income and Product Accounts Tables*, table 2.5.5, Internet site <http://www.bea.doc.gov/bea/dn/nipa/web/index.asp> as of Oct. 4, 2004.

TABLE 3-13: Personal Consumption Expenditures on Transportation by Subcategory (Current \$ millions)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL transportation	42,800	59,400	81,500	132,400	238,900	377,700	471,700	594,600	853,400	(R) 872,400	(R) 877,500	925,500
User-operated transportation, total	39,500	55,300	74,500	121,100	218,800	349,800	434,700	550,500	793,800	(R) 818,300	(R) 827,200	872,900
New cars and net purchases of used cars	16,600	25,200	26,700	36,700	57,200	110,700	119,000	132,600	164,300	(R) 162,900	(R) 160,000	151,400
New and used trucks and RVs	600	1,300	2,700	7,700	11,800	41,000	63,900	96,200	173,200	(R) 195,900	(R) 215,400	235,400
Tires, tubes, accessories, and parts	2,500	3,500	6,100	10,300	17,900	24,300	29,900	37,800	49,000	49,100	(R) 50,700	53,200
Repair and rental ¹	5,500	7,600	12,300	19,800	34,000	60,500	84,900	125,500	183,500	189,100	(R) 186,000	186,200
Gasoline and oil	12,000	14,800	21,900	39,700	86,700	97,200	111,200	120,200	175,700	(R) 171,600	(R) 163,400	191,300
Tolls	300	500	700	800	1,100	1,500	2,300	3,700	5,100	(R) 5,100	(R) 5,800	6,600
Insurance premiums, less claims paid	2,000	2,600	4,100	5,900	10,000	14,700	23,500	34,500	43,000	44,600	(R) 45,800	48,700
Purchased intercity transportation, total	1,300	2,000	4,000	7,300	15,400	21,000	28,600	33,900	47,400	(R) 41,600	(R) 37,900	40,000
Railroad	300	300	200	300	300	400	600	400	500	600	600	600
Intercity bus	300	400	500	700	1,400	1,300	1,300	1,800	2,400	2,400	2,300	2,300
Airline	700	1,300	3,100	5,900	12,800	17,600	22,700	25,300	36,700	(R) 31,400	(R) 28,100	30,300
Other	0	100	200	400	900	1,700	4,000	6,400	7,800	7,300	(R) 6,900	6,800
Purchased local transportation, total	2,000	2,100	3,000	4,000	4,800	6,800	8,400	10,100	12,200	(R) 12,500	(R) 12,400	12,600
Mass transit system	1,400	1,400	1,800	2,100	2,900	4,200	5,800	7,100	9,100	(R) 9,200	(R) 9,000	8,800
Taxi	600	600	1,200	2,000	1,900	2,600	2,600	3,000	3,100	3,200	(R) 3,400	3,700

KEY: R = revised; RVs = recreational vehicles.

¹ Also includes greasing, washing, parking, storage, and leasing.

NOTE

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts Tables*, table 2.5.5, Internet site <http://www.bea.doc.gov/bea/dn/nipaweb/index.asp> as of Oct. 4, 2004.

TABLE 3-14: Average Cost of Owning and Operating an Automobile^a (Assuming 15,000 Vehicle-Miles per Year)

	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Average total cost per mile (current ¢)	14.4	21.2	23.2	33.0	37.3	38.8	38.7	39.4	41.2	42.6	44.8	46.1	47.0	49.1	51.0	50.2	51.7
Gas and oil	4.8	5.9	5.6	5.4	6.6	5.9	5.9	5.6	5.8	5.6	6.6	6.2	5.6	6.9	7.9	5.9	7.2
Gas and oil as a percent of total cost	33.4	27.9	24.0	16.4	17.7	15.2	15.2	14.2	14.1	13.1	14.7	13.4	11.9	14.1	15.5	11.8	13.9
Maintenance	1.0	1.1	1.2	2.1	2.2	2.2	2.4	2.5	2.6	2.8	2.8	3.1	3.3	3.6	3.9	4.1	4.1
Tires	0.7	0.6	0.7	0.9	0.9	0.9	0.9	1.0	1.2	1.2	1.4	1.4	1.7	1.7	1.8	1.8	1.8
Average total cost per 15,000 miles (current \$)	2,154	3,176	3,484	4,954	5,601	5,824	5,804	5,916	6,185	6,389	6,723	6,908	7,050	7,363	7,654	7,533	7,754
Variable cost	968	1,143	1,113	1,260	1,455	1,350	1,380	1,365	1,440	1,440	1,620	1,605	1,590	1,829	2,040	1,770	1,965
Fixed cost ^b	1,186	2,033	2,371	3,694	4,146	4,474	4,424	4,551	4,745	4,949	5,103	5,303	5,460	5,534	5,614	5,764	5,789

^a All figures reflect the average cost of operating a vehicle 15,000 miles per year in stop and go conditions.

^b Fixed costs (ownership costs) include insurance, license, registration, taxes, depreciation, and finance charges.

NOTES

Changes in the way costs were calculated make it difficult to compare pre-1985 data with more recent years.

Prior to 1985, the cost figures are for a mid-sized, current model, American car equipped with a variety of standard and optional accessories.

After 1985, the cost figures represent a composite of three current model American cars. The 2003 fuel costs are based on a fourth quarter average price of \$1.461 per gallon of regular unleaded gasoline, weighted 20 percent full-serve and 80 percent self-serve. Insurance figures are based on personal use of vehicles driven less than 10 miles to or from work, with no young drivers. Normal depreciation costs are based on the vehicle's trade-in value at the end of 4 years or 60,000 miles. American Automobile Association analysis covers vehicles equipped with standard and optional accessories including automatic transmission, air conditioning, power steering, power disc brakes, AM/FM stereo, driver- and passenger-side air bags, anti-lock brakes, cruise control, tilt steering wheel, tinted glass, emissions equipment, and rear-window defogger.

SOURCE

American Automobile Association, *Your Driving Costs* (Heathrow, FL: Annual issues).

TABLE 3-15a: Average Passenger Fares (Current \$)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air carrier, domestic, scheduled service	33.01	34.13	40.65	53.64	84.60	92.53	107.86	106.66	121.27	(R) 111.60	101.94	102.90
Class I bus, intercity ^a	2.46	2.73	3.81	5.46	10.57	11.98	20.22	20.10	29.46	30.27	30.11	U
Transit, all modes ^b (unlinked)	0.14	0.16	0.22	0.27	0.30	0.53	0.67	0.88	0.93	0.92	0.89	U
Commuter rail	0.64	0.71	0.84	1.04	1.41	2.85	2.90	3.13	3.32	3.44	3.49	U
Intercity rail / Amtrak ^c	4.22	3.92	3.19	12.96	17.72	26.15	39.59	39.92	49.61	51.58	55.15	U

KEY: R = revised; U = data are not available.

^a Regular route intercity service.

^b Prior to 1984, excludes commuter railroad, automated guideway, urban ferryboat, demand responsive, and most rural and smaller systems.

^c Amtrak began operations in 1971.

SOURCES

Air carrier, domestic, scheduled service:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: February 1970), part III, table 2 (enplanements); part IV, table 2 (passenger revenue).

1965-70: *Ibid. Handbook of Airline Statistics, 1973* (Washington, DC: March 1974), part III, table 2 (enplanements); part IV, table 2 (passenger revenue).

1975-80: *Ibid. Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 1, line 3; and *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 2, line 16 (passenger revenue / revenue passenger enplanements).

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 1, line 3; and *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 3, line 16 (passenger revenue / revenue passenger enplanements).

Class I bus, intercity:

1960-90: Interstate Commerce Commission, *Transport Statistics in the United States, Motor Carriers* (Washington, DC: Annual issues), part 2.

1995-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Selected Earnings Data, Class I Motor Carriers of Passengers* (Washington, DC: Annual issues) (operating revenue / revenue passengers).

Transit and commuter rail:

1960-2002: American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: Annual issues) (passenger fares / passenger trips).

Intercity rail / Amtrak:

1960-70: Association of American Railroads, *Railroad Facts* (Washington, DC: Annual issues).

1975-80: Amtrak, State and Local Affairs Department and Public Affairs Department, personal communication.

1985: Amtrak, Amtrak Annual Report, Statistical Appendix (Washington, DC: Annual issues) (transportation revenues / Amtrak system passenger trips).

1990-2002: Amtrak, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues) (ticket revenue per passenger mile x average trip length of passengers).

TABLE 3-15b: Average Passenger Fares (Chained 2000 \$)

	1960	1965	1970	1975	1980	1985	1990	(R) 1995	(R) 2000	2001	2002	2003
Air carrier, domestic, scheduled service	138.96	138.27	138.65	135.45	123.18	112.42	117.94	114.73	121.27	(R) 121.07	123.12	122.38
Class I bus, intercity ^a	17.71	18.57	20.46	18.70	22.63	16.36	23.31	23.22	29.46	29.31	28.26	U
Transit, all modes ^b (unlinked)	1.02	1.01	0.92	0.97	0.75	0.84	0.86	0.97	0.93	0.89	0.85	U
Commuter rail	4.60	5.02	5.04	4.84	3.97	5.11	3.81	3.65	3.32	3.28	3.21	U
Intercity rail / Amtrak ^c	30.30	27.73	19.15	60.29	49.86	46.85	51.99	46.56	49.61	49.18	50.72	U

KEY: U = data are not available.

^a Regular route intercity service.

^b Prior to 1984, excludes commuter railroad, automated guideway, urban ferryboat, demand responsive, and most rural and smaller systems.

^c Amtrak began operations in 1971.

SOURCES

Air carrier, domestic, scheduled service:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: February 1970), part III, table 2 (enplanements); part IV, table 2 (passenger revenue).

1965-70: *Ibid.*, *Handbook of Airline Statistics, 1973* (Washington, DC: March 1974), part III, table 2 (enplanements); part IV, table 2 (passenger revenue).

1975-80: *Ibid.*, *Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 1, line 3; and *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 2, line 16 (passenger revenue / revenue passenger enplanements).

1985-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 1, line 3 and *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 3, line 16 (passenger revenue / revenue passenger enplanements).

Class I bus, intercity:

1960-90: Interstate Commerce Commission, *Transport Statistics in the United States, Motor Carriers* (Washington, DC: Annual issues), part 2.

1995-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Selected Earnings Data, Class I Motor Carriers of Passengers* (Washington, DC: Annual issues) (operating revenue/revenue passenger).

Transit and commuter rail:

1960-2002: American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: Annual issues) (passenger fares / passenger trips).

Intercity rail / Amtrak:

1960-70: Association of American Railroads, *Railroad Facts* (Washington, DC: Annual issues).

1975-80: Amtrak, State and Local Affairs Department and Public Affairs Department, personal communication.

1985: Amtrak, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues) (transportation revenues / Amtrak system passenger trips).

1990-2002: Amtrak, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues) (ticket revenue per passenger mile x average trip length of passengers).

Section C
**Transportation Revenues,
Employment, and
Productivity**

TABLE 3-16: Average Passenger Revenue per Passenger-Mile (Current \$)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air carrier, domestic, scheduled service	6.1	6.1	6.0	7.7	11.5	12.2	13.4	13.5	14.6	13.2	12.0	12.2
Index (1980 = 100)	53	53	52	67	100	106	117	117	127	115	90	91
Class I bus, intercity ^a	2.7	2.9	3.6	4.9	7.3	9.9	11.6	12.2	12.8	12.9	U	U
Index (1990 = 100)	23	25	31	42	63	86	100	106	111	112	U	U
Commuter rail	2.9	3.3	3.8	4.6	6.7	12.1	13.5	13.1	15.1	15.4	U	U
Index (1990 = 100)	22	25	28	34	50	90	100	97	112	114	U	U
Intercity / Amtrak ^b	3.0	3.1	4.0	5.7	8.2	11.3	14.1	14.6	23.2	24.9	26.8	25.0
Index (1990 = 100)	21	22	28	40	58	80	100	103	165	176	668	438
Consumer Price Index (1982-84 = 100)	30	32	39	54	82	108	131	152	172	177	180	184

KEY: U = data are not available.

^a Regular route intercity service.

^b Amtrak began operations in 1971.

SOURCES

Air carrier, domestic, scheduled service:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: February 1970), part III, table 2 (passenger-miles); part IV, table 2 (passenger revenues).

1965-70: *Ibid.*, *Handbook of Airline Statistics, 1973* (Washington, DC: March 1974), part III, table 2 (passenger-miles); part IV, table 2 (passenger revenues).

1975-80: *Ibid.*, *Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 2, line 3.

Ibid., *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 4, line 9.

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 1, line 9 and similar pages in previous editions; and *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 3, line 9 and similar pages in previous editions (total passenger operating revenues / total revenue passenger-miles).

Intercity class I bus and commuter rail:

1960-2001: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 48.

Continued next page

TABLE 3-16: Average Passenger Revenue per Passenger-Mile (Current \$)—continued**Intercity / Amtrak:**

- 1960-70: Association of American Railroads, *Railroad Facts* (Washington, DC: Annual issues).
 1975-80: Eno Transportation Foundation, Inc., *Transportation in America, 1994* (Lansdowne, VA: 1994), p. 50.
 1985-2002: Amtrak, *Amtrak Annual Report, Statistical Appendix* (Washington, DC: Annual issues) (transportation revenues / passenger-miles).
 2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 77 (passenger revenue/revenue passenger miles).

Consumer Price Index:

- 1960-2003: Council of Economic Advisors, *Economic Report of the President, 2004* (Washington, DC: 2004), table B-60.

TABLE 3-17: Average Freight Revenue Per Ton-mile (Current €)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air carrier, domestic, scheduled service	22.8	20.5	21.9	28.2	46.3	48.8	64.6	76.5	78.0 (R)	80.4	60.8	53.4
Index (1980 = 100)	49	44	47	61	100	105	140	165	168 (R)	174	131	83
Truck ^a	6.3	6.5	8.5	11.6	18.0	22.9	24.4	25.1	27.0	26.6	U	U
Index (1990 = 100)	26	26	35	48	74	94	100	103	111	109	U	U
Class I rail	1.40	1.27	1.43	2.04	2.87	3.04	2.66	2.40	2.26	2.24	2.26	2.28
Index (1990 = 100)	53	48	54	77	108	114	100	90	85	84	85	86
Barge	N	0.35	0.30	0.52	0.77	0.80	0.76	0.73	0.73	0.72	U	U
Index (1990 = 100)	N	46	40	68	102	106	100	97	97	95	U	U
Oil pipeline	0.32	0.28	0.27	0.37	0.33	1.57	1.46	1.51	1.45	1.47	U	U
Index (1990 = 100)	22	19	19	25	91	107	100	104	100	101	U	U
Producer Price Index (1982 = 100) ^b	33	34	39	58	88	105	119	128	138	141	139	143

KEY: N = data do not exist; R = revised; U = data are not available.

^a General freight common carriers, most of which are LTL (less-than-truckload) carriers.

^b Total finished goods.

^c Reflects entrance of Alaska pipeline moving crude petroleum to U.S. refineries between 1975 and 1980.

SOURCES

Air carrier, domestic, scheduled service:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: 1970), part III, tables 2 and 13.

1965-70: *Ibid.*, *Handbook of Airline Statistics, 1973* (Washington, DC: 1974), part III, tables 2 and 13.

1975-80: *Ibid.*, *Air Carrier Traffic Statistics* (Washington, DC: 1976, 1981), pp. 4 and 14 (December 1976) and pp. 2 and 3 (December 1981).

1985-2001: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 1, line 4.

2002-2003: *Ibid.*, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 3, line 18 (freight operating revenues/freight revenue ton-miles).

Truck, barge, and oil pipeline:

1960-2001: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 47.

Class I rail:

1960-2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 30.

Producer Price Index:

1960-2003: Council of Economic Advisors, *Economic Report of the President, 2004* (Washington, DC: 2004), table B-65.

TABLE 3-18: Total Operating Revenues (Current \$ millions)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air carrier, domestic, all services	2,178	3,691	7,180	12,020	26,440	37,629	57,961	70,885	98,896	(R) 86,511	79,220	88,179
Trucking ^a	N	N	N	N	N	N	127,314	161,806	(R) 224,996	(R) 222,386	222,544	U
Class I bus, intercity	463	607	722	955	1,397	1,233	943	917	1,088	1,076	1,070	U
Transit ^b	1,407	1,444	1,707	3,451	6,510	12,195	16,053	18,241	24,243	25,288	(P) 26,632	U
Class I rail	9,514	10,208	11,992	16,402	28,258	27,586	28,370	32,279	34,102	34,576	35,327	36,639
Intercity / Amtrak ^c	N	N	N	253	454	832	1,308	1,490	2,111	2,109	2,228	2,077
Water transportation (domestic) ^d	1,722	1,822	2,070	3,293	7,219	7,704	7,940	7,712	6,930	6,235	U	U
Oil pipeline ^e	895	1,051	1,396	2,220	7,548	8,910	8,506	9,077	8,958	9,066	U	U
Gas pipeline (investor-owned) ^f	8,700	11,500	16,400	30,551	85,918	103,945	66,027	58,435	(R) 72,075	(R) 79,276	68,594	U
Transmission companies	3,190	4,088	5,928	11,898	41,604	45,738	21,756	12,092	10,404	10,257	10,096	U
Distribution companies	N	N	N	5,938	14,013	21,510	18,750	19,421	34,696	(R) 39,179	31,210	U
Integrated companies	N	N	N	6,962	17,300	17,396	10,117	10,899	3,755	4,184	3,150	U
Combination companies	N	N	N	5,753	13,001	19,301	15,404	16,023	23,220	(R) 25,656	24,138	U

KEY: N = data do not exist; P = preliminary; R = revised; U = data are not available.

^a Data from 1990 through 1997 include local trucking (4212), trucking, except local (4213), local trucking, without storage (4214), and courier services, except air (4215) based on SIC (Standard Industrial Classification). For 1998 and later, data includes truck transportation (484) and couriers and messengers (492) based on NAICS (North American Industry Classification System). Therefore, data from 1998 onward are not directly comparable with data prior to 1998.

^b Excludes commuter rail, automated guideway, urban boat, demand responsive, and most rural and smaller systems prior to 1984. Includes operating assistance.

^c Amtrak began operations in 1971.

^d Includes foreign traffic moving on domestic inland waterways.

^e Oil pipeline revenues are much smaller than gas pipeline revenues because oil pipeline companies are common carriers that include transportation costs only.

^f Data are not directly comparable from year to year due to acquisition and mergers. Prior to 1975, pipeline companies are not categorized by distribution, integrated, or combination. Total numbers for these companies are 1960 = 5,505; 1965 = 7,437; 1970 = 10,542. In 1997, the American Gas Association revised the database that identifies companies by type (distribution, integrated, or transmission). This reclassification of companies has resulted in numerous additions to the distribution company sample, in particular from the integrated company sample.

SOURCES

Air carrier, domestic, all services:

1960-70: Civil Aeronautics Board, *Handbook of Airline Statistics, 1973* (Washington, DC: March 1974).

1975-80: Ibid., *Air Carrier Financial Statistics* (Washington, DC: Annual issues), p. 1.

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Financial Statistics* (Washington, DC: Annual December issues), p. 1.

TABLE 3-18: Total Operating Revenues (Current \$ millions)—continued

Trucking:	
1990-95:	U.S. Department of Commerce, Bureau of the Census, <i>Transportation Annual Survey, 1998</i> (Washington, DC: January 2000), table 1.
2000-2002:	<i>Ibid.</i> , <i>Service Annual Survey, 2002</i> (Washington, DC: February 2004), table 2.2.
Intercity Class I bus:	
1960-90:	Interstate Commerce Commission, <i>Annual Report of the Interstate Commerce Commission</i> (Washington, DC: Annual issues).
1995-2001:	U.S. Department of Transportation, Bureau of Transportation Statistics, <i>Selected Earnings Data, Class I Motor Carriers of Passengers</i> (Washington, DC: Annual issues).
2002:	<i>Ibid.</i> , personal communication, Oct. 6, 2004.
Transit:	
1960-2002:	American Public Transportation Association, <i>Public Transportation Fact Book</i> (Washington, DC: Annual issues), table 64 and similar tables in earlier editions.
Class I rail:	
1960-2003:	Association of American Railroads, <i>Railroad Facts</i> (Washington, DC: 2003), p. 12 and similar tables in earlier editions.
Intercity/Amtrak:	
1975-80:	Amtrak, State and Local Affairs Department and Public Affairs Department, personal communication.
1985-2001:	<i>Ibid.</i> , <i>Amtrak Annual Report</i> , Statistical Appendix (Washington, DC: Annual issues).
2002-03:	<i>Ibid.</i> , Consolidated Financial Statements, Internet site http://www.amtrak.com/pdf/03financial.pdf as of July 21, 2004.
Water transportation:	
1960-2001:	Eno Transportation Foundation, Inc., <i>Transportation in America</i> (Washington, DC: 2002), p. 38-40.
Oil pipeline:	
1960-2001:	Eno Transportation Foundation, Inc., <i>Transportation in America</i> (Washington, DC: 2002), p. 38-40.
Gas pipeline:	
1960-2002:	American Gas Association, <i>Gas Facts</i> (Arlington, VA: Annual issues), tables 11-1, 11-2, 11-3, and 11-4, and similar tables in earlier editions.

TABLE 3-19a: Employment in For-Hire Transportation and Selected Transportation-Related Industries^a (Standard Industrial Classification [SIC] basis) (Thousands)

SIC	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL U.S. labor force ^b	90,406	97,387	109,403	117,191	119,608	122,690	125,865	128,916	131,720	131,922	130,791
Transportation-related labor force, total	8,488	9,211	10,093	10,501	10,215	11,002	11,262	11,523	11,664	11,585	11,343
For-hire transportation industry, total	3,128	3,172	3,675	4,057	4,166	4,264	4,410	4,545	4,645	4,622	4,438
45 Air	453	522	968	1,068	1,107	1,134	1,181	1,227	1,280	1,266	1,161
42 Trucking and warehousing	1,280	1,361	1,395	1,587	1,637	1,677	1,744	1,810	1,847	1,848	1,826
41 Local and interurban passenger transit	265	277	338	419	437	452	469	478	476	479	472
413 Intercity and rural bus	38	35	26	24	24	22	24	24	25	25	23
411 Local and suburban	79	92	141	203	218	229	236	238	233	236	235
415 School bus ^c	80	91	111	131	132	137	141	146	147	148	149
412 Taxi	53	38	32	31	31	31	31	32	32	32	31
Other local and interurban ^d	16	22	28	31	33	34	36	38	40	38	35
40 Railroad	532	359	279	238	231	227	231	235	237	234	229
44 Water	211	185	177	175	174	179	181	186	194	192	190
46 Liquid pipeline	21	19	19	15	15	14	14	13	14	15	15
492 Gas production and distribution	168	175	165	154	147	141	137	134	128	126	121
47 Transportation services ^e	198	275	336	401	418	441	454	463	470	463	423
Equipment manufacturing (SIC 37 and SIC 301), total	1,995	2,054	2,073	1,870	1,864	1,923	1,973	1,967	1,931	1,835	1,739
372 Aircraft and parts	633	616	712	451	458	501	525	496	464	461	410
371 Motor vehicles and equipment	789	883	812	971	967	986	995	1,018	1,017	947	912
374 Railroad equipment	71	33	33	38	36	34	37	38	36	30	27
373 Ship and boat building and repairing	221	187	188	160	159	158	167	167	168	161	158
301 Tires and inner tubes	115	94	84	80	80	78	80	79	79	75	72
Other ^f	167	241	244	172	165	167	168	168	168	161	161

TABLE 3-19a: Employment in For-Hire Transportation and Selected Transportation-Related Industries^a (Standard Industrial Classification [SIC] basis) (Thousands)—*continued*

SIC	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Related industries, total	2,694	3,336	3,672	3,930	4,086	4,186	4,251	4,368	4,442	4,473	4,479
553 Automotive and home supply stores	261	304	337	369	380	392	397	404	408	410	406
75 Automotive repair, services, and parking	571	730	914	1,020	1,080	1,120	1,145	1,196	1,234	1,257	1,263
554 Gasoline service stations	561	588	647	649	669	676	680	660	652	648	641
161 Highway and street construction	U	264	239	228	236	243	257	280	281	289	286
501 Motor vehicles, parts, and supplies	434	454	456	492	503	513	517	524	517	502	498
551 New and used car dealers	745	856	924	996	1,031	1,046	1,047	1,080	1,112	1,121	1,130
Other automotive retail ⁹	122	140	155	176	187	197	208	223	239	246	256
Government employment, total ^h	671	649	673	644	99	629	629	643	646	654	686
U.S. DOT ⁱ	112	100	104	101	99	98	99	100	100	102	141
State and local highway ^j	559	549	569	543	(k) N	531	530	543	546	552	545

^a Annual averages.

^b Excludes farm employment.

^c Does not include drivers employed by school districts.

^d Difference between the total of SIC 41 and the sum of 411, 412, 413, and 415.

^e Transportation services are defined as services incidental to transportation, such as forwarding and packing; motor vehicle inspections; and freight broker, tour operator, and travel agency services, etc.

^f The difference between the total of SIC 37 and the sum of 371, 372, 373, and 374.

^g The difference between the total of SIC 55 and the sum of 551, 553, and 554.

^h Not all government agencies are included (e.g., the National Transportation Safety Board).

ⁱ U.S. Department of Transportation was created in 1966. Data are for fiscal year and include permanent civilians as well as temporary employees and military.

^j Full-time equivalent employment. Data prior to 1986 are not directly comparable to data from later years due to a change in the way full-time equivalent was calculated. Full-time equivalent was not calculated for 1985.

^k Due to a change in the reference period, from October to March, the October 1996 Annual Survey of Government Employment and Payroll was not conducted.

NOTE

The employment totals in tables 3-19 and 3-20 differ. Table 3-19 shows employment in transportation and selected transportation-related industries. Table 3-20 shows employment by transportation occupation. Some employees of transportation industries have nontransportation jobs (e.g., a bookkeeper in a trucking firm), and some people with transportation occupations do not work in the transportation industry (e.g., a truck driver for a construction firm). Beginning in January 1999, data are not strictly comparable with data for 1998 and earlier years because of revisions in the population controls used in the household survey.

Continued next page

TABLE 3-19a: Employment in For-Hire Transportation and Selected Transportation-Related Industries^a (Standard Industrial Classification [SIC] basis) (Thousands)—*Continued*

SOURCES

All data, except as noted:

1980-85: U.S. Department of Labor, Bureau of Labor Statistics, *Employment, Hours and Earnings, United States, 1909-1994* (Washington, DC: September 1994).

1990-2002: Ibid., Internet site www.bls.gov, database query for individual series as of June 11, 2003.

Government employment:

USDOT:

1980-85: U.S. Department of Transportation, Office of the Secretary of Transportation, *DOT Employment Facts, A Report to Management* (Washington, DC: Annual issues).

1990-2003: Ibid., *DOT Workforce Demographics* (Washington, DC: Annual issues).

State and local highway:

1980-90: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1993* (Washington, DC: 1993), table 500 and similar tables in earlier editions.

1995-2003: Ibid., Internet site <http://www.census.gov/pub/govs/www/apesstl.html> as of July 24, 2002 and July 6, 2004.

TABLE 3-19b: Employment in For-Hire Transportation and Selected Transportation-Related Industries^a (North American Industry Classification System [NAICS] basis) (Thousands)

NAICS Code	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL U.S. labor force ^b	90,528	97,511	109,487	117,298	119,708	122,776	125,930	128,993	131,785	131,826	130,341	129,931
Transportation related labor force	2,878	3,345	12,086	12,448	12,191	12,997	13,267	13,545	13,678	13,514	13,192	12,394
Transportation and warehousing	2,961	3,012	3,476	3,838	3,935	4,027	4,168	4,300	4,410	4,372	4,224	4,177
Air transportation	U	U	529	511	526	542	563	586	614	615	564	527
Scheduled air transportation	U	U	503	473	486	501	520	543	570	570	520	483
Nonscheduled air transportation	U	U	27	38	40	41	43	44	45	45	44	44
Rail transportation	518	350	272	233	225	221	225	229	232	227	218	215
Water transportation	U	U	57	51	51	51	51	52	56	54	53	53
Sea, coastal, and Great Lakes water transportation	U	U	35	32	32	32	32	33	36	34	32	33
Inland water transportation	U	U	U	U	U	U	U	U	U	U	U	U
Truck transportation	U	U	1,122	1,249	1,282	1,308	1,354	1,392	1,406	1,387	1,339	1,328
General freight trucking	U	U	807	901	924	942	976	1,002	1,013	992	952	936
Specialized freight trucking	U	U	315	348	359	367	379	390	393	395	388	392
Transit and ground passenger transportation	U	U	274	328	339	350	363	371	372	375	381	380
Urban transit systems	U	U	21	31	33	35	36	36	35	36	38	37
Interurban and rural bus transportation	36	33	25	23	23	21	23	23	23	24	23	22
Taxi and limousine service	U	U	57	66	68	70	72	73	72	71	68	67
School and employee bus transportation	81	93	114	136	137	142	146	151	152	153	161	166
Charter bus industry	15	21	26	29	31	32	34	36	38	37	36	33
Other transit and ground passenger transportation	U	U	31	45	48	51	52	53	51	54	56	57
Pipeline transportation	U	U	60	54	51	50	48	47	46	45	42	40
Pipeline transportation of crude oil	U	U	U	U	U	U	U	U	U	U	U	U
Pipeline transportation of natural gas	U	U	U	U	U	U	U	U	U	U	U	U
Other pipeline transportation	U	U	U	U	U	U	U	U	U	U	U	U
Scenic and sightseeing transportation	U	U	16	22	23	25	25	26	28	29	26	28
Scenic and sightseeing transportation, land	U	U	U	U	U	U	U	U	U	U	U	U

Continued next page

TABLE 3-19b: Employment in For-Hire Transportation and Selected Transportation-Related Industries^a (North American Industry Classification System [NAICS] basis) (Thousands)—continued

NAICS Code	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Other transportation related industries												
2373	U	U	289	278	288	294	308	336	340	346	346	341
4231	U	U	309	335	343	350	354	360	356	347	346	344
42386	U	U	35	32	33	35	37	40	39	36	34	32
4247	U	U	155	126	124	123	122	123	119	114	111	108
441	U	U	1,494	1,627	1,686	1,723	1,741	1,797	1,847	1,855	1,879	1,884
4411	783	904	983	1,072	1,113	1,135	1,142	1,180	1,217	1,225	1,253	1,255
4412	U	U	93	97	101	105	110	121	132	136	142	148
4413	U	U	418	459	471	484	489	496	499	493	485	480
447	U	U	910	922	946	956	961	944	936	925	896	880
5321	U	142	163	171	180	184	189	199	208	208	195	195
532411	U	U	U	U	U	U	U	U	U	U	U	U
5615	U	U	250	281	294	302	304	297	299	285	252	240
6219	U	U	99	143	154	164	171	173	173	180	187	196
8111	U	U	659	738	781	811	828	864	888	904	900	897
81293	U	U	68	75	78	82	85	89	93	96	96	99
92612	U	U	U	U	U	U	U	U	U	U	U	U
	671	649	673	644	99	647	629	642	646	654	686	U
	112	100	104	101	99	98	99	100	100	102	141	59
	559	549	569	543	(h) N	548	530	543	546	552	545	U

KEY: N = data do not exist; U = data are not available.

^a Annual averages.

^b Excludes farm employment.

^c Includes tire manufacturing and tire retreading.

^d Does not include motor vehicle wholesalers.

^e Not all government agencies are included (e.g., the National Transportation Safety Board).

^f U.S. Department of Transportation was created in 1966. Data are for fiscal year and include permanent civilians as well as temporary employees and military. The United States Coast Guard (USCG) and the Transportation Security Administration (TSA) were transferred to the Department of Homeland Security 2003.

TABLE 3-19b: Employment in For-Hire Transportation and Selected Transportation-Related Industries^a (North American Industry Classification System [NAICS] basis) (Thousands)—Continued

^g Full-time equivalent employment. Data prior to 1986 are not directly comparable to data from later years due to a change in the way full-time equivalent was calculated. Full-time equivalent was not calculated for 1985.

^h Due to a change in the reference period, from October to March, the October 1996 Annual Survey of Government Employment and Payroll was not conducted.

SOURCES

All data, except as noted:

1960-2003: U.S. Department of Labor, Bureau of Labor Statistics Data, *National Employment Hours and Earnings*, table B-1, Internet site <http://www.bls.gov/data/sa.htm>, database query as of Sep. 22, 2004.

Government employment:

USDOT:

1980-85: U.S. Department of Transportation, Office of the Secretary of Transportation, *DOT Employment Facts, A Report to Management* (Washington, DC: Annual issues).

1990-2003: *Ibid.*, *DOT Workforce Demographics* (Washington, DC: Annual issues).

State and local highway:

1980-90: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1993* (Washington, DC: 1993), table 500 and similar tables in earlier editions.

1995-2003: *Ibid.*, Internet site <http://www.census.gov/pub/govs/www/apesstl.html> as of July 24, 2002 and July 6, 2004.

TABLE 3-20a: Employment in Transportation Occupations (Thousands)

	1985	1990	1995	1996	1997	1998	1999	2000	2001
Total workers, 16 years and over	107,150	118,793	124,900	126,708	129,558	131,463	133,488	135,208	135,073
Total workers in transportation occupations	3,681	4,039	4,308	4,451	4,534	4,499	4,643	4,684	4,824
Transportation occupation as percent of total workers, 16 years and over	3.4%	3.4%	3.4%	3.5%	3.5%	3.4%	3.5%	3.5%	3.6%
Motor vehicle operators, total	3,298	3,618	3,900	4,024	4,090	4,069	4,202	4,222	4,356
Supervisors	51	76	87	85	95	88	86	77	88
Truck drivers	2,412	2,627	2,860	3,018	3,075	3,012	3,116	3,088	3,156
Drivers-sales workers	214	201	158	156	150	159	160	167	166
Bus drivers	394	443	526	512	472	471	490	539	571
Taxicab drivers and chauffeurs	180	213	211	203	248	273	271	280	305
Parking lot attendants	45	53	50	46	46	62	68	60	61
Motor transportation occupations, NEC	2	5	8	4	4	3	11	11	9
Rail transportation, total	148	118	104	116	121	104	106	127	112
Railroad conductors and yardmasters	36	36	33	45	48	50	45	48	42
Locomotive operating occupations	59	46	51	49	53	41	45	63	61
Railroad brake, signal, and switch operators	46	28	17	15	14	7	9	11	7
Rail vehicle operators, NEC	7	8	3	7	6	6	7	5	2
Water transportation, total	59	53	66	70	52	63	57	56	59
Ship captains and mates, except fishing boats	32	27	33	32	24	22	31	38	34
Sailors and deckhands	18	18	26	25	21	30	16	14	20
Marine engineers	1	2	3	8	2	3	5	2	4
Bridge, lock, and lighthouse tenders	8	6	4	5	5	8	5	3	1
Air transportation, total	111	150	144	146	156	139	167	152	164
Airplane pilots and navigators	77	114	114	114	120	113	143	129	136
Air traffic controllers	34	36	30	32	36	26	24	23	28
Public transportation attendants	65	100	94	95	115	124	111	127	133

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TABLE 3-20a: Employment in Transportation (Thousands)—continued

KEY: NEC = not elsewhere classified.

NOTES

Beginning in January 2000, data are not comparable with data for earlier years due to new composite estimation procedures and revised controls used in the household survey for population. See source for additional information. The employment totals in tables 3-19 and 3-20 differ. Table 3-19 shows employment in transportation and related industries; table 3-20 shows employment by transportation occupation. Some employees of transportation industries have nontransportation jobs (e.g., a bookkeeper in a trucking firm), and some people in transportation occupations do not work in the transportation industry (e.g., a truck driver for a construction firm).

SOURCES

All data except total workers, 16 years and over:

1985, 1990-99: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings* (Washington, DC: Annual January issues), table 11 of the Household Data Annual Averages Tables, Internet site <http://stats.bls.gov/pdf/cpsaatab.htm> as of May 31, 2000.

2000: Ibid., personal communication, Aug. 6, 2001.

2001: Ibid., personal communication, Aug. 23, 2002.

Total workers, 16 years and over:

1985, 1990-2000: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings* (Washington, DC: January 2001), revised totals, table 1, Internet site <http://stats.bls.gov/pdf/cpsaat1.pdf> as of Aug. 3, 2001.

2001: Ibid., personal communication, Aug. 23, 2002.

TABLE 3-20b: Employment in Transportation and Transportation-Related Occupations

SOC code	Occupation	1999	2000	2001	2002	2003
Vehicle operators, pipeline operators, and primary support						
53-2011	Airline pilots, copilots, and flight engineers	88,040	94,820	88,800	78,810	76,940
53-2012	Commercial pilots	18,780	18,040	18,380	19,570	19,940
53-2022	Airfield operations specialists	4,510	4,580	5,390	5,910	4,670
53-2021	Air traffic controllers	22,620	23,350	22,990	23,410	22,610
53-3011	Ambulance drivers and attendants, except emergency medical technicians	13,520	15,700	17,620	17,280	18,420
53-3021	Bus drivers, transit and intercity	160,210	175,470	190,530	197,090	187,900
53-3022	Bus drivers, school	463,860	457,050	469,100	468,790	471,130
53-3031	Driver/sales workers	385,210	373,660	378,220	368,730	397,630
53-3032	Truck drivers, heavy and tractor-trailer	1,558,400	1,577,070	1,548,480	1,520,880	1,520,740
53-3033	Truck drivers, light or delivery services	1,085,050	1,033,220	996,000	977,920	951,400
53-3041	Taxi drivers and chauffeurs	119,630	130,200	125,860	125,720	131,880
53-4011	Locomotive engineers	19,940	29,390	30,730	28,250	30,070
53-4012	Locomotive firers	890	1,040	730	710	630
53-4013	Rail yard engineers, dinky operators, and hostlers	5,070	4,020	4,840	4,600	6,020
53-4021	Railroad brake, signal, and switch operators	14,500	16,830	17,070	15,030	15,310
53-4031	Railroad conductors and yardmasters	36,680	40,380	40,910	38,070	35,120
53-4041	Subway and street car operators	U	3,190	U	7,250	8,720
53-5011	Sailors and marine oilers	27,200	30,090	28,650	25,360	27,170
53-5021	Captains, mates, and pilots of water vessels	20,660	21,080	22,180	22,530	24,050
53-5022	Motorboat operators	4,000	3,540	3,410	3,600	3,130
53-5031	Ship engineers	6,800	7,370	7,470	8,020	10,230
53-6011	Bridge and lock tenders	6,970	4,790	4,500	3,900	3,490
53-7071	Gas compressor and gas pumping station operators	6,940	6,510	6,070	6,920	5,250
53-7072	Pump operators, except wellhead pumpers	13,480	13,730	12,920	12,360	10,540

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TABLE 3-20b: Employment in Transportation and Transportation-Related Occupations—continued

SOC code	Occupation	1999	2000	2001	2002	2003
Transportation equipment manufacturing and maintenance occupations						
17-2011	Aerospace engineers	71,790	71,550	74,380	74,210	71,750
17-2121	Marine engineers and naval architects	4,450	4,680	4,860	4,810	6,060
17-3021	Aerospace engineering and operations technicians	17,270	19,850	15,570	14,700	10,650
49-2091	Avionics technicians	15,560	15,360	16,340	21,710	21,020
49-2093	transportation equipment	14,700	15,930	16,650	17,320	17,130
49-2096	Electronic equipment installers and repairers, motor vehicles	14,250	12,480	13,210	15,200	15,070
49-3011	Aircraft mechanics and service technicians	125,970	135,730	135,250	125,850	113,470
49-3021	Automotive body and related repairers	179,960	168,170	168,630	175,370	168,630
49-3022	Automotive glass installers and repairers	20,520	21,240	21,550	19,710	18,040
49-3023	Automotive service technicians and mechanics	587,320	692,570	701,150	687,380	689,630
49-3031	Bus and truck mechanics and diesel engine specialists	273,320	258,800	254,420	254,470	249,230
49-3043	Rail car repairers	7,230	10,620	11,860	13,520	16,790
49-3051	Motorboat mechanics	18,450	19,040	18,370	18,550	17,990
49-3052	Motorcycle mechanics	11,390	11,720	13,290	13,030	15,000
49-3091	Bicycle repairers	8,080	7,940	7,730	7,000	7,560
49-3092	Recreational vehicle service technicians	13,100	12,200	11,830	12,490	12,520
49-3093	Tire repairers and changers	99,880	88,530	86,200	81,560	85,030
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers	18,070	32,680	33,620	25,690	19,830
51-9122	Painters, transportation equipment	45,920	43,270	44,090	45,670	47,390
51-9197	Tire builders	16,680	15,790	13,410	13,020	16,400
53-6031	Service station attendants	109,050	106,010	107,650	102,550	96,450
53-7061	Cleaners of vehicles and equipment	302,380	301,330	304,500	311,070	321,630

TABLE 3-20b: Employment in Transportation and Transportation-Related Occupations—continued

SOC code	Occupation	1999	2000	2001	2002	2003
Transportation Infrastructure construction and maintenance occupations						
47-2071	Paving, surfacing, and tamping equipment operators	58,410	56,330	57,880	58,760	60,210
47-4051	Highway maintenance workers	139,540	145,790	148,390	146,290	139,810
47-4061	Rail-track laying and maintenance equipment operators	8,620	9,940	11,680	10,450	12,120
49-9097	Signal and track switch repairers	3,720	5,540	8,550	7,990	7,600
53-7031	Dredge operators	1,910	3,100	2,920	2,850	2,190
Secondary Support Service Occupations						
13-1032	Insurance appraisers, auto damage	19,310	12,320	12,110	13,270	11,260
33-3041	Parking enforcement workers	7,660	8,040	9,160	10,180	9,690
33-3052	Transit and railroad police	4,590	5,760	6,750	6,010	4,790
33-9091	Crossing guards	68,310	72,830	69,990	73,020	68,910
39-6022	Travel guides	4,180	5,200	5,480	4,960	5,240
39-6031	Flight attendants	123,310	126,380	115,750	104,360	99,910
39-6032	baggage porters	22,780	23,550	25,910	26,580	28,440
41-3041	Travel agents	111,130	124,030	111,310	104,550	98,410
43-4181	Reservation and transportation ticket agents and travel clerks	222,340	199,700	183,280	174,170	156,140
43-5021	Couriers and messengers	134,370	130,210	121,670	120,900	117,460
43-5032	Dispatchers, except police, fire, and ambulance	171,560	167,180	170,050	168,380	161,570
43-5052	Postal service mail carriers	352,550	354,980	355,120	347,420	344,090
43-5071	Shipping, receiving, and traffic clerks	886,230	864,530	802,600	792,470	757,750
53-6021	Parking lot attendants	109,340	116,930	109,930	108,460	109,890
53-6041	Traffic technicians	5,000	4,590	5,090	5,370	5,980
53-6051	Transportation inspectors	22,440	26,520	27,670	28,340	23,860
53-7081	Refuse and recyclable material collectors	135,320	118,910	125,600	132,290	137,510
53-7121	Tank car, truck, and ship loaders	20,830	17,480	19,430	16,960	15,910

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TABLE 3-20b: Employment in Transportation and Transportation-Related Occupations—continued

SOC code	Occupation	1999	2000	2001	2002	2003
Other						
11-3071	Transportation, storage, and distribution managers	123,450	116,680	108,590	107,400	90,940
53-1011	Aircraft cargo handling supervisors	8,090	9,960	9,070	8,920	8,580
53-1021	material movers, hand	138,210	146,790	147,490	147,180	159,780
53-1031	moving machine and vehicle operators	175,260	186,710	197,430	207,280	211,960

KEY: SOC = Standard Occupational Classification; U = data are not available.

NOTES

Occupational Employment Statistics (OES) uses a mail survey to measure employment levels and wage rates for all full- and part-time wage and salary workers in nonfarm establishments. The survey does not include self-employed owners and partners in unincorporated firms, household workers, or unpaid family workers. In 1999 OES began using the Standard Occupational Classification (SOC) system to organize occupational data. Consequently estimates from 1999 and subsequent years are not directly comparable to previous occupational estimates. The SOC is being adopted by all federal agencies and consists of 821 detailed occupations, grouped into 449 broad occupations, 96 minor groups, and 23 major groups.

A broad definition of transportation and transportation-related occupations is used in this table based on Sen, B. and M. Rossetti, "A Complete Count of the U.S. Transportation Workforce," *Transportation Research Record 1719*; 2000, pp 259-266. Some occupational categories may include workers not engaged in transportation or transportation-related activities. For example, the category "first-line supervisors/managers" (53-1021 and 53-1031) may include workers in material moving occupations along with transportation occupations. Moreover, some workers engaged in transportation and transportation-related activities may be excluded. For example, "baggage porters and bellhops" is not included in this table because it is believed that a large share of workers in this category work in hotels or similar establishments.

SOURCES

U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics, *Occupational Employment and Wages, 2003* (Washington, DC: November 2004), Internet site <http://www.bls.gov/oes> as of Dec. 20, 2004.

TABLE 3-21a: Average Wage^a and Salary Accruals per Full-Time Equivalent Employee by Transportation Industry (Standard Industrial Classification [SIC] basis)^b (Current \$)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000
All industries	4,822	5,808	7,744	10,810	15,793	21,297	26,262	31,034	32,087	33,490	35,201	36,754	38,846
Transportation, total	5,835	6,989	9,396	13,550	20,818	25,246	29,000	32,283	33,074	34,407	35,907	37,178	38,484
Air	6,929	8,495	12,027	17,035	25,649	32,131	32,867	36,419	36,989	38,691	40,441	42,523	43,820
Trucking and warehousing	5,396	6,623	8,672	12,765	19,204	22,383	26,297	29,605	30,342	31,754	32,949	34,007	35,024
Local and interurban passenger transit	4,877	5,553	6,996	9,462	13,530	14,878	17,554	19,980	20,648	21,219	22,008	22,792	23,745
Railroad	6,241	7,460	10,110	14,987	25,049	36,608	43,602	50,465	55,299	57,235	60,632	60,623	62,673
Water	6,212	7,402	10,302	14,136	22,746	28,531	33,855	37,769	38,857	40,329	42,317	43,436	44,980
Pipelines, except natural gas	6,957	8,053	10,765	16,765	26,227	37,316	46,167	58,186	54,782	58,881	64,991	65,379	66,540
Transportation services ^c	5,380	6,239	8,232	11,430	16,005	20,530	26,057	30,801	31,511	32,794	34,603	36,204	38,602

^a Wages do not include supplements to wages and salaries such as pension, profit-sharing, and other retirement plans, and health, life, and unemployment insurance compensation.

^b The data in this table have been revised as a result of the Bureau of Economic Analysis' comprehensive revision of the National Income and Product Accounts (NIPA).

^c Establishments furnishing services incidental to transportation, such as forwarding and packing services and the arrangement of passenger and freight transportation.

NOTES

Use care in comparing the data in this table with those in table 3-22. This table includes weighted part-time employees' salaries. Table 3-22 covers only full-time employees. 1960-85 data are based on the 1972 SIC codes; 1990-2000 data are based on the 1987 SIC codes.

The Bureau of Economic Analysis provides these data on a SIC basis *ending* in 2000 and on a North American Industry Classification System (NAICS) basis *beginning* in 1998 (see table 3-21b for data based on NAICS).

Wage and salary accruals consist of the monetary remuneration of employees, including compensation of corporate officers; commissions, tips and bonuses; voluntary employee contributions to certain deferred compensation plans, such as 401(k) plans; and receipts in kind that represent income. In other words, accruals are wage and salary earned, not wage and salary paid. For example, wage and salary earned in 1999 but not paid until 2000 are included in accruals for 1999. However, the difference between wage and salary earned and wage and salary paid is usually very small.

SOURCE

1960-2000: U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Products Accounts, tables 6.6b and 6.6c, Internet site <http://www.bea.doc.gov/bea/dn1.htm> available as of Feb. 17, 2004.

TABLE 3-21b: Average Wage ^a and Salary Accruals per Full-Time Equivalent Employee by Transportation Industry (North American Industry Classification System [NAICS]) (Current \$)

	1998	1999	2000	2001	2002	2003
All industries	35,201	36,754	38,846	(R) 39,667	(R) 40,359	41,562
Transportation and warehousing, total	36,297	37,612	39,463	(R) 39,426	(R) 40,129	40,800
Air	46,790	48,466	50,969	(R) 55,336	(R) 57,370	56,734
Rail	60,530	60,538	62,728	(R) 63,517	(R) 64,643	66,015
Water	47,422	51,803	51,361	(R) 54,850	(R) 55,387	58,425
Truck	34,533	35,341	36,736	(R) 36,204	(R) 36,955	37,795
Transit and ground passenger transportation	21,988	22,880	23,795	(R) 23,121	(R) 23,542	24,129
Pipeline	71,496	77,984	96,703	(R) 99,717	(R) 81,406	83,186
Other transportation and support activities ^b	33,444	35,299	36,806	35,846	(R) 37,283	38,528
Warehousing and storage	30,120	31,663	34,269	(R) 33,842	(R) 34,771	36,002

KEY: R = revised.

^a Wages do not include supplements to wages and salaries such as pension, profit-sharing, and other retirement plans, and health, life, and unemployment insurance compensation.

^b Comprises business establishments involved in scenic and sightseeing transportation, support activities for transportation, postal service, and couriers and messengers.

NOTES

All data in this table are based on the 1997 NAICS codes. The Bureau of Economic Analysis provides these data on a Standard Industrial Classification (SIC) basis *ending* in 2000 and on a NAICS basis *beginning* in 1998 (see table 3-21a for data based on SIC).

Use care in comparing the data in this table with those in table 3-22. This table includes weighted part-time employees' salaries. Table 3-22 covers only full-time employees.

Wage and salary accruals consist of the monetary remuneration of employees, including compensation of corporate officers; commissions, tips and bonuses; voluntary employee contributions to certain deferred compensation plans, such as 401(k) plans; and receipts in kind that represent income. In other words, accruals are wage and salary earned, not wage and salary paid. For example, wage and salary earned in 1999 but not paid until 2000 are included in accruals for 1999. However, the difference between wage and salary earned and wage and salary paid is usually very small.

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Products Accounts, table 6.6d, Internet site <http://www.bea.doc.gov/bea/dn1.htm> as of Oct. 4, 2004.

TABLE 3-22a: Median Weekly Earnings of Full-Time Wage and Salary Workers in Transportation by Detailed Occupation (Current \$)

	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
All occupations ^a	343	412	479	490	503	523	549	576	597	609
Airplane pilots and navigators	738	910	956	1,138	1,079	1,383	1,048	1,283	1,150	1,245
Public transportation attendants	N	635	450	417	521	524	604	568	552	611
Motor vehicle operators	343	400	475	473	496	503	514	543	575	582
Supervisors, motor vehicle operators	N	520	549	583	589	595	585	688	609	688
Truck drivers	N	N	481	481	506	516	527	564	593	600
Drivers-sales workers	399	439	517	506	524	526	534	558	630	600
Bus drivers	344	355	419	396	405	428	428	460	457	493
Taxicab drivers and chauffeurs	262	307	352	374	405	379	427	468	487	476
Nonmotor vehicle operators	559	687	711	691	761	834	761	816	911	884
Rail transportation operators	599	717	741	740	814	849	816	863	947	866
Water transportation	463	547	624	586	641	812	604	778	794	934

KEY: N = data do not exist.

^a Earnings for all full-time workers 16 years and older, not just transportation related.

NOTES

Use care in comparing the figures in this table with those in table 3-21. This table does not include part-time employees.

Table 3-21 includes weighted part-time employees' salaries.

SOURCES

Water transportation:

1985-2000: U.S. Department of Labor, Bureau of Labor Statistics, unpublished data, Mar. 1, 1999, Mar. 11, 1999, and Apr. 25, 2000.

2001-02: Ibid., personal communication, Aug. 23, 2002 and Nov. 20, 2003.

Other Data:

1985-2002: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings (Washington, DC: Annual January issues), table 39 of the Household Data Annual Averages Tables, Internet site <http://www.bls.gov/cps/cpsaat39.pdf> as of Nov. 20, 2003.

2001: Ibid., personal communication, Aug. 23, 2002.

TABLE 3-22b: Median Weekly Earnings of Full-Time Wage and Salary Workers in Transportation by Detailed Occupation (1998 Standard Occupational Classification [SOC] basis) (Current \$)

	2000	2001	2002	2003
All occupations ^a	576	596	608	620
Transportation and material moving occupations	481	504	514	520
Supervisors, transportation and material moving workers	671	648	709	705
Aircraft pilots and flight engineers	1,193	1,040	1,233	1,350
Air traffic controllers and airfield operations specialists	1,090	1,123	1,041	1,583
Ambulance drivers and attendants, except emergency medical technicians	580	521	456	322
Bus drivers	462	467	499	501
Driver/sales workers and truck drivers	551	585	599	603
Taxi drivers and chauffeurs	451	484	488	481
Motor vehicle operators, all other	509	508	409	353
Locomotive engineers and operators	870	953	963	925
Railroad brake, signal, and switch operators	689	753	792	880
Railroad conductors and yardmasters	817	927	818	884
Subway, streetcar, and other rail transportation workers	754	727	579	515
Sailors and marine oilers	508	697	701	616
Ship and boat captains and operators	779	848	899	944
Ship engineers	712	1,190	1,181	1,154
Bridge and lock tenders	935	560	667	726
Parking lot attendants	316	329	341	350
Service station attendants	314	335	362	369
Transportation inspectors	731	696	747	847
Other transportation workers	483	491	645	652
Conveyor operators and tenders	465	488	350	363
Crane and tower operators	675	688	694	589
Dredge, excavating, and loading machine operators	572	617	602	653
Hoist and winch operators	733	610	604	789
Industrial truck and tractor operators	448	477	499	488
Cleaners of vehicles and equipment	361	363	354	373
Laborers and freight, stock, and material movers, hand	401	426	420	464
Machine feeders and offbearers	412	403	433	437
Packers and packagers, hand	313	332	338	348
Pumping station operators	730	622	786	801
Refuse and recyclable material collectors	435	505	430	456
Shuttle car operators	992	696	1,030	741
Tank car, truck, and ship loaders	420	703	506	589
Material moving workers, all other	491	463	516	515

^a Earnings for all full-time workers 16 years and older, not just transportation related.

TABLE 3-22b: Median Weekly Earnings of Full-Time Wage and Salary Workers in Transportation by Detailed Occupation (1998 Standard Occupational Classification [SOC] basis) (Current \$)—*continued*

NOTES

The 1998 Standard Occupational Classification (SOC) System was developed by the Federal Government in response to a growing need for a universal occupational classification system. The SOC is being adopted by all Federal agencies and consists of 821 detailed occupations, grouped into 449 broad occupations, 96 minor groups, and 23 major groups.

Use care in comparing the figures in this table with those in table 3-21. This table does not include part-time employees.

Table 3-21 includes weighted part-time employees' salaries.

SOURCE

U.S. Department of Commerce, Bureau of the Census, Current Population Survey, table A-26, personal communication, Oct. 4, 2004.

**TABLE 3-23a: Total Wage^a and Salary Accruals by Transportation Industry (Standard Industrial Classification [SIC] basis)^b
(Current \$ millions)**

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000
All industries	272,855	363,757	551,560	814,838	1,377,641	1,995,472	2,754,015	3,435,670	3,623,205	3,874,685	4,182,719	4,471,400	4,829,240
Transportation, total	14,629	17,276	24,505	34,512	59,247	72,556	95,323	118,964	125,351	133,638	144,919	154,811	163,555
Air	1,268	1,852	4,029	5,894	11,029	15,744	29,515	36,237	38,616	41,090	45,132	49,284	52,890
Trucking and warehousing	4,592	6,265	9,123	13,786	23,755	29,725	34,475	44,556	46,787	50,362	54,365	58,323	61,326
Local and interurban passenger transit	1,307	1,427	1,868	2,375	3,423	4,047	5,635	7,892	8,569	9,188	9,903	10,575	10,899
Railroad	5,498	5,446	6,268	8,108	12,850	11,861	10,726	11,203	11,502	11,733	12,611	12,610	12,409
Water	1,379	1,584	2,112	2,601	4,572	5,050	5,620	6,345	6,450	6,896	7,321	7,601	8,141
Pipeline, except natural gas	160	153	183	285	577	709	831	873	822	824	845	850	865
Transportation services ^c	425	549	922	1,463	3,041	5,420	8,521	11,858	12,604	13,544	14,741	15,568	17,024

^a Wages do not include supplements to wages and salaries such as pension, profit-sharing, and other retirement plans, and health, life, and unemployment insurance compensation.

^b The data in this table have been revised as a result of the Bureau of Economic Analysis' comprehensive revision of the National Income and Product Accounts (NIPA).

^c Establishments furnishing services incidental to transportation, such as forwarding and packing services and the arrangement of passenger and freight transportation.

NOTE

The Bureau of Economic Analysis provides these data on a SIC basis *ending* in 2000 and on a North American Industry Classification System (NAICS) basis *beginning* in 1998 (see table 3-23b for data based on NAICS).

SOURCE

1960-2000: U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Products Accounts, tables 6.3b and 6.3c, Internet site <http://www.bea.doc.gov/bea/dn1.htm> as of Feb. 17, 2004.

TABLE 3-23b: Total Wage^a and Salary Accruals by Transportation Industry (North American Industry Classification System [NAICS] basis) (Current \$ millions)

	1998	1999	2000	2001	2002	2003
All industries	4,182,719	4,471,400	4,829,240	(R) 4,942,776	(R) 4,976,266	5,103,553
Transportation and warehousing, total	142,175	151,999	162,753	(R) 165,113	(R) 162,173	162,768
Air	25,512	27,447	30,046	(R) 32,311	(R) 30,551	28,410
Rail	12,611	12,610	12,409	(R) 12,104	(R) 11,824	11,765
Water	2,396	2,652	2,710	(R) 2,789	(R) 2,830	3,023
Truck	43,059	45,818	48,594	(R) 48,541	(R) 47,918	48,497
Transit and ground passenger transportation	7,672	8,249	8,497	(R) 8,806	(R) 9,011	9,222
Pipeline	3,178	3,473	4,282	4,238	(R) 3,284	3,188
Other transportation and support activities ^b	34,105	37,040	39,974	(R) 39,881	(R) 39,863	40,853
Warehousing and storage	13,641	14,709	16,240	(R) 16,442	(R) 16,893	17,811

KEY: R = revised.

^a Wages do not include supplements to wages and salaries such as pension, profit-sharing, and other retirement plans, and health, life, and unemployment insurance compensation.

^b Comprises business establishments involved in scenic and sightseeing transportation, support activities for transportation, postal service, and couriers and messengers.

NOTE

The Bureau of Economic Analysis provides this data on a Standard Industrial Classification (SIC) basis *ending* in 2000 and on a NAICS basis *beginning* in 1998 (see table 3-23a for data based on SIC).

SOURCE

U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Products Accounts, Annual edition, table 6.3d, Internet site <http://www.bea.doc.gov/bea/dn1.htm> as of Oct. 4, 2004.

TABLE 3-24a: Labor Productivity Indices for Selected Transportation Industries (SIC)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000
Output-per-hour ^a worked													
Air ^b	N	N	N	N	N	N	93	109	111	112	108	109	111
Bus, Class I ^c	106	128	118	107	111	96	96	110	106	125	105	135	112
Railroad	22	32	36	43	55	82	119	156	167	170	173	183	196
Trucking, except local ^b	N	N	N	N	N	N	111	125	131	132	130	132	131
Petroleum pipelines ^c	31	49	76	91	89	100	103	116	131	134	137	145	141
Output-per-employee ^d													
Air	22	35	45	56	71	92	93	109	111	112	108	109	111
Bus, Class I ^c	108	129	119	103	99	93	96	105	103	121	104	133	110
Railroad	25	36	42	46	55	79	120	162	172	177	176	182	195
Trucking, except local	48	56	60	64	78	94	111	125	131	132	130	132	131
Petroleum pipelines ^c	30	48	75	89	89	98	102	121	139	141	146	150	141

KEY: N = data do not exist.

^a Based on the number of paid hours.

^b The average weekly hours were assumed to be constant for these industries; therefore, the output-per-hour worked and the output-per-employee measures are identical in the years for which data are given for both measures.

^c Data did not meet the publication standards for the Bureau of Labor Statistics and are considered less reliable than the published series.

^d Full-time and part-time employees are counted equally. Hence, these data do not reflect output per full-time equivalent employee.

NOTE

Index, 1987 = 100.

SOURCES

U.S. Department of Labor, Bureau of Labor Statistics, Industry Productivity, Internet site <http://www.bls.gov/lpc/iprdata1.htm> as of Aug. 12, 2002.

Ibid., personal communication, Aug. 19, 2002 (unpublished data).

TABLE 3-24b: Labor Productivity Indices for Selected Transportation Industries (North American Industry Classification System [NAICS] basis) (Index, 1997 = 100)

	1987	1988	1989	1990	1995	1996	1997	1998	1999	2000	2001	2002
Output per hour ^a worked												
Air transportation ^b	81	82	79	78	95	99	100	98	98	98	92	103
Line-haul railroads	59	64	68	70	92	98	100	102	(R) 106	(R) 114	(R) 122	132
General freight trucking, long-distance	79	84	84	89	95	96	100	99	(R) 102	(R) 106	104	109
Postal Service	92	92	92	96	98	97	100	101	102	105	106	107
Output per employee ^c												
Air transportation ^b	81	82	79	78	95	99	100	98	98	98	92	103
Line-haul railroads	57	62	64	68	91	(R) 97	100	99	(R) 102	(R) 111	113	119
General freight trucking, long-distance	75	80	81	85	94	96	100	(R) 99	(R) 103	(R) 107	(R) 104	111
Postal Service	88	88	88	93	97	96	100	101	102	105	105	106

KEY: R = revised.

^a Based on the number of paid hours.

^b The average weekly hours were assumed to be constant for air transportation industries; therefore, the output per hour worked and the output per employee measures are identical.

^c Full-time and part-time employees are counted equally. Hence, these data do not reflect output per full-time equivalent employee.

NOTE

BLS developed labor productivity indexes for all manufacturing and retail trade of the North American Industry Classification System (NAICS) industries as well as selected mining, transportation, communications and services industries. Indexes for petroleum pipelines and bus (class I) systems were created under the Standard Industrial Classification (SIC) system but have not yet been developed under NAICS. Productivity measures for NAICS starts in 1987.

SOURCE

U.S. Department of Labor, Bureau of Labor Statistics, Industry Productivity, Internet site <http://www.bls.gov/lpc/iprdata1.htm> as of Oct. 4, 2004.

Section D
Government Finance

**TABLE 3-25a: Federal, State, and Local Government Transportation-Related Revenues and Expenditures, Fiscal Year
(Current \$ millions)**

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total government revenues	32,977	52,140	69,753	93,659	96,419	100,516	111,234	126,895	125,882	125,181	U	U
Federal	10,312	18,404	21,384	30,166	30,742	31,440	38,934	51,996	46,791	42,654	(R) 43,493	44,824
State and local	22,665	33,735	48,369	63,493	65,677	69,076	72,300	74,898	79,091	82,527	U	U
Total government expenditures ^a	(R) 56,217	(R) 77,213	(R) 100,685	(R) 130,540	(R) 133,410	(R) 138,392	(R) 145,673	(R) 154,718	(R) 167,360	183,057	U	U
State and local expenditures less federal grants ^{ab}	(R) 31,556	(R) 48,914	(R) 69,760	(R) 89,738	(R) 92,581	(R) 96,593	(R) 104,348	(R) 110,961	(R) 117,916	126,581	U	U
Federal grants ^{ac}	(R) 14,619	(R) 18,176	(R) 19,697	(R) 24,988	(R) 25,068	(R) 26,079	(R) 25,131	(R) 27,868	(R) 32,984	(R) 36,791	41,719	U
Federal expenditures, less grants	(R) 10,041	(R) 10,124	(R) 11,228	(R) 15,814	(R) 15,761	(R) 15,720	(R) 16,194	(R) 15,890	(R) 16,459	(R) 19,686	21,249	U

KEY: R = revised; U = data are not available.

^a Data for 1980, 1985 and 1990-2001 have been revised due to the Office of Management and Budget (OMB)'s revision to the source data on federal expenditure and federal grants.

^b Figures for state and local expenditures less federal grants were determined by subtracting federal grants from state and local expenditures including grants. State and local expenditures including grants were obtained from the U.S. Department of Commerce, Census Bureau, which uses different definitions and accounting methods than those used by some modal administrations of the U.S. Department of Transportation. For example, highway expenditures in this table do not include traffic control activities by police or public safety activities; while the highway expenditure statistics published by the U.S. Department of Transportation, Federal Highway Administration do include these items.

^c Federal grants to state and local governments for research and special programs, and emergency preparedness are included starting from 1985.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.
 1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics: 2004* (Washington, DC: forthcoming), tables 3-A, 13-A, and 14-A.

TABLE 3-25b: Federal, State, and Local Government Transportation-Related Revenues and Expenditures, Fiscal Year (Chained 2000 \$ millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total government revenues	66,341	80,106	90,941	106,095	106,913	109,301	119,099	131,961	125,882	122,096	U	U
Federal	19,952	27,996	28,414	33,762	33,702	33,737	41,302	53,671	46,791	41,858	(R) 41,340	41,637
State and local	46,389	52,110	62,527	72,333	73,211	75,564	77,797	78,291	79,091	80,238	U	U
Total government expenditures ^a	(R) 95,431	(R) 118,603	(R) 131,270	(R) 147,898	(R) 147,963	(R) 150,518	(R) 156,120	(R) 161,153	(R) 167,360	176,209	U	U
State and local expenditures less federal grants ^{a,b}	(R) 47,715	(R) 75,555	(R) 90,180	(R) 102,233	(R) 103,202	(R) 105,665	(R) 112,282	(R) 115,986	(R) 117,916	123,069	U	U
Federal grants ^{a,c}	(R) 28,286	(R) 27,648	(R) 26,172	(R) 27,966	(R) 27,482	(R) 27,984	(R) 26,660	(R) 28,766	(R) 32,984	(R) 36,105	39,654	U
Federal expenditures, less grants	(R) 19,429	(R) 15,400	(R) 14,919	(R) 17,699	(R) 17,278	(R) 16,868	(R) 17,178	(R) 16,401	(R) 16,459	(R) 17,035	18,085	U

KEY: R = revised; U = data are not available.

^a Data for 1980, 1985 and 1990-2001 have been revised due to the Office of Management and Budget (OMB)'s revision to the source data on federal expenditure and federal grants.

^b Figures for state and local expenditures less federal grants were determined by subtracting federal grants from state and local expenditures including grants. State and local expenditures including grants were obtained from the U.S. Department of Commerce, Census Bureau, which uses different definitions and accounting methods than those used by some modal administrations of the U.S. Department of Transportation. For example, highway expenditures in this table do not include traffic control activities by police or public safety activities; while the highway expenditure statistics published by the U.S. Department of Transportation, Federal Highway Administration do include these items.

^c Federal grants to state and local governments for research and special programs, and emergency preparedness are included starting from 1985.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics: 2003* (Washington, DC: forthcoming), 3-b, 13-b, and 14-b.

Constant dollar deflator: U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts*, Washington, DC, table 7.1, "Chain-Type Price Index."

TABLE 3-26: Summary of Transportation Revenues and Expenditures from Own Funds and User Coverage, Fiscal Year (Current and chained 2000 \$ millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Federal revenues												
Current	10,312	18,404	21,384	30,166	30,742	31,440	38,934	51,996	46,791	42,654	(R) 43,493	44,824
Chained	19,952	27,996	28,414	33,762	33,702	33,737	41,302	53,671	46,791	41,858	(R) 41,340	41,637
Federal expenditures^a												
Current	(R) 24,661	28,300	30,924	(R) 40,802	(R) 40,829	(R) 41,799	(R) 41,325	(R) 43,758	(R) 49,443	(R) 56,477	62,968	U
Chained	(R) 47,715	43,048	41,090	(R) 45,665	(R) 44,761	(R) 44,852	(R) 43,838	(R) 45,167	(R) 49,443	(R) 53,139	57,739	U
Federal user coverage (percent)	42%	65%	69%	74%	75%	75%	94%	119%	95%	76%	69%	U
State and local revenues												
Current	22,665	33,735	48,369	63,493	65,677	69,076	72,300	74,898	79,091	82,527	U	U
Chained	46,389	52,110	62,527	72,333	73,211	75,564	77,797	78,291	79,091	80,238	U	U
State and local expenditures												
Current	(R) 31,556	(R) 48,914	(R) 69,760	(R) 89,738	(R) 92,581	(R) 96,593	(R) 104,348	(R) 110,961	(R) 117,916	126,581	U	U
Chained	(R) 64,587	(R) 75,555	(R) 90,180	(R) 102,233	(R) 103,202	(R) 105,665	(R) 112,282	(R) 115,986	(R) 117,916	123,069	U	U
State and local user coverage (percent)	72%	69%	69%	71%	71%	72%	69%	67%	67%	65%	U	U

KEY: R = revised; U = data are not available.

^a Data for 1985 and 1990-2001 have been revised due to the Office of Management and Budget (OMB)'s revision to the source data on federal expenditure and federal grants.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.

1985-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics: 2003* (Washington, DC: forthcoming), tables 2-a, 2-b, 4-a, and 4-b.

Constant dollar deflator: U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts*, Washington, DC, table 3.9.4, "Chain-Type Price Index."

TABLE 3-27a: Transportation Revenues by Mode and Level of Government, Fiscal Year (Current \$ millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL, all modes	32,977	52,140	69,753	93,659	96,419	100,516	111,234	126,895	125,882	125,181	U	U
Federal	10,312	18,404	21,384	30,166	30,742	31,440	38,934	51,996	46,791	42,654	(R) 43,493	44,824
State	17,088	24,442	34,629	44,846	45,966	47,729	50,009	51,584	54,142	55,804	57,480	U
Local	5,577	9,294	13,740	18,647	19,711	21,348	22,291	23,315	24,949	26,723	U	U
Highway, total	25,268	38,166	49,945	66,743	71,179	71,814	77,299	88,668	87,800	86,090	U	U
Federal: Highway Trust Fund-Highway Account ^a	7,647	12,906	13,453	19,377	22,692	21,314	24,307	33,823	30,347	26,917	(R) 27,983	28,964
State	16,287	22,960	32,644	42,415	43,353	45,034	47,214	48,784	51,073	52,580	54,291	U
Local	1,334	2,300	3,848	4,952	5,133	5,466	5,779	6,061	6,380	6,594	U	U
Air, total	4,100	6,711	10,119	13,954	11,298	13,544	18,176	21,079	21,627	21,956	U	U
Federal: Airport and Airways Trust Fund ^b	2,274	3,593	4,945	6,291	3,128	4,488	8,654	11,089	10,544	10,073	(R) 9,891	10,088
State	190	299	556	695	705	765	768	744	852	908	792	U
Local	1,636	2,818	4,617	6,968	7,465	8,291	8,754	9,246	10,231	10,975	U	U
Transit, total	2,397	5,636	7,193	9,352	10,171	11,417	11,872	13,186	12,674	13,317	U	U
Federal: Highway Trust Fund- Mass Transit Account	RZ	1,420	1,977	2,813	3,282	3,996	4,326	5,478	4,625	4,553	4,621	4,762
State	362	847	1,074	1,257	1,308	1,339	1,384	1,404	1,524	1,595	1,662	U
Local	2,035	3,369	4,142	5,283	5,581	6,082	6,162	6,304	6,525	7,169	U	U
Water, total	1,211	1,626	2,487	3,567	3,733	3,704	3,850	3,923	3,717	3,756	U	U
Federal: Water Receipts ^c	391	485	999	1,644	1,602	1,605	1,611	1,568	1,210	1,049	916	944
State	249	335	355	479	600	590	643	651	693	722	736	U
Local	572	807	1,133	1,444	1,531	1,509	1,597	1,704	1,813	1,985	U	U
Pipeline, total	RZ	RZ	10	35	31	30	29	30	40	44	57	57
Federal: Pipeline Safety Fund	RZ	RZ	10	35	31	30	29	30	40	44	57	57
General support, total	RZ	RZ	RZ	7	7	7	8	8	25	18	25	9
Federal: Emergency Preparedness Fund	RZ	RZ	RZ	7	7	7	8	8	25	18	25	9

KEY: RZ = no activity or a value of zero; U = data are not available.

^a Beginning in 1983, a portion of the fuel tax credited to the Highway Trust Fund is earmarked for transit.^b The tax requirement that allows for the 10% passenger ticket tax and certain other taxes paid by airport and airway users to be transferred to the Airport and Airway Trust Fund expired on Dec. 31, 1995; it was reenacted in August 1996; but expired again in December 1996.

TABLE 3-27a: Transportation Revenues by Mode and Level of Government, Fiscal Year (Current \$ millions)—continued

^c Water receipts include the Harbor Maintenance Trust Fund, St. Lawrence Seaway tolls, the Inland Waterway Trust Fund, Panama Canal receipts, Oil Spill Liability Trust Fund, Offshore Oil Pollution Fund, Deep Water Port Liability Fund, and excise taxes of the Boat Safety Program.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.

1985–2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics, 2003* (Washington, DC: forthcoming), table 2-a.

TABLE 3-27b: Transportation Revenues by Mode and Level of Government, Fiscal Year (Chained 2000 \$ millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL, all modes	66,341	80,106	90,941	106,095	106,913	109,301	119,099	131,961	125,882	122,096	U	U
Federal	19,952	27,996	28,414	33,762	33,702	33,737	41,302	53,671	46,791	41,858	(R) 41,340	41,637
State	34,975	37,754	44,765	51,090	51,239	52,211	53,811	53,920	54,142	54,256	54,545	U
Local	11,414	14,356	17,761	21,243	21,972	23,353	23,986	24,370	24,949	25,982	U	U
Highway, total	50,862	58,650	65,049	75,648	78,926	78,114	82,806	92,242	87,800	83,947	U	U
Federal: Highway Trust Fund-Highway Account ^a	14,797	19,633	17,876	21,686	24,877	22,871	25,785	34,912	30,347	26,415	(R) 26,598	26,905
State	33,336	35,465	42,199	48,321	48,327	49,264	50,804	50,994	51,073	51,121	51,518	U
Local	2,730	3,552	4,974	5,641	5,722	5,979	6,218	6,336	6,380	6,411	U	U
Air, total	8,136	10,281	13,259	15,771	12,536	14,722	19,426	21,889	21,627	21,439	U	U
Federal: Airport and Airways Trust Fund ^b	4,399	5,466	6,571	7,041	3,429	4,816	9,180	11,446	10,544	9,885	(R) 9,401	9,371
State	388	463	719	792	785	836	827	778	852	883	751	U
Local	3,349	4,353	5,969	7,938	8,322	9,070	9,420	9,665	10,231	10,671	U	U
Transit, total	4,906	8,673	9,369	10,598	11,277	12,406	12,709	13,711	12,674	12,989	U	U
Federal: Highway Trust Fund- Mass Transit Account	RZ	2,160	2,626	3,148	3,598	4,288	4,589	5,654	4,625	4,468	4,392	4,423
State	741	1,309	1,388	1,432	1,458	1,465	1,490	1,468	1,524	1,550	1,577	U
Local	4,165	5,204	5,354	6,019	6,222	6,653	6,630	6,589	6,525	6,970	U	U
Water, total	2,436	2,501	3,251	4,031	4,132	4,019	4,119	4,080	3,717	3,662	U	U
Federal: Water Receipts ^c	756	737	1,328	1,840	1,756	1,722	1,709	1,618	1,210	1,029	871	877
State	510	518	459	546	669	646	691	681	693	702	698	U
Local	1,171	1,246	1,464	1,645	1,707	1,651	1,718	1,781	1,813	1,930	U	U
Pipeline, total	RZ	RZ	13	39	34	32	31	31	40	43	54	53
Federal: Pipeline Safety Fund	RZ	RZ	13	39	34	32	31	31	40	43	54	53
General support, total	RZ	RZ	RZ	8	8	8	8	8	25	18	24	8
Federal: Emergency Preparedness Fund	RZ	RZ	RZ	8	8	8	8	8	25	18	24	8

KEY: RZ = no activity or a value of zero; U = data are not available.

^a Beginning in 1983, a portion of the fuel tax credited to the Highway Trust Fund is earmarked for transit.

^b The tax requirement that allows for the 10% passenger ticket tax and certain other taxes paid by airport and airway users to be transferred to the Airport and Airway Trust Fund expired on Dec. 31, 1995; it was reenacted in August 1996; but expired again in December 1996.

TABLE 3-27b: Transportation Revenues by Mode and Level of Government, Fiscal Year (Chained 2000 \$ millions)—continued

^c Water receipts include the Harbor Maintenance Trust Fund, St. Lawrence Seaway tolls, the Inland Waterway Trust Fund, Panama Canal receipts, Oil Spill Liability Trust Fund, Offshore Oil Pollution Fund, Deep Water Port Liability Fund, and excise taxes of the Boat Safety Program.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.

1985–2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics: 2003* (Washington, DC: forthcoming), table 2-b.

Constant dollar deflator: U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts*, Washington, DC, table 3.9.4, "Chain-Type Price Index."

TABLE 3-28: Cash Balances of the Transportation-Related Federal Trust Funds, Fiscal Year (\$ millions)

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL, all funds																
Current \$	16,441	20,483	31,795	35,697	37,475	36,499	31,916	32,345	31,139	31,306	30,637 (R)	44,323	48,175 (R)	45,550	44,250	38,385
Chained 2000 \$	30,847	29,272	41,216	44,492	45,368	43,047	36,659	36,138	33,853	33,471	32,416	45,749	48,175	44,628	42,200	35,704
Airport / Airway Trust Fund																
Current \$	5,442	7,426	14,355	15,263	15,204	12,850	12,386	11,365	7,692	6,358	9,411	12,446	13,934	14,485	12,642	12,397
Chained 2000 \$	10,210	10,613	18,609	19,024	18,406	15,155	14,227	12,698	8,363	6,798	9,958	12,846	13,934	14,192	12,056	11,531
Highway Trust Fund, highway account																
Current \$	10,999	10,361	9,629	10,246	11,300	11,523	7,927	9,421	11,658	12,575	8,519 (R)	19,206	22,553	20,372	22,233	17,815
Chained 2000 \$	20,636	14,807	12,482	12,770	13,680	13,590	9,105	10,526	12,674	13,444	9,014	19,824	22,553	19,960	21,203	16,571
Highway Trust Fund, transit account																
Current \$	N	2,524	7,155	9,250	9,798	10,617	9,945	9,579	9,525	9,857	10,051	9,753	8,547	7,368	6,096	4,823
Chained 2000 \$	N	3,607	9,275	11,529	11,862	12,522	11,423	10,702	10,355	10,539	10,635	10,067	8,547	7,219	5,814	4,486
Harbor Maintenance Trust Fund																
Current \$	N	N	30	74	121	305	451	621	865	1,106	1,246 (R)	1,556	1,621	1,777	1,850	2,001
Chained 2000 \$	N	N	39	92	146	360	518	694	940	1,182	1,318	1,606	1,621	1,741	1,764	1,861
Inland Waterway Trust Fund																
Current \$	N	172	281	217	186	180	214	238	275	300	327 (R)	345	364	(R) 404	392	383
Chained 2000 \$	N	246	364	270	225	212	246	266	299	321	346	356	364	396	374	356
Oil Spill Liability Trust Fund																
Current \$	N	N	345	647	866	1,024	993	1,121	1,124	1,110	1,083	1,017	1,156 (R)	1,144	1,037	966
Chained 2000 \$	N	N	447	806	1,048	1,208	1,141	1,252	1,222	1,187	1,146	1,050	1,156	1,121	989	899

KEY: N = data do not exist; R = revised.

SOURCES1980-94: U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Receipts and Outlays in the Federal Budget*, Fiscal Years 1977-94 (Washington, DC: April 1997), table 1-3.1995-2003: U.S. Executive Office of the President, Office of Management and Budget, *Budget of the United States Government, Appendix* (Washington, DC: Annual issues).

TABLE 3-28: Cash Balances of the Transportation-Related Federal Trust Funds, Fiscal Year (\$ millions)—continued

Constant dollar deflator

1980-97: U.S. Department of Commerce, Bureau of Economic Analysis, Historical data for chain-type indexes accurate to 3 decimal places, table 7-11, "Chain Type Price Indexes-Federal," Internet site <http://www.bea.doc.gov/bea/dn1.htm> as of Sept. 20, 2002.

1998-2003: U.S. Department of Commerce, Bureau of Economic Analysis, *Interactive Access to National Income and Product Accounts Tables*, table 3.9.4, "Price Indexes for Government Consumption Expenditures and Gross Investment," Internet site <http://www.bea>

**TABLE 3-29a: Transportation Expenditures by Mode and Level of Government from Own Funds, Fiscal Year
(Current \$ millions)**

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL, all modes ^a	(R) 56,217	(R) 77,213	(R) 100,685	(R) 130,540	(R) 133,410	(R) 138,392	(R) 145,673	(R) 154,718	(R) 167,360	183,057	U
Federal	(R) 24,661	28,300	30,924	(R) 40,802	(R) 40,829	(R) 41,799	(R) 41,325	(R) 43,758	(R) 49,443	(R) 56,477	62,968
State and local ^a	(R) 31,556	(R) 48,914	(R) 69,760	(R) 89,738	(R) 92,581	(R) 96,593	(R) 104,348	(R) 110,961	(R) 117,916	126,581	U
Highways, total	34,553	46,613	62,629	79,375	81,623	84,290	89,527	95,556	103,952	110,465	U
Federal	11,706	15,039	15,517	20,144	20,695	21,425	20,725	23,553	27,759	29,950	33,214
State and local	22,847	31,574	47,112	59,232	60,927	62,865	68,802	72,003	76,192	80,515	U
Air, total	5,673	7,903	12,568	(R) 16,894	(R) 17,237	(R) 8,727	(R) 19,525	(R) 21,712	(R) 22,017	(R) 27,404	U
Federal	3,762	4,947	7,305	(R) 10,356	(R) 10,099	(R) 10,088	(R) 10,554	(R) 10,645	(R) 10,481	(R) 13,889	15,249
State and local	1,911	2,955	5,263	6,538	7,138	8,639	8,971	11,067	11,536	(R) 13,515	U
Transit, total ^a	(R) 8,915	(R) 16,308	(R) 19,251	(R) 26,161	(R) 26,343	(R) 26,873	(R) 28,103	(R) 29,022	(R) 32,384	(R) 33,590	U
Federal	3,307	3,427	3,832	4,474	4,375	4,583	4,302	4,265	(R) 5,334	7,048	7,695
State and local ^a	(R) 5,608	(R) 12,881	(R) 15,420	(R) 21,687	(R) 21,968	(R) 22,290	(R) 23,801	(R) 24,757	(R) 27,050	(R) 26,542	U
Water, total	(R) 4,475	5,124	5,480	6,628	6,775	6,996	7,144	7,684	7,946	10,469	U
Federal	3,308	3,642	3,537	4,380	4,237	4,212	4,391	4,567	4,814	(R) 4,475	5,223
State and local	(R) 1,167	1,481	1,943	2,247	2,538	2,783	2,753	3,117	3,132	5,994	U
Rail, total	2,419	1,072	(R) 540	1,043	(R) 1,016	(R) 1,154	(R) 1,100	(R) 445	(R) 767	(R) 737	U
Federal	2,395	1,057	534	1,034	1,006	1,138	1,079	428	(R) 760	722	1,296
State and local	23	15	(R) 6	9	(R) 10	(R) 16	(R) 21	(R) 17	(R) 7	(R) 15	U
Pipeline, total ^b	RZ	8	26	45	U	U	U	U	U	U	U
Federal	RZ	RZ	9	21	33	31	34	34	36	29	43
State and local	RZ	8	17	24	U	U	U	U	U	U	U
General support, total ^c	(R) 183	187	191	394	384	322	241	(R) 266	(R) 259	(R) 364	248
Federal / general support	(R) 183	187	191	394	384	322	241	(R) 266	(R) 259	(R) 364	248

KEY: R = revised; RZ = no activity or a value of zero; U = data are not available.

^a Data for 1980, 1985 and 1990-2001 have been revised due to the Office of Management and Budget (OMB)'s revision to the source data on federal expenditure and federal grants.

TABLE 3-29a: Transportation Expenditures by Mode and Level of Government from Own Funds, Fiscal Year (Current \$ millions)—Continued

- b Includes gas and liquid pipeline.
- c General support represents administrative and operating expenditures of the U.S. Department of Transportation, the Interstate Commerce Commission (terminated at the end of 1995), and the National Transportation Safety Board.

NOTE

Numbers may not add to totals due to rounding. Numbers for state and local expenditures from own funds were calculated by deducting federal grants from state and local expenditures that included federal grants.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.
1985–2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2002* (Washington, DC: forthcoming).

TABLE 3-29b: Transportation Expenditures by Mode and Level of Government from Own Funds, Fiscal Year (Chained 2000 \$ millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL, all modes ^a	(R) 112,303	(R) 118,603	(R) 131,270	(R) 147,898	(R) 147,963	(R) 150,518	(R) 156,120	(R) 161,153	(R) 167,360	(R) 176,209	U
Federal	(R) 47,715	43,048	41,090	(R) 45,665	(R) 44,761	(R) 44,852	(R) 43,838	(R) 45,167	(R) 49,443	(R) 53,139	57,739
State and local ^a	(R) 64,587	(R) 75,555	(R) 90,180	(R) 102,233	(R) 103,202	(R) 105,665	(R) 112,282	(R) 115,986	(R) 117,916	(R) 123,069	U
Highways, total	69,411	71,647	81,520	90,023	90,605	91,760	96,018	99,575	103,952	107,673	U
Federal	22,649	22,876	20,618	22,544	22,688	22,990	21,985	24,311	27,759	29,391	31,570
State and local	46,762	48,771	60,902	67,479	67,917	68,770	74,033	75,264	76,192	78,281	U
Air, total	11,190	12,091	16,510	(R) 19,039	(R) 19,029	(R) 20,275	(R) 20,849	(R) 22,556	(R) 22,017	(R) 24,485	U
Federal	7,279	7,526	9,706	(R) 11,590	(R) 11,072	(R) 10,825	(R) 11,196	(R) 10,988	(R) 10,481	(R) 11,345	12,382
State and local	3,911	4,565	6,804	7,449	7,957	9,450	9,653	11,568	11,536	13,140	U
Transit, total ^a	(R) 17,876	(R) 25,109	(R) 25,024	(R) 29,714	(R) 29,285	(R) 29,301	(R) 30,174	(R) 30,281	(R) 32,384	(R) 32,722	U
Federal	6,398	5,213	5,091	5,007	4,796	4,918	4,564	4,402	(R) 5,334	6,917	7,314
State and local ^a	(R) 11,479	(R) 19,897	(R) 19,933	(R) 24,707	(R) 24,489	(R) 24,383	(R) 25,611	(R) 25,879	(R) 27,050	(R) 25,806	U
Water, total	8,789	7,829	7,211	7,462	7,474	7,565	7,620	7,972	7,946	10,219	U
Federal	6,401	5,540	4,700	4,902	4,645	4,520	4,658	4,714	4,814	(R) 4,392	4,964
State and local	2,388	2,288	2,511	2,560	2,829	3,045	2,962	3,258	3,132	5,827	U
Rail, total	4,683	1,631	(R) 717	1,167	(R) 1,114	(R) 1,238	(R) 1,167	(R) 459	(R) 767	(R) 723	U
Federal	4,635	1,608	710	1,157	1,103	1,221	1,145	442	(R) 760	709	1,232
State and local	48	23	(R) 8	10	(R) 11	(R) 17	(R) 23	(R) 17	(R) 7	(R) 15	U
Pipeline, total ^b	RZ	12	34	51	U	U	U	U	U	U	U
Federal	RZ	RZ	12	24	36	33	36	35	36	28	41
State and local	RZ	12	21	28	U	U	U	U	U	U	U
General support, total ^c	(R) 354	284	253	440	420	345	255	(R) 274	(R) 259	(R) 357	235
Federal / general support	(R) 354	284	253	440	420	345	255	(R) 274	(R) 259	(R) 357	235

KEY: R = revised; RZ = no activity or a value of zero; U = data are not available.

^a Data for 1980, 1985 and 1990-2001 have been revised due to the Office of Management and Budget (OMB)'s revision to the source data on federal expenditure and federal grants.

TABLE 3-29b: Transportation Expenditures by Mode and Level of Government from Own Funds, Fiscal Year (Chained 2000 \$ millions)—Continued

b Includes gas and liquid pipeline.

c General support represents administrative and operating expenditures of the U.S. Department of Transportation, the Interstate Commerce Commission (terminated at the end 1995), and the National Transportation Safety Board.

NOTE
 Numbers may not add to totals due to rounding.
 Numbers for state and local expenditures from own funds were calculated by deducting federal grants from state and local expenditures that included federal grants.

SOURCES
 1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.
 1985–2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003* (Washington, DC: forthcoming).
 Constant dollar deflator: U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts*, Washington, DC, table 3.9.4, "Chain-Type Price Index."

TABLE 3-30a: Federal Transportation Grants to State and Local Governments by Mode, Fiscal Year (Current \$ millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Total, all modes	(R) 14,617	(R) 18,176	(R) 19,697	(R) 24,988	(R) 25,068	(R) 26,079	(R) 25,131	(R) 27,868	(R) 32,984	(R) 36,791	41,719
Highway	10,807	14,007	14,695	18,677	19,039	20,008	19,294	22,029	26,049	27,749	31,322
Air	590	789	1,220	1,859	1,655	1,489	1,511	1,565	1,624	2,017	2,860
Transit	(R) 3,163	(R) 3,329	(R) 3,738	(R) 4,354	(R) 4,294	(R) 4,501	(R) 4,226	(R) 4,193	(R) 5,265	(R) 6,965	7,463
Water ^a	RZ	12	26	62	40	26	32	21	9	1	RZ
Rail	54	35	(R) 14	(R) 21	(R) 23	(R) 37	(R) 49	(R) 39	(R) 16	(R) 35	43
Pipeline	RZ	RZ	4	10	11	12	13	14	13	14	19
General support ^b	3	4	RZ	5	6	6	6	7	8	10	12

KEY: R = revised; RZ = no activity or a value of zero.

^a Includes only federal grants for Boat Safety Program.

^b General support is a new addition to the table. It includes federal grants to state and local governments for research and special programs, and emergency preparedness.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.

1985-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003* (Washington, DC: forthcoming).

TABLE 3-30b: Federal Transportation Grants to State and Local Governments by Mode, Fiscal Year (Chained 1996 \$ millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Total, all modes	(R) 28,278	(R) 27,642	(R) 26,172	(R) 27,966	(R) 27,482	(R) 27,984	(R) 26,660	(R) 28,766	(R) 32,984	(R) 36,105	39,654
Highway	20,910	21,307	19,525	20,903	20,873	21,470	20,468	22,739	26,049	27,231	29,772
Air	1,142	1,200	1,621	2,081	1,814	1,598	1,603	1,615	1,624	1,979	2,718
Transit	(R) 6,120	(R) 5,064	(R) 4,967	(R) 4,873	(R) 4,708	(R) 4,830	(R) 4,483	(R) 4,328	(R) 5,265	(R) 6,835	7,094
Water ^a	RZ	18	34	69	44	28	34	22	9	1	RZ
Rail	105	53	(R) 19	(R) 24	(R) 25	(R) 40	(R) 52	(R) 40	(R) 16	(R) 34	41
Pipeline	RZ	RZ	6	11	12	13	14	14	13	14	18
General support ^b	5	6	RZ	6	7	6	6	7	8	10	11

KEY: R = revised; RZ = no activity or a value of zero.

^a Includes only federal grants for Boat Safety Program.

^b General support is a new addition to the table. It includes federal grants to state and local governments for research and special programs, and emergency preparedness.

NOTE

Numbers may not add to totals due to rounding.

SOURCES

1980: U.S. Department of Transportation, Bureau of Transportation Statistics, unpublished data.

1985–2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003* (Washington, DC: forthcoming).

Constant dollar deflator: U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts*, Washington, DC, table 3.9.4, "Chain-Type Price Index."

Chapter 4

Transportation, Energy, and the Environment

Section A

U.S. and Transportation Sector Energy Consumption

TABLE 4-1: Overview of U.S. Petroleum Production, Imports, Exports, and Consumption (Million barrels per day)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Domestic production, total ^a	7.96	9.01	11.30	10.05	10.21	10.64	8.99	8.63	8.11	8.05	(R) 8.04	(R) 7.82
Crude oil ^b	7.04	7.80	9.64	8.38	8.60	8.97	7.36	6.56	5.82	5.80	(R) 5.75	(R) 5.68
Natural gas plant liquids	0.93	1.21	1.66	1.63	1.57	1.61	1.56	1.76	1.91	1.87	1.88	(R) 1.72
Gross imports, total	1.81	2.47	3.42	6.06	6.91	5.07	8.02	8.84	11.46	11.87	(R) 11.53	(R) 12.26
Crude oil ^c	1.02	1.24	1.32	4.11	5.26	3.20	5.89	7.23	9.07	9.33	(R) 9.14	(R) 9.67
Petroleum products ^d	0.80	1.23	2.10	1.95	1.65	1.87	2.12	1.61	2.39	2.54	(R) 2.39	(R) 2.60
Exports	0.20	0.19	0.26	0.21	0.54	0.78	0.86	0.95	1.04	0.97	0.98	(R) 1.03
U.S. net imports ^e	1.61	2.28	3.16	5.85	6.37	4.29	7.16	7.89	10.42	10.90	(R) 10.55	(R) 11.24
U.S. petroleum consumption	9.80	11.51	14.70	16.32	17.06	15.73	16.99	17.72	19.70	19.65	19.76	(P) 20.03
By the transportation sector	5.14	6.04	7.78	8.95	9.55	(R) 9.84	(R) 10.89	(R) 11.67	(R) 13.01	(R) 12.94	(E) 13.12	(E) 13.24
Transportation petroleum use as a percent of domestic petroleum production	64.5	67.0	68.8	89.1	93.5	(R) 92.5	(R) 121.1	(R) 135.3	(R) 160.4	(R) 160.6	163.1	169.3
Transportation petroleum use as a percent of domestic petroleum consumption	52.4	52.4	52.9	54.8	56.0	(R) 62.6	(R) 64.1	(R) 65.8	(R) 66.0	(R) 65.8	66.4	66.1
World petroleum consumption	21.34	31.14	46.81	56.20	(R) 63.11	60.09	(R) 66.53	(R) 70.00	(R) 76.83	(R) 78.00	(R) 78.21	79.77
U.S. petroleum consumption as percent of world petroleum consumption	45.9	37.0	31.4	29.0	27.0	26.2	(R) 25.5	25.3	25.6	(R) 25.2	(R) 25.3	25.1

KEY: E = estimate; P = preliminary; R = revised.

^a Includes crude oil, natural gas plant liquids, and other liquids.

^b Includes lease condensate.

^c Includes imports for the Strategic Petroleum Reserve, which began in 1977.

^d Beginning in 1985, motor gasoline blending components and aviation gasoline blending components are included.

^e Net imports = imports minus exports.

NOTE

Numbers may not add to totals due to rounding.

Continued next page

TABLE 4-1: Overview of U.S. Petroleum Production, Imports, Exports, and Consumption (Million barrels per day)—continued**SOURCES****Domestic production, imports, exports, and U.S. petroleum consumption:**

1960-1970: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC: August 2001), table 5.1.

1975-2003: Ibid., *Monthly Energy Review* (Washington, DC: March 2003), tables 3.1a and 3.1b, Internet site <http://www.eia.doe.gov> as of Apr. 14, 2004.

World petroleum consumption:

1960-1970: Ibid., *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC: August 2001), table 11.9.

1975-95: Ibid., *Annual Energy Review 2003*, DOE/EIA-0384(2003) (Washington, DC: September 2004), table 11.10, Internet site <http://www.eia.doe.gov> as of Sept. 16, 2004.

2000-03: Ibid., *International Petroleum Monthly* (Washington, DC: November 2004), table 2.4, Internet site <http://www.eia.doe.gov/ipm/demand.html> as of Jan. 4, 2005.

U.S. petroleum consumption by transportation sector:

1960-2001: Ibid., *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC: November 2002), table 5.12c.

2002-2003: Ibid., *Annual Energy Review 2002*, DOE/EIA-0384(2003) (Washington, DC: September 2004), table 5.13c, Internet site <http://www.eia.doe.gov> as of Sept. 16, 2004.

TABLE 4-2: U.S. Consumption of Energy from Primary Sources by Sector (Quadrillion Btu)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Energy consumption, total	43.80	52.68	66.43	72.00	78.29	76.42	84.61	91.22	(R) 98.91	96.32	(R) 98.24	98.25
Transportation	10.56	12.40	16.06	18.21	19.66	20.02	22.47	23.91	(R) 26.65	(R) 26.21	(R) 26.63	26.82
Transportation as percent of total energy consumption	24.1	23.5	24.2	25.3	25.1	(R) 26.2	(R) 26.6	(R) 26.2	(R) 26.9	(R) 27.2	(R) 27.1	27.3
Industrial	16.26	19.24	21.92	21.45	22.67	19.54	21.24	22.64	(R) 22.74	(R) 21.82	(R) 22.06	21.68
Industrial as percent of total energy consumption	37.1	36.5	33.0	(R) 29.8	(R) 29.0	(R) 25.6	(R) 25.1	(R) 24.8	(R) 23.0	(R) 22.7	(R) 22.5	22.1
Residential and commercial	8.75	10.00	12.14	12.03	11.60	10.70	(R) 10.27	11.05	(R) 11.34	(R) 10.98	(R) 11.10	11.42
Residential and commercial as percent of total energy consumption	20.0	19.0	18.3	16.7	14.8	(R) 14.0	12.1	12.1	11.5	(R) 11.4	(R) 11.3	11.6
Energy input at electric utilities	8.19	11.01	16.27	20.31	24.36	26.16	30.65	33.62	(R) 38.18	(R) 37.32	(R) 38.44	38.33
Energy input at electric utilities as percent of total energy consumption	18.7	20.9	24.5	(R) 28.2	(R) 31.1	(R) 34.2	36.2	(R) 36.9	38.6	(R) 38.7	(R) 39.1	39.0
Percentage of primary demand met by petroleum												
Transportation	96.0	95.7	95.3	96.7	96.7	97.4	97.0	97.0	97.5	(R) 97.5	(R) 97.4	97.5
Industrial	35.4	35.3	35.5	38.0	(R) 42.0	(R) 39.9	(R) 39.1	(R) 37.8	(R) 39.8	(R) 42.3	(R) 41.9	43.4
Residential and commercial	39.8	38.6	35.4	31.6	26.2	23.6	21.2	(R) 18.7	(R) 19.7	(R) 20.8	(R) 20.3	20.2
Electric utilities	6.7	6.7	13.0	(R) 15.6	(R) 10.8	(R) 4.2	(R) 4.2	(R) 2.2	(R) 3.0	(R) 3.4	(R) 2.5	3.1

KEY: Btu = British thermal unit; R = revised.

NOTES

The data for residential, commercial, and industrial sectors include only fossil fuels consumed directly. Most renewable fuels are not included. The data for the transportation sector includes only fossil and renewable fuels consumed directly. The data for electric utilities includes all fuels (fossil, nuclear, geothermal, hydro, and other renewables) used by electric utilities. Due to a lack of consistent monthly historical data, some renewable energy resources are not included in this table. The totals in table 4-4 are the best numbers for total U.S. energy consumption from all sources.

The April 2003 *Monthly Energy Review* included extensive revisions to historical data. These revisions are most noticeable in the electricity, natural gas, coal, renewable energy, and total energy consumption data.

Numbers may not add to totals due to rounding.

SOURCES

1960-70: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1990*, DOE/EIA-0394(90) (Washington, DC: May 1991), table 4.

1975-2003: Ibid., *Monthly Energy Review*, DOE/EIA-0035(2004/05) (Washington, DC: June 2004), tables 2.1, 2.2, 2.3, 2.4, 2.5, and 2.6.

TABLE 4-3: Domestic Demand for Refined Petroleum Products by Sector (Quadrillion Btu)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL petroleum demand	19.92	23.26	29.53	32.73	34.20	30.92	(R) 33.55	34.55	38.40	38.33	(R) 38.40	39.07
Transportation	10.13	11.87	15.31	17.61	19.01	19.50	(R) 21.79	(R) 23.18	(R) 25.97	(R) 25.56	(R) 25.93	26.15
Industrial	5.75	6.79	7.79	8.15	9.53	7.81	(R) 8.31	(R) 8.55	(R) 9.06	(R) 9.22	(R) 9.25	9.42
Residential and commercial	3.49	3.87	4.31	3.81	3.04	2.52	(R) 2.18	(R) 2.07	(R) 2.23	(R) 2.28	(R) 2.26	2.30
Electric utilities	0.55	0.73	2.12	3.17	2.63	1.09	(R) 1.29	(R) 0.76	(R) 1.14	(R) 1.28	(R) 0.96	1.21
Transportation as percent of total petroleum demand	50.86	51.03	51.85	53.81	55.58	63.07	(R) 64.95	67.09	(R) 67.63	(R) 66.67	(R) 67.53	66.91

KEY: Btu = British thermal unit; R = revised.

NOTE

Transportation's share of U.S. petroleum demand in this table differs slightly from table 4-1 because this table takes into account differences within sectors in the use of various grades of petroleum-based fuel that have different Btu content per unit volume.

The April 2003 *Monthly Energy Review* includes extensive revisions to historical data.

SOURCES

1960-70: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1997*, DOE/EIA-0384(97) (Washington, DC: July 1998), tables 2.1, 5.12b, and A3.

1975-2003: Ibid., *Monthly Energy Review*, DOE/EIA-0035(2004/05) (Washington, DC: June 2004), tables 1.3, 2.2, 2.3, 2.4, 2.5, 2.6, and similar tables in earlier editions.

Section B
Transportation Energy
Consumption by Mode

TABLE 4-4: U.S. Energy Consumption by the Transportation Sector (Quadrillion Btu)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Energy consumption (all sectors)	45.12	54.02	67.86	(R) 72.00	(R) 78.29	(R) 76.42	(R) 84.60	(R) 91.22	(R) 94.22	(R) 94.73	(R) 95.15	96.77	(R) 98.90	(R) 96.32	(R) 98.24	98.24
Total transportation	10.60	12.43	16.10	18.24	19.70	20.07	(R) 22.53	(R) 23.96	(R) 24.51	(R) 24.81	(R) 25.36	(R) 26.11	(R) 26.70	(R) 26.27	(R) 26.69	26.87
Transportation as percent of total energy consumption	23.5	23.0	23.7	25.3	25.2	26.3	(R) 26.6	(R) 26.3	(R) 26.0	(R) 26.2	(R) 26.7	(R) 27.0	(R) 27.0	(R) 27.3	(R) 27.2	27.4
Total primary consumption ^a	10.56	12.40	16.06	18.21	19.66	20.02	(R) 22.47	(R) 23.90	(R) 24.46	(R) 24.75	(R) 25.30	(R) 26.05	(R) 26.64	(R) 26.21	(R) 26.63	26.82
Coal	0.074	0.017	0.007	0.001	d	d	d	d	d	d	d	d	d	d	d	d
Million short tons	3.0	0.7	0.3	<0.05	d	d	d	d	d	d	d	d	d	d	d	d
Natural gas ^b	0.36	0.52	0.75	(R) 0.59	0.65	0.52	0.68	0.72	(R) 0.74	0.78	(R) 0.67	(R) 0.68	0.67	(R) 0.66	(R) 0.70	0.67
Trillion cubic feet	0.35	0.50	0.72	0.58	(R) 0.63	0.50	0.66	0.70	(R) 0.72	0.76	0.64	(R) 0.66	0.65	(R) 0.64	(R) 0.68	0.65
Petroleum products ^c	10.13	11.87	15.31	17.61	19.01	19.50	(R) 21.79	(R) 23.18	(R) 23.72	(R) 23.97	(R) 24.64	(R) 25.37	(R) 25.97	(R) 25.56	(R) 25.93	26.15
Million barrels	1.879	2.203	2.839	3.267	3.494	3.597	4.003	4.278	4.376	4.426	4.549	4.683	4.789	(E) 4.804	U	U
Electricity	0.010	0.010	0.011	0.010	0.011	0.014	0.016	0.017	0.017	0.017	0.017	0.017	0.018	(R) 0.019	0.018	0.018
Electrical system energy	0.026	0.024	0.026	(R) 0.024	0.027	0.033	0.037	(R) 0.039	(R) 0.038	(R) 0.038	(R) 0.038	(R) 0.040	(R) 0.042	(R) 0.042	(R) 0.040	0.040

KEY: Btu = British thermal unit; E = estimated; R = revised; U = data are not available.

- ^a Sum of coal, natural gas, and petroleum categories.
^b Consumed in the operation of pipelines, primarily in compressors, and small amounts consumed as vehicle fuel.
^c Includes most nonutility use of fossil fuels to produce electricity and small amounts (about 0.1 quadrillion Btu per year since 1990) of renewable energy in the form of ethanol blended into motor gasoline.
^d From 1980, small amounts of coal consumed for transportation are included in industrial sector consumption.

NOTES

Energy consumption (all sectors) differs from totals in table 4-2 for 1990 and subsequent years.
 Table 4-2 includes primary energy consumption only.

SOURCES

Energy consumption (all sectors), total transportation consumption and total primary consumption:
 1960-70: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2000*, DOE/EIA-0384 (2000) (Washington DC: August 2001) table 2.1a.
 1975-2003: *Ibid.*, *Monthly Energy Review* (Washington DC: May 2004), table 2.1.

Continued next page

TABLE 4-4: U.S. Energy Consumption by the Transportation Sector (Quadrillion Btu)—continued

Coal:	
<i>Btu:</i>	
1960-70: Ibid., <i>Annual Energy Review 2000</i> , DOE/EIA-0384 (2000) (Washington DC: August 2001) table 2.1.e.	
1975-2003: Ibid., <i>Monthly Energy Review</i> (Washington DC: May 2004), table 2.5.	
<i>Short tons:</i>	
1960-70: Ibid., <i>Annual Energy Review 2000</i> , DOE/EIA-0384 (2000) (Washington DC: August 2001) table 7.3.	
1975-2003: Ibid., <i>Monthly Energy Review</i> (Washington DC: May 2004), table 6.2.	
Natural gas:	
<i>Btu:</i>	
1960-70: Ibid., <i>Annual Energy Review 2000</i> , DOE/EIA-0384 (2000) (Washington DC: August 2001) table 2.1.e.	
1975-2003: Ibid., <i>Monthly Energy Review</i> (Washington DC: May 2004), table 2.5.	
<i>Cubic feet:</i>	
1960-70: Ibid., <i>Annual Energy Review 2000</i> , DOE/EIA-0384 (2000) (Washington DC: August 2001) table 6.5.	
1975-2003: Ibid., <i>Monthly Energy Review</i> (Washington DC: May 2004), table 4.4.	
Petroleum products:	
<i>Btu:</i>	
1960-70: Ibid., <i>Annual Energy Review 2000</i> , DOE/EIA-0384 (2000) (Washington DC: August 2001) table 2.1.e.	
1975-2003: Ibid., <i>Monthly Energy Review</i> (Washington DC: May 2004), table 2.5.	
<i>Barrels:</i>	
1960-2001: Ibid., <i>Annual Energy Review 2001</i> , DOE/EIA-0384 (2001) (Washington DC: November 2002) table 5.12c. (barrels/day x 365 or 366 for leap years).	
Electricity and electrical system energy losses:	
1960-70: Ibid., <i>Annual Energy Review 2000</i> , DOE/EIA-0384 (2000) (Washington DC: August 2001) table 2.1.e.	
1975-2003: Ibid., <i>Monthly Energy Review</i> (Washington DC: May 2004), table 2.5.	

TABLE 4-5: Fuel Consumption by Mode of Transportation

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001
Air										
Certificated carriers ^a										
Jet fuel (million gallons)	1,954	3,889	7,857	7,558	8,519	10,115	(R) 12,323	(R) 12,672	14,845	14,017
General aviation ^b										
Aviation gasoline (million gallons)	242	292	551	412	520	421	353	287	(R) 333	(R) 275
Jet fuel (million gallons)	N	56	208	453	766	691	663	560	(R) 972	(R) 953
Highway										
Gasoline, diesel and other fuels (million gallons)										
Passenger car and motorcycle	41,171	49,723	67,879	74,253	70,186	71,700	69,759	68,268	73,275	(R) 73,752
Other 2-axle 4-tire vehicle	N	e	12,313	19,081	23,796	27,363	35,611	45,605	52,939	(R) 53,522
Single-unit 2-axle 6-tire or more truck	N	13,848	3,968	5,420	6,923	7,399	8,357	9,216	9,563	(R) 9,667
Combination truck	N	6,658	7,348	9,177	13,037	14,005	16,133	19,777	25,666	(R) 25,512
Bus	827	875	820	1,053	1,018	834	895	968	1,112	(R) 1,026
Transit^c										
Electricity (million kWh)	2,908	2,584	2,561	2,646	2,446	4,216	4,837	5,068	5,510	5,610
Motor fuel (million gallons)										
Diesel	208	248	271	365	431	609	651	678	786	745
Gasoline and other nondiesel fuels ^d	192	124	68	8	11	46	34	61	48	46
Compressed natural gas	N	N	N	N	N	N	N	11	55	66
Rail, Class 1 (in freight service)										
Distillate / diesel fuel (million gallons)	3,463	3,592	3,545	3,657	3,904	3,110	3,115	3,480	3,700	3,710
Amtrak										
Electricity (million kWh)	N	N	N	180	254	295	330	304	350	377
Distillate / diesel fuel (million gallons)	N	N	N	63	64	65	82	66	76	75

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TABLE 4-5: Fuel Consumption by Mode of Transportation—continued

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001
Water										
Residual fuel oil (million gallons)	3,952	3,093	3,774	4,060	8,952	4,590	6,326	5,886	6,410	5,409
Distillate / diesel fuel oil (million gallons)	787	652	819	1,098	1,478	1,699	2,065	2,339	2,261	2,044
Gasoline (million gallons)	N	N	598	730	1,052	1,053	1,300	1,060	1,124	994
Pipeline										
Natural gas (million cubic feet)	347,075	500,524	722,166	582,963	634,622	503,766	659,816	700,335	642,210	(R) 624,964

KEY: kWh = kilowatt-hour; N = data do not exist; P = preliminary; R = revised.

^a Domestic operations only.

^b Includes fuel used in air taxi operations, but not commuter operations. Data for 1996 are estimated using new information on nonrespondents and are therefore not comparable to earlier years. See the accuracy statement in the appendix for more detailed information.

^c Prior to 1984, excludes commuter rail, automated guideway, ferryboat, demand responsive vehicles, and most rural and small systems.

^d Gasoline and all other nondiesel fuels such as liquefied natural gas, methanol, and propane, except compressed natural gas.

^e Included in single-unit 2-axle 6-tire or more truck category.

SOURCES

Air:

Certificated air carriers:

1960-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.brs.gov/oa/fuel/fuelearly.html> as of June 23, 2004.

General aviation:

1960-70: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation - 1972 edition* (Washington, DC: 1973), table 9.12.

1975-90: Ibid., *General Aviation and Air Taxi Activity Survey* (Washington, DC: Annual issues), table 5.1, and similar tables in earlier editions.

1995-2002: Ibid., *FAA Aerospace Forecasts Fiscal Years 2004-2015* (Washington, DC: March 2004), table 34 and similar tables in earlier editions.

Highway:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. (Revised data obtained from Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of August 2001).

1995-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit:

Electricity / motor fuel / compressed natural gas:

1960-2002: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: February 2003), tables 33, 34, 35, and similar tables in earlier editions.

TABLE 4-5: Fuel Consumption by Mode of Transportation—continued

Rail:	1960-2002: Association of American Railroads, <i>Railroad Facts</i> (Washington, DC: October 2003), p. 40.
Amtrak:	1975-2001: Amtrak, Energy Management Department, personal communication.
Water:	<i>Residual and distillate / diesel fuel oil:</i>
	1960-80: American Petroleum Institute, <i>Basic Petroleum Data Book</i> (Washington, DC: Annual issues), tables 10, 10a, 12, and 12a.
	1985-2002: U.S. Department of Energy, Energy Information Administration, <i>Fuel Oil and Kerosene Sales</i> (Washington, DC: Annual issues), tables 2, 4, and similar tables in earlier editions.
	<i>Gasoline:</i>
	1970-2002: U.S. Department of Transportation, Federal Highway Administration, <i>Highway Statistics</i> (Washington, DC: Annual issues), table MF-24 and similar tables in earlier editions.
Pipeline:	1960-2002: U.S. Department of Energy, <i>Natural Gas Annual 2002</i> , DOE/EIA-0131(02) (Washington, DC: January 2004), table 15 and similar tables in earlier editions.

TABLE 4-6: Energy Consumption by Mode of Transportation (Trillion Btu)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Air															
Certificated carriers ^a															
Jet fuel	264	525	1,061	1,020	1,150	1,366	(R) 1,664	(R) 1,711	(R) 1,784	(R) 1,831	(R) 1,800	1,944	2,004	1,892	1,735
General aviation ^b															
Aviation gasoline	29	35	66	50	63	51	42	35	35	35	37	42	(R) 40	(R) 33	33
Jet fuel	N	8	28	61	103	93	90	76	82	87	110	131	(R) 131	(R) 129	133
Highway															
Gasoline, diesel and other fuels															
Passenger car and motorcycle	5,146	6,215	8,485	9,282	8,773	8,963	8,720	8,534	8,677	8,762	8,988	9,187	9,159	(R) 9,219	9,392
Other 2-axle 4-tire vehicle	N	e	1,539	2,385	2,975	3,420	4,451	5,701	5,919	6,173	6,308	6,607	6,617	(R) 6,690	6,855
Single-unit 2-axle 6-tire or more truck	N	1,921	550	752	960	1,026	1,159	1,278	1,305	1,328	946	1,300	1,326	(R) 1,341	1,429
Combination truck	N	923	1,019	1,273	1,808	1,942	2,238	2,743	2,801	2,816	3,489	3,403	3,560	(R) 3,538	3,669
Bus	115	121	114	146	141	116	124	134	137	142	144	159	154	(R) 142	138
Transit ^c															
Electricity	10	9	9	9	8	14	17	17	17	17	17	18	19	19	(P) 19
Motor fuel															
Diesel	29	34	38	51	60	84	90	94	96	99	103	106	109	103	(P) 100
Gasoline and other nondiesel fuels ^d	24	16	9	1	1	6	4	8	8	7	7	6	6	6	(P) 7
Compressed natural gas	N	N	N	N	N	N	N	1	2	3	5	6	8	9	(P) 11
Rail, Class I (in freight service)															
Distillate / diesel fuel	480	498	492	507	541	431	432	483	496	496	497	515	513	515	517
Amtrak															
Electricity	N	N	N	1	1	1	1	1	1	1	1	1	1	1	U
Distillate / diesel fuel	N	N	N	9	9	9	11	9	10	10	10	10	11	10	U

TABLE 4-6: Energy Consumption by Mode of Transportation (Trillion Btu)—Continued

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Water															
Residual fuel oil	592	463	565	608	1,340	687	947	881	853	750	841	874	960	810	726
Distillate / diesel fuel oil	109	90	114	152	205	236	286	324	345	357	360	336	314	284	288
Gasoline	N	N	75	91	132	132	163	133	124	123	120	137	141	124	135
Pipeline															
Natural gas	358	516	745	601	654	519	680	722	734	775	655	665	662	(R) 644	688

KEY: Btu = British thermal unit; N = data do not exist; P = preliminary; R = revised; U = data are not available.

- ^a Domestic operations only.
- ^b Includes fuel used in air taxi operations, but not commuter operations.
- ^c Prior to 1984, excludes commuter rail, automated guideway, ferryboat, demand responsive vehicles, and most rural and smaller systems.
- ^d Gasoline and all other nondiesel fuels such as liquefied natural gas, methanol, and propane, except compressed natural gas.
- ^e Included in other single-unit 2-axle 6-tire or more truck category.

NOTES

The following conversion rates were used:

- Jet fuel = 135,000 Btu/gallon
- Aviation gasoline = 120,200 Btu/gallon
- Automotive gasoline = 125,000 Btu/gallon
- Diesel motor fuel = 138,700 Btu/gallon
- Electricity 1kWh = 3,412 Btu, negating electrical system losses. To include approximate electrical system losses, multiply this conversion factor by 3.
- Compressed natural gas = 138,700 Btu/gallon
- Distillate fuel = 138,700 Btu/gallon
- Residual fuel = 149,700 Btu/gallon
- Natural gas = 1,031 Btu/ft³

SOURCES

- Air:**
- Certificated air carriers:*
- 1960-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oai/fuel/fueiyearly.html> as of June 23, 2004.
- General aviation:*
- 1960-70: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation - 1972 edition* (Washington, DC: 1973), table 9.12.
- 1975-90: *Ibid.*, *General Aviation and Air Taxi Activity Survey* (Washington, DC: Annual issues), table 5.1, and similar tables in earlier editions.
- 1995-2002: *Ibid.*, *FAA Aerospace Forecasts Fiscal Years 2004-2015* (Washington, DC: March 2004), table 34 and similar tables in earlier editions.

Continued next page

TABLE 4-6: Energy Consumption by Mode of Transportation (Trillion Btu)—continued

Highway:	1960-90: U.S. Department of Transportation, Federal Highway Administration, <i>Highway Statistics, Summary to 1995</i> , FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. (Revised data obtained from Internet site http://www.fhwa.dot.gov/ohim/ohimstat.htm as of August 2001).
	1995-2002: <i>Ibid.</i> , <i>Highway Statistics</i> (Washington, DC: Annual issues), table VM-1.
Transit:	
<i>Electricity / motor fuel / compressed natural gas:</i>	1960-2002: American Public Transit Association, <i>Public Transportation Fact Book</i> (Washington, DC: February 2003), tables 33, 34, 35, and similar tables in earlier editions.
Rail:	1960-2002: Association of American Railroads, <i>Railroad Facts</i> (Washington, DC: October 2003), p. 40.
Amtrak:	1975-2001: Amtrak, Energy Management Department, personal communication.
Water:	
<i>Residual and distillate / diesel fuel oil:</i>	1960-80: American Petroleum Institute, <i>Basic Petroleum Data Book</i> (Washington, DC: Annual issues), tables 10, 10a, 12, and 12a.
	1985-2002: U.S. Department of Energy, Energy Information Administration, <i>Fuel Oil and Kerosene Sales</i> (Washington, DC: Annual issues), tables 2, 4, and similar tables in earlier editions.
<i>Gasoline:</i>	1970-2002: U.S. Department of Transportation, Federal Highway Administration, <i>Highway Statistics</i> (Washington, DC: Annual issues), table MF-24 and similar tables in earlier editions.
Pipeline:	1960-2002: U.S. Department of Energy, <i>Natural Gas Annual 2002</i> , DOE/EIA-0131(02) (Washington, DC: January 2004), table 15 and similar tables in earlier editions.

TABLE 4-7: Domestic Demand for Gasoline (Million gallons) by Mode

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL demand	60,761	71,187	89,601	102,996	104,838	107,550	113,606	120,253	131,891	133,740	137,260	138,608
Highway	55,429	66,979	85,598	99,354	101,183	103,545	109,529	117,061	128,884	129,682	132,955	134,091
Nonhighway, total	5,332	4,208	4,003	3,642	3,655	4,005	4,076	3,192	3,007	4,058	4,305	4,517
Agriculture	2,292	1,963	1,932	1,565	1,059	1,081	681	927	652	802	832	853
Aviation ^a	1,324	501	393	410	413	382	361	367	296	356	342	305
Marine	61	96	598	730	1,052	1,053	1,300	1,060	1,124	994	1,081	1,107
Other ^b	1,656	1,647	1,080	938	1,131	1,490	1,733	838	934	1,907	2,051	2,252

^a Does not include aviation jet fuel.

^b Includes state, county, and municipal use, industrial and commercial use, construction use, and miscellaneous.

NOTES

All nonhighway uses of gasoline were estimated by the U.S. Department of Transportation, Federal Highway Administration.

These estimates may not be comparable to data for prior years due to revised estimation procedures.

Numbers may not add to totals due to rounding.

SOURCES

Highway:

1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995* (Washington, DC: 1996), table MF-221.

2000-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table MF-21.

Nonhighway:

1960-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table MF-24, and unpublished revisions.

TABLE 4-8: Certificated Air Carrier Fuel Consumption and Travel^a

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number of aircraft	2,135	2,125	2,679	2,495	3,808	4,678	6,083	7,411	8,055	8,497	8,194	U
Average miles flown per aircraft (thousands)	487	667	949	932	768	740	776	759	862	802	835	U
Aircraft-miles (millions)												
Domestic operations	858	1,134	2,068	1,948	2,523	3,046	3,963	4,629	5,664	5,548 (R)	5,616	6,085
International operations	182	284	475	377	401	415	760	998	1,282	1,266	1,225	1,246
Fuel consumption (million gallons)												
Domestic operations	1,954	3,889	7,857	7,558	8,519	10,115	12,429	12,812	14,845	14,017	12,848	12,959
International operations	566	1,280	2,243	1,949	1,747	2,488	3,963	4,511	5,475	5,237	4,991	4,836
Aircraft-miles flown per gallon												
Domestic operations	0.44	0.29	0.26	0.26	0.30	0.30	0.32	0.36	0.38	0.40	0.44	0.47
International operations	0.32	0.22	0.21	0.19	0.23	0.17	0.19	0.22	0.23	0.24	0.25	0.26

KEY: R = revised; U = data are not available.

^a Aircraft operating under 14 CFR 121 and 14 CFR 135.

SOURCES

Number of aircraft:

1960-65: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation, 1970 edition* (Washington, DC: 1970), table 5.3.

1970-75: *Ibid.*, *FAA Statistical Handbook of Aviation, Calendar Year 1979* (Washington, DC: 1979), table 5.1.

1980-85: *Ibid.*, *FAA Statistical Handbook of Aviation, Calendar Year 1986* (Washington, DC: 1986), table 5.1.

1990-95: *Ibid.*, *FAA Statistical Handbook of Aviation, Calendar Year 1997* (Washington, DC: unpublished), personal communication, Mar. 19, 1999.

2000-2002: Aerospace Industries Association, *Aerospace Facts and Figures* (Washington DC: Annual Issues), "Active U.S. Air Carrier Fleet."

Aircraft-miles flown:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics 1969* (Washington, DC: 1970), part III, tables 2 and 13.

1965-70: *Ibid.*, *Handbook of Airline Statistics 1973* (Washington, DC: 1974), part III, tables 2 and 13.

1975-80: *Ibid.*, *Air Carrier Traffic Statistics* (Washington, DC: December 1976), pp. 4 and 14; and (December 1981), pp. 2 and 3.

1985-2001: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues, December), pp. 2 and 3, line 27 plus line 50.

TABLE 4-8: Certificated Air Carrier Fuel Consumption and Travel^a—continued

2002-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues, December), pp. 3 and 4, line 2.5 plus line 46.

Fuel consumption:

1960-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/programs/oal/fuel/fueyearly.html> as of June 25, 2004.

TABLE 4-9: Motor Vehicle Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Vehicles registered (thousands) ^a	73,858	90,358	111,242	137,913	161,490	177,133	193,057	205,427	225,821	235,331	234,624	236,760
Vehicle-miles traveled (millions)	718,762	887,812	1,109,724	1,327,664	1,527,295	1,774,826	2,144,362	2,422,696	2,746,925	(R) 2,797,287	(R) 2,855,508	2,890,893
Fuel consumed (million gallons)	57,880	71,104	92,329	108,984	114,960	121,301	130,755	143,834	162,554	(R) 163,478	(R) 168,682	169,624
Average miles traveled per vehicle (thousands)	9.7	9.8	10.0	9.6	9.5	10.0	11.1	11.8	12.2	(R) 11.9	(R) 12.2	12.2
Average miles traveled per gallon	12.4	12.5	12.0	12.2	13.3	14.6	16.4	16.8	16.9	17.1	(R) 16.9	17.0
Average fuel consumed per vehicle (gallons)	784	787	830	790	712	685	677	700	720	(R) 695	(R) 719	716

KEY: R = revised.

^a Includes personal passenger vehicles, buses, and trucks.

NOTE

See tables 4-11, 4-12, 4-13, 4-14, and 4-15 for individual highway vehicles.

SOURCES

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

**TABLE 4-10: Estimated Consumption of Alternative and Replacement Fuels for Highway Vehicles
(Thousand gasoline-equivalent gallons)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003 ^{PP}	2004 ^{PP}
TOTAL fuel consumption ^a	144,774,683	148,180,046	151,597,859	(R) 156,838,150	(R) 161,210,087	(R) 163,032,677	(R) 165,201,691	169,983,219	173,303,895	177,561,958
Alternative fuels, total	276,643	295,616	312,589	(R) 323,790	(R) 302,287	(R) 322,307	(R) 348,421	378,589	412,725	447,198
Liquefied petroleum gases	232,701	239,158	238,356	(R) 241,386	(R) 209,817	(R) 212,576	(R) 215,876	223,143	230,486	242,368
Compressed natural gas	35,162	46,923	65,192	(R) 72,412	(R) 79,620	(R) 86,475	(R) 104,496	120,670	141,726	159,464
Liquefied natural gas	2,759	3,247	3,714	5,343	(R) 5,828	(R) 7,259	(R) 8,921	9,382	10,514	10,868
Methanol, 85% ^b	2,023	1,775	1,554	1,212	1,073	(R) 585	(R) 439	337	274	257
Methanol, neat	2,150	347	347	449	447	(R) 0	(R) 0	0	0	0
Ethanol, 85% ^b	190	694	1,280	1,727	(R) 3,916	(R) 12,071	(R) 14,623	17,783	20,092	22,405
Ethanol, 95% ^b	995	2,699	1,136	59	(R) 62	(R) 13	(R) 0	0	0	0
Electricity ^c	663	773	1,010	1,202	(R) 1,524	(R) 3,058	(R) 4,066	7,274	9,633	11,836
Biodiesel	N	N	N	N	N	6,816	7,076	16,917	26,758	36,599
Oxygenates										
Methyl-tertiary-butyl-ether	2,691,200	2,749,700	3,104,200	(R) 2,903,400	(R) 3,402,600	(R) 3,296,100	(R) 3,352,200	2,383,000	U	U
Ethanol in gasohol	910,700	660,200	830,700	(R) 889,500	(R) 950,300	(R) 1,085,800	(R) 1,143,300	1,413,600	1,792,900	2,052,000
Traditional fuels, total	144,498,040	147,884,430	151,285,270	156,514,360	160,907,800	(R) 162,710,370	(R) 164,853,270	169,604,630	172,891,170	177,114,760
Gasoline ^e	115,943,000	117,783,000	119,336,000	122,849,000	125,111,000	(R) 125,720,000	(R) 127,768,000	131,299,000	132,961,000	136,374,000
Diesel	28,555,040	30,101,430	31,949,270	33,665,360	35,796,800	(R) 36,990,370	(R) 37,085,270	38,305,630	39,930,170	40,740,760

KEY: N = data do not exist; PP = based on plans or projections; R = revised; U = data are not available.

^a Total fuel consumption is the sum of alternative fuels, gasoline, and diesel. Oxygenate consumption is included in gasoline consumption.

^b The remaining portion of 85% methanol, 85% ethanol, and 95% ethanol fuels is gasoline. Consumption data include the gasoline portion of the fuel.

^c Excludes gasoline-electric hybrids.

^d Includes a very small amount of other ethers, primarily tertiary-amy-methyl-ether and ethyl-tertiary-butyl-ether.

^e Gasoline consumption includes ethanol in gasohol and methyl-tertiary-butyl-ether.

NOTE

Numbers may not add to totals due to rounding.

SOURCE

U.S. Department of Energy, Energy Information Administration, *Alternatives to Traditional Transportation Fuels 2003*, Table 10 available at <http://www.eia.doe.gov/fuelaltarnate.html> as of Feb. 27, 2004.

TABLE 4-11: Passenger Car and Motorcycle Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Vehicles registered (thousands)												
Passenger cars	61,671	75,258	89,244	106,706	121,601	127,885	133,700	128,387	133,621	137,633	135,921	135,670
Motorcycles	574	1,382	2,824	4,964	5,694	5,444	4,259	3,897	4,346	4,903	5,004	5,370
Vehicle-miles traveled (millions)												
Passenger cars	587,000	723,000	917,000	1,034,000	1,112,000	1,247,000	1,408,000	1,438,000	1,600,287 ^a	1,628,332	(R) 1,658,474	1,660,828
Motorcycles	^a	^a	3,000	5,600	10,200	9,100	9,600	9,800	10,469	(R) 9,639	(R) 9,552	9,539
Fuel consumed (million gallons)												
Passenger cars	41,171	49,723	67,819	74,140	69,982	71,518	69,568	68,072	73,065	(R) 73,559	(R) 75,471	74,590
Motorcycles	^a	^a	60	113	204	182	191	196	209	(R) 193	191	191
Average miles traveled per vehicle (thousands)												
Passenger cars	9.5	9.6	10.3	9.7	9.1	9.8	10.5	11.2	12.0	(R) 11.8	12.2	12.2
Motorcycles	^a	^a	1.1	1.1	1.8	1.7	2.3	2.5	2.4	(R) 2.0	1.9	1.8
Average miles traveled per gallon												
Passenger cars	14.3	14.5	13.5	13.9	15.9	17.4	20.2	21.1	21.9	22.1	(R) 22.0	22.3
Motorcycles	^a	^a	50.0	49.6	50.0	50.0	50.3	50.0	50.0	49.9	50.0	50.0
Average fuel consumed per vehicle (gallons)												
Passenger cars	668	661	760	695	576	559	520	530	547	(R) 534	(R) 555	550
Motorcycles	^a	^a	21	23	36	33	45	50	48	(R) 39	38	36

KEY: R = revised.^a Included in passenger car.**NOTE**

See table 4-12 for other 2-axle 4-tire vehicles.

SOURCES**Passenger car:***Number registered:*1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-11: Passenger Car and Motorcycle Fuel Consumption and Travel—continued*All other categories:*

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. For 1970-94, the unrevised motorcycle vehicle-miles and fuel consumed are subtracted from the combined passenger car and motorcycle vehicle-miles and fuel consumed from VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:*Number registered:*

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

All other categories:

1970-85: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1985*, table VM-201A.

1990-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Average miles traveled per vehicle, average miles traveled per gallon, average fuel consumed per vehicle: derived by calculation.

TABLE 4-12: Light Trucks and Other 2-Axle 4-Tire Motor Vehicle Fuel Consumption and Travel

	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number registered (thousands)	14,211	20,418	27,876	37,214	48,275	65,738	79,085	84,188	85,011	87,032
Vehicle-miles traveled (millions)	123,000	201,000	291,000	391,000	575,000	790,000	923,059	(R) 943,207	(R) 966,034	998,004
Fuel consumed (million gallons)	12,313	19,081	23,796	27,363	35,611	45,605	52,939	(R) 53,522	(R) 55,220	56,302
Average miles traveled per vehicle (thousands)	8.7	9.8	10.4	10.5	11.9	12.0	11.7	(R) 11.2	11.4	11.5
Average miles traveled per gallon	10.0	10.5	12.2	14.3	16.1	17.3	17.4	17.6	(R) 17.5	17.7
Average fuel consumed per vehicle (gallons)	866	935	854	735	738	694	669	(R) 636	(R) 650	647

KEY: R = revised.

NOTES

Nearly all vehicles in this category are light trucks, which include vans, pickup trucks, and sport utility vehicles. In 1995, the U.S. Department of Transportation, Federal Highway Administration revised its vehicle categories beginning with 1993 data. They are passenger car, other 2-axle 4-tire vehicle, single-unit 2-axle 6-tire or more truck, and combination truck. Prior to 1993, some minivans and sport utility vehicles were included under the passenger car category.

SOURCES

1970-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-13: Single-Unit 2-Axle 6-Tire or More Truck Fuel Consumption and Travel^a

	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number registered (thousands)	3,681	4,232	4,374	4,593	4,487	5,024	5,926	5,704	5,651	5,667
Vehicle-miles (millions)	27,100	34,600	39,800	45,400	51,900	62,705	70,500	(R) 72,448	(R) 75,866	77,562
Fuel consumed (million gallons)	3,968	5,420	6,923	7,399	8,357	9,216	9,563	(R) 9,667	(R) 10,321	10,690
Average miles traveled per vehicle (thousands)	7.4	8.2	9.1	9.9	11.6	12.5	11.9	12.7	13.4	13.7
Average miles traveled per gallon	6.8	6.4	5.7	6.1	6.2	6.8	7.4	(R) 7.5	7.4	7.3
Average fuel consumed per vehicle (gallons)	1,078	1,281	1,583	1,611	1,862	1,835	1,614	(R) 1,695	(R) 1,826	(R) 1,886

KEY: R = revised.

^a Beginning in 1998, the Federal Highway Administration (FHWA) used the Census Bureau's 1997 *Vehicle Inventory and Use Survey* (VIUS) for its baseline estimate of single-unit 2-axle 6-tire or more trucks. Prior to 1998, the FHWA used the Census Bureau's 1992 *Transportation Inventory and Use Survey* (TIUS) for its baseline estimates. Therefore, post-1997 data may not be comparable to 1997 and earlier years.

NOTES

In 1995, the U.S. Department of Transportation, Federal Highway Administration revised its vehicle categories beginning with 1993 data to include passenger cars, other 2-axle 4-tire vehicles, single-unit 2-axle 6-tire or more trucks, and combination trucks. Single-unit 2-axle 6-tire or more trucks are on a single frame with at least 2 axles and 6 tires. Pre-1993 data have been reassigned to the most appropriate category.

SOURCES

1970-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-14: Combination Truck Fuel Consumption and Travel^a

	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number registered (thousands)	787	905	1,131	1,417	1,403	1,709	1,696	2,097	2,154	2,277	2,245
Vehicle-miles traveled (millions)	31,700	35,100	46,700	68,700	78,100	94,300	115,500	135,020	(R) 136,584	(R) 138,737	138,322
Fuel consumed (million gallons)	6,658	7,348	9,177	13,037	14,005	16,133	19,777	25,666	(R) 25,512	(R) 26,480	26,895
Average miles traveled per vehicle (thousands)	40.3	38.8	41.3	48.5	55.7	55.2	68.1	64.4	(R) 63.4	60.9	61.6
Average miles traveled per gallon	4.8	4.8	5.1	5.3	5.6	5.8	5.8	5.3	(R) 5.4	5.2	5.1
Average fuel consumed per vehicle (gallons)	8,465	8,119	8,116	9,201	9,980	9,441	11,663	12,241	(R) 11,843	(R) 11,631	11,980

KEY: R = revised.

^a Beginning in 1998, the Federal Highway Administration (FHWA) used the Census Bureau's 1997 *Vehicle Inventory and Use Survey* (VIUS) for its baseline estimate of combination trucks. Prior to 1998, the FHWA used the Census Bureau's 1992 *Transportation Inventory and Use Survey* (TIUS) for its baseline estimates. Therefore, post-1997 data may not be comparable to 1997 and earlier years.

SOURCES

1965-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-15: Bus Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number registered (thousands)	272	314	378	462	529	593	627	686	746	750	761	777
Vehicle-miles traveled (millions)	4,300	4,700	4,500	6,100	6,100	4,500	5,700	6,400	7,590	(R) 7,077	(R) 6,845	6,638
Fuel consumed (million gallons)	827	875	820	1,053	1,018	834	895	968	1,112	(R) 1,026	(R) 1,000	957
Average miles traveled per vehicle (thousands)	15.8	15.0	11.9	13.2	11.5	7.6	9.1	9.3	10.2	(R) 9.4	9.0	8.5
Average miles traveled per gallon	5.2	5.4	5.5	5.8	6.0	5.4	6.4	6.6	6.8	6.9	(R) 6.8	6.9
Average fuel consumed per vehicle (gallons)	3,039	2,784	2,172	2,278	1,925	1,405	1,427	1,412	1,490	(R) 1,369	(R) 1,314	1,232

KEY: R = revised.

NOTE

Includes both publicly and privately owned school, transit, and other commercial buses.

SOURCES

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-16: Transit Industry Electric Power and Primary Energy Consumption^a and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	(P) 2002
Number of vehicles (thousands)	65	62	61	62	75	94	93	116	131	134	135
Vehicle-miles traveled (millions)	2,143	2,008	1,883	2,176	2,287	2,791	3,242	3,550	4,081	4,196	4,277
Electric power consumed (million kWh)	2,908	2,584	2,561	2,646	2,446	4,216	4,837	5,068	5,510	5,610	5,649
Primary energy consumed (thousand gallons)											
Diesel	208,100	248,400	270,600	365,060	431,400	608,738	651,030	678,286	786,025	744,663	724,535
Gasoline and other nondiesel fuels ^b	191,900	124,200	68,200	7,576	11,400	45,704	33,906	60,730	48,284	45,873	57,124
Compressed natural gas	N	N	N	N	N	N	N	10,740	54,794	66,215	81,051

KEY: kWh = kilowatt hour; N = data do not exist; P = preliminary.

^a Prior to 1985, excludes commuter rail, automated guideway, urban ferryboat, demand responsive vehicles, and most rural and smaller systems.

^b Data for 1995-2002, includes propane, liquid petroleum gas, liquefied natural gas, kerosene, and all other nondiesel fuels except compressed natural gas. 1960 to 1990 data include propane.

SOURCE

American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: March 2004), tables 18, 24, 33, 34, 35, and similar tables in earlier editions.

TABLE 4-17: Class I Rail Freight Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number in use												
Locomotives ^a	29,031	27,780	27,077	27,846	28,094	22,548	18,835	18,812	20,028	19,745	20,506	20,774
Cars ^b	1,965,486	1,800,662	1,784,181	1,723,605	1,710,827	1,421,686	1,212,261	1,218,927	1,380,796	1,314,136	1,299,670	1,278,980
Miles traveled (millions)												
Freight train-miles ^c	404	421	427	403	428	347	380	458	504	500	500	516
Locomotive unit-miles	N	N	N	1,479	1,531	1,228	1,280	1,445	1,503	(R) 1,478	1,444	1,484
Car-miles	28,170	29,336	29,890	27,656	29,277	24,920	26,159	30,383	34,590	34,243	34,680	35,555
Average miles traveled per vehicle (thousands)												
Locomotives	N	N	N	53.1	54.5	54.5	68.0	76.8	75.0	(R) 74.9	70.4	71.4
Cars	14.3	16.3	16.8	16.0	17.1	17.5	21.6	24.9	25.1	26.1	26.7	27.8
Average miles traveled per gallon												
Trains	0.12	0.12	0.12	0.11	0.11	0.11	0.12	0.13	0.14	0.13	0.13	0.13
Cars	8.13	8.17	8.43	7.56	7.50	8.01	8.40	8.73	9.35	9.23	9.30	9.29
Fuel consumed (million gallons)	3,463	3,592	3,545	3,657	3,904	3,110	3,115	3,480	3,700	3,710	3,730	3,826
Average fuel consumed per locomotive ^a (thousand gallons)	119.3	129.3	130.9	131.3	139.0	137.9	165.4	185.0	184.7	187.9	181.9	184.2

KEY: N = data do not exist; R = revised.

^a For 1960-80, the total includes a small number of steam and electric units, which are not included in the per locomotive fuel consumption figure.

^b Includes cars owned by Class I railroads, other railroads, car companies, and shippers.

^c Based on the distance run between terminals and / or stations; does not include yard or passenger train-miles.

SOURCES

All data except for locomotive unit-miles:

Association of American Railroads, *Railroad Facts 2004* (Washington, DC: November 2004), pp. 33, 34, 40, 49, 51, and similar tables in earlier editions.

Locomotive unit-miles:

1975-90, 2002: *Ibid.*, *Railroad Ten-Year Trends* (Washington, DC: Annual issues).

1995-2001, 2003: *Ibid.*, *Analysis of Class I Railroads* (Washington, DC: Annual issues)

TABLE 4-18: Amtrak Fuel Consumption and Travel

	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number in use									
Locomotives	355	419	291	318	313	378	401	372	442
Cars	1,913	2,128	1,854	1,863	1,722	1,894	2,084	2,896	1,623
Miles traveled (millions)									
Train-miles	30	30	30	33	32	35	36	38	37
Car-miles	253	235	251	301	292	368	378	379	332
Locomotive fuel consumed									
Electric (million of kWh hours)	180	254	295	330	304	350	U	U	U
Diesel (million gallons)	63	64	65	82	66	76	U	U	U
Average miles traveled per car	132,000	110,000	135,000	162,000	170,000	194,000	181,000	131,000	204,000

KEY: Btu = British thermal unit; kWh = kilowatt hour; U = data are not available.

NOTE

The heat equivalent factors used in Btu conversions are: diesel = 138,700 Btu/gallon; electric = 3,412 Btu/kWh, negating electrical system losses (to include electrical system losses, multiply this conversion factor by approximately three).

SOURCES

Number of locomotives and cars:

- 1975–80: Amtrak, State and Local Affairs Department, personal communication.
- 1985–2000: Ibid., *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues).
- 2001–03: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 77 and similar pages in earlier editions.

Miles traveled:

- Train-miles:* 1975–2002: Amtrak, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues).
- 2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 77 and similar pages in earlier editions.

Car-miles:

- 1975: Association of American Railroads, *Yearbook of Railroad Facts 1975* (Washington, DC: 1976), p. 40.
- 1980–85: Amtrak, State and Local Affairs Department and Public Affairs Department, personal communication.
- 1990–2000: Ibid., Amtrak Corporate Reporting, Route Profitability System, personal communication, Aug. 22, 2001.
- 2001–03: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 77 and similar pages in earlier editions.

Locomotive fuel consumed:

- 1975–2000: Amtrak, State and Local Affairs Department, personal communication.

TABLE 4-19: U.S. Government Energy Consumption by Agency and Source (Trillion Btu)

	Petroleum							Coal and other ^d	Total
	Motor gasoline	Distillate and residual fuel oil	Jet fuel and aviation gas	Other ^c	Total	Electricity	Natural gas		
FY 1992 total	35.6	200.6	629.2	11.4	876.8	192.5	151.2	74.2	1,294.7
Agriculture	4.6	0.5	0.1	0.2	5.4	2.0	1.6	0.1	9.1
Defense	12.2	183.2	620.5	5.4	821.3	115.9	106.6	60.2	1,104.0
Energy	1.1	2.5	0.4	0.3	4.4	18.8	12.3	8.9	44.3
GSA	0.1	0.4	0.0	0.0	0.5	9.1	2.6	1.6	13.8
Health and Human Services	0.0	2.0	0.0	0.1	2.1	2.5	2.1	1.6	6.8
Interior	1.8	1.0	0.2	1.8	4.7	1.5	0.6	0.1	7.0
Justice	2.9	0.4	0.7	0.0	4.1	2.2	0.9	0.4	7.5
NASA	0.3	1.1	1.5	0.0	2.9	7.0	2.4	0.3	12.6
Postal Service	9.3	3.9	0.0	0.2	13.4	12.7	5.1	0.5	31.7
Transportation	0.7	1.5	4.7	3.4	10.3	5.7	1.0	0.1	17.0
Veterans Affairs	0.5	1.6	0.0	0.0	2.1	8.2	13.6	1.3	25.3
Other ^a	2.0	2.3	1.3	0.0	5.6	6.7	2.5	0.8	15.6
FY 2001 total	42.5	177.0	414.3	7.9	641.8	188.9	133.9	37.5	1,002.2
Agriculture	2.3	0.3	0.0	0.1	2.8	1.9	2.5	0.2	7.4
Defense	13.6	153.6	407.7	4.1	579.0	102.2	78.0	28.0	787.2
Energy	0.9	2.3	0.0	0.2	3.5	16.4	6.9	4.1	31.1
GSA	0.1	0.5	0.0	0.0	0.6	9.7	6.5	1.7	18.4
Health and Human Services	0.6	0.8	0.0	0.2	1.6	3.0	3.6	0.4	8.5
Interior	2.4	1.4	0.1	2.2	6.1	2.0	1.3	0.0	9.5
Justice	6.6	0.9	1.7	0.0	9.3	4.3	5.8	0.4	19.7
NASA	0.2	0.5	0.0	0.0	0.7	5.7	3.1	0.2	9.9
Postal Service	11.7	5.2	0.0	0.7	17.6	17.3	8.5	0.0	43.4
Transportation	0.7	5.6	3.6	0.1	10.0	5.9	1.8	0.1	17.8
Veterans Affairs	0.6	3.3	0.0	0.0	4.0	10.0	12.2	1.5	27.7
Other ^b	2.8	2.5	1.1	0.1	6.5	10.5	3.9	0.8	21.7
(P) FY 2002 total	42.5	177.4	414.3	7.6	641.9	188.6	130.8	37.5	998.8
Agriculture	2.3	0.3	0.0	0.2	2.9	1.8	1.9	0.6	7.1
Defense	13.6	153.6	407.7	4.1	579.0	102.2	78.0	28.0	787.2
Energy	0.9	1.7	0.0	0.2	3.0	16.7	7.6	3.4	30.7
GSA	0.1	0.1	0.0	0.0	0.2	9.8	6.1	1.4	17.5
Health and Human Services	0.6	0.6	0.0	0.2	1.4	3.1	3.7	0.4	8.5
Interior	2.4	1.3	0.1	2.4	6.2	1.9	1.5	0.1	9.7
Justice	6.6	1.0	1.7	0.0	9.3	4.3	5.2	0.6	19.4
NASA	0.2	0.5	0.0	0.0	0.8	5.6	3.0	0.2	9.7
Postal Service	11.7	5.0	0.0	0.2	16.9	17.7	7.0	0.4	42.0
Transportation	0.7	5.6	3.6	0.1	9.9	5.0	1.0	0.2	16.1
Veterans Affairs	0.6	3.3	0.0	0.0	4.0	10.0	12.2	1.5	27.7

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TABLE 4-19: U.S. Government Energy Consumption by Agency and Source (Trillion Btu)—continued

KEY: Btu = British thermal unit; FY = fiscal year; GSA = General Services Administration; NASA = National Aeronautics and Space Administration; P = preliminary.

- a Includes U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, U.S. Information Agency, U.S. Department of Housing and Urban Development, Federal Communications Commission, Office of Personnel Management, U.S. Department of State, Federal Emergency Management Agency, U.S. Department of the Treasury, National Archives and Records Administration, Nuclear Regulatory Commission, Railroad Retirement Board, Federal Trade Commission, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, and Environmental Protection Agency.
- b Includes National Archives and Records Administration, U.S. Department of Commerce, U.S. Department of Labor, U.S. Department of State, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, Social Security Administration, International Broadcasting Bureau, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, Office of Personnel Management, U.S. Department of Housing and Urban Development, U.S. Department of the Treasury, Railroad Retirement Board, Tennessee Valley Authority, Federal Emergency Management Agency, Central Intelligence Agency, and National Science Foundation.
- c Includes liquefied petroleum gases.
- d Includes purchased steam, chilled water from district heating and cooling systems, and any other energy type, such as renewable energy.

NOTES

Numbers may not add to totals due to rounding.

These data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. government energy use for electricity generation and uranium enrichment is excluded. Other energy used by U.S. agencies that produce electricity or enriched uranium is included. The U.S. government's fiscal year runs from October 1 through September 30.

This table uses a conversion factor for electricity of 3,600,000 joules per kilowatt-hour, and a conversion factor for purchased steam of 2,326 kilojoules per kilogram.

SOURCE

U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2002*, table 1.13. Internet site <http://www.eia.doe.gov/emeu/aer/> as of October 2003.

Section C
Transportation Energy
Intensity and Fuel Efficiency

TABLE 4-20: Energy Intensity of Passenger Modes (Btu per passenger-mile)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air, certificated carrier												
Domestic operations	8,633	10,118	10,185	7,746	5,742	5,047	4,932	4,382	3,883	3,890	3,596	3,476
International operations	9,199	10,292	10,986	8,465	4,339	5,103	4,546	4,173	3,833	3,965	3,920	3,894
Highway ^a												
Passenger car	4,495	4,455	4,841	4,743	4,348	4,269	3,811	3,721	3,589 (R)	3,597	3,600	3,553
Other 2-axle 4-tire vehicle	N	N	6,810	6,571	5,709	4,971	4,539	4,538	4,509 (R)	3,985	4,121	4,068
Motorcycle	b	b	2,500	2,354	2,125	1,896	2,227	2,274	2,273 (R)	2,049	1,969	1,969
Transit motor bus	N	N	N	N	2,742	3,389	3,723	4,155	4,147	3,697	4,415	U
Amtrak	N	N	N	2,383	2,148	2,089	2,066	1,838	2,134	2,100	U	U

KEY: Btu = British thermal unit; N = data do not exist; P = preliminary; R = revised; U = data are not available.

^a For 1995 and subsequent years, highway passenger-miles were taken directly from *Highway Statistics* rather than derived from vehicle-miles and average occupancy, as is the case for 1960-1994.

^b Included in passenger car.

NOTE

To calculate total Btu, multiply fuel consumed (see tables 4-21, 4-22, 4-24, 4-25) by 135,000 Btu/gallon for air carrier; 125,000 Btu/gallon for passenger car, other 2-axle 4-tire vehicle, and motorcycle; 138,700 Btu/gallon for transit motor bus and Amtrak diesel consumption; and 3,412 Btu/Kwh for Amtrak electric consumption.

SOURCES

Air:

Certificated air carriers:

Passenger-miles:

Air Transport Association, Internet site <http://www.air-transport.org/public/industry> as of Aug. 30, 2004.

Fuel consumed:

U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oai/fuel/early.html> as of Aug. 30, 2004.

Highway:

Passenger car:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

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TABLE 4-20: Energy Intensity of Passenger Modes (Btu per passenger-mile)—continued*Other 2-axle 4-tire vehicle:*

1970-90: Ibid., *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:

1970-85: Ibid., *Highway Statistics Summary to 1985*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
1990-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit motor bus:

American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: February 2003), tables 6 and 33.

Amtrak:

Amtrak, State and Local Affairs Department, personal communication.

TABLE 4-21: Energy Intensity of Certificated Air Carriers, All Services^a

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Aircraft-miles (millions)												
Domestic operations	858	1,134	2,068	1,948	2,523	3,046	3,963	4,629	5,664	5,548	(R) 5,616	6,085
International operations	182	284	475	377	401	415	760	998	1,282	1,266	1,225	1,246
Available seat-miles (millions)												
Domestic operations	52,220	94,787	213,160	241,282	346,028	445,826	563,065	603,917	727,033	695,200	(R) 676,949	689,170
International operations	13,347	29,533	51,960	61,724	86,507	101,963	170,310	203,160	254,048	235,311	215,606	204,732
Passenger-miles (millions)												
Domestic operations	30,557	51,887	104,147	131,728	200,289	270,584	340,231	394,708	516,129	486,506	(R) 482,310	503,339
International operations	8,306	16,789	27,563	31,082	54,363	65,819	117,695	145,948	192,798	178,343	(R) 171,860	167,662
Fuel consumed (million gallons)												
Domestic operations	1,954	3,889	7,857	7,558	8,519	10,115	12,429	12,812	14,845	14,017	12,848	12,959
International operations	566	1,280	2,243	1,949	1,747	2,488	3,963	4,511	5,475	5,237	4,991	4,836
Seats per aircraft												
Domestic operations	60.9	83.6	103.1	123.9	137.1	146.4	142.1	130.5	128.4	125.3	(R) 120.5	113.3
International operations	73.3	104.0	109.4	163.7	215.7	245.7	224.1	203.6	198.2	185.9	(R) 176.1	164.3
Seat-miles per gallon												
Domestic operations	27	24	27	32	41	44	45	47	49	50	53	53
International operations	24	23	23	32	50	41	43	45	46	45	43	42
Energy intensity (Btu/passenger-mile) ^b												
Domestic operations	8,633	10,118	10,185	7,746	5,742	5,047	4,932	4,382	3,883	3,890	(R) 3,596	3,476
International operations	9,199	10,292	10,986	8,465	4,339	5,103	4,546	4,173	3,833	3,965	(R) 3,920	3,894
Load factor (percent)												
Domestic operations	58.5	54.7	48.9	54.6	58.0	60.7	60.4	65.4	71.0	69.1	70.3	72.4
International operations	62.2	56.8	53.0	50.4	62.8	64.6	69.1	71.8	75.9	72.8	76.6	76.5

KEY: Btu = British thermal unit; R = revised.
^a U.S. owned carriers only. Operation of foreign-owned carriers in or out of the United States not included.

^b Calculation based on unrounded figures not shown here.

Continued next page

TABLE 4-21: Energy Intensity of Certificated Air Carriers, All Services^a—Continued**NOTES**

Aircraft-miles includes all four air-carrier groups (majors, nationals, large regionals, and medium regionals), scheduled and charter, passenger, and all-cargo. Fuel consumed includes majors, nationals, and large regionals, scheduled and charter, passenger, and all-cargo.

Passenger-miles includes all four air-carrier groups, scheduled and charter, passenger service only.

International operations include operations outside the United States, including those between the United States and foreign countries and the United States and its territories or possessions.

Heat equivalent factor used for Btu conversion is 135,000 Btu/gallon.

SOURCES

Aircraft-miles, available seat-miles, passenger-miles, and load factor:

1960-80: Air Transport Association, Internet site <http://www.air-transport.org/public/industry>, as of July 31, 2002.

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington DC: Annual December issues).

Fuel consumed:

1960-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oat/fuel/fuelearly.html> as of July 21, 2004.

Seats per aircraft, seat-miles per gallon, and energy intensiveness:

Derived by calculation.

TABLE 4-22: Energy Intensity of Passenger Cars, Other 2-Axle 4-Tire Vehicles, and Motorcycles—continued

Other 2-axle 4-tire vehicle includes vans, pickup trucks, and sport utility vehicles. In previous years, some minivans and sport utility vehicles were included in the passenger car category. Single-unit 2-axle 6-tire or more trucks are on a single frame with at least 2 axles and 6 tires. Pre-1993 data have been reassigned to the closest available category.

Vehicle-miles and passenger-miles data for 1960 through 1999 have been rounded to the nearest billion miles.

SOURCES:

Vehicle-miles:

Passenger car:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Other 2-axle 4-tire vehicle:

1960-90: *Ibid.*, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:

1970-90: *Ibid.*, *Highway Statistics, Summary to 1985* (Washington, DC: 1986), table VM-201A.

For 1970-90, the unrevised motorcycle vehicle-miles are subtracted from the combined passenger car and motorcycle vehicle-miles from VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Passenger-miles:

1960-95: Vehicle-miles multiplied by vehicle occupancy rates.

2000-03: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Fuel consumed:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

For 1970-90, the unrevised motorcycle fuel consumed is subtracted from the combined passenger car and motorcycle fuel consumed from VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-23: Average Fuel Efficiency of U.S. Passenger Cars and Light Trucks

	1980	1985	1990	1995	2000	2001	2002	2003	2004
Average U.S. passenger car fuel efficiency (mpg) (calendar year)									
Passenger car ^a	16.0	17.5	20.3	21.1	21.9	22.1	22.0	22.3	U
Other 2-axle 4-tire vehicle	12.2	14.3	16.1	17.3	17.4	17.6	17.5	17.7	U
New vehicle fuel efficiency (mpg) ^b (model year)									
Light-duty vehicle									
Passenger car	24.3	27.6	28.0	28.6	28.5	(R) 28.8	29.0	29.4	29.3
Domestic	22.6	26.3	26.9	27.7	28.7	(R) 28.7	29.1	29	29.3
Imported	29.6	31.5	29.9	30.3	28.3	(R) 29.0	28.8	29.8	29.3
Light truck (<8,500 lbs GVWR) ^c	18.5	20.7	20.8	20.5	21.3	20.9	21.4	21.6	21.5
CAFE standards (mpg) ^b (model year)									
Passenger car	20.0	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
Light truck	^d 16.0/14.0	19.5	20.0	20.6	20.7	20.7	20.7	20.7	20.7

KEY: CAFE = Corporate Average Fuel Economy; GVWR = gross vehicle weight rating; mpg = miles per gallon; R = revised.

^a From 1980 to 1990, passenger car fuel efficiency includes motorcycles.

^b Assumes 55% city and 45% highway-miles. The source calculated average miles per gallon for light-duty vehicles by taking the reciprocal of the sales-weighted average of gallons per mile. This is called the harmonic average.

^c Beginning with FY 1999, the total light truck fleet ceased to be categorized by either domestic or import fleets.

^d 2 Wheel Drive/4 Wheel Drive. No combined figure available for this year.

NOTE

The fuel efficiency figures for light duty vehicles represent the sales-weighted harmonic average of the combined passenger car and light truck fuel economics.

SOURCES

Average U.S. passenger car fuel efficiency:

1980-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A (Revised data obtained from Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of Aug. 2, 2001).
1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

New vehicle fuel efficiency (based on model year production) and CAFE standards:

1980-2004: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Automotive Fuel Economy Program, Annual Update Calendar Year 2002*, table II-6, Internet site www.nhtsa.dot.gov/cars/rules/CAFE/FuelEconUpdates/2002/index.htm as of Oct. 4, 2004.

CAFE standards:

1980-2004: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Summary of Fuel Economy Performance* (Washington, DC: 2004), Internet site www.nhtsa.dot.gov/cars/rules/CAFE/docs/Summary-Fuel-Economy-Pref-2004.pdf as of Dec. 14, 2004.

TABLE 4-24: Energy Intensity of Transit Motor Buses

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	(P) 2002
Vehicle-miles (millions)	1,576	1,528	1,409	1,526	1,677	1,863	2,130	2,184	2,221	2,245	2,175	2,276	2,315	2,377	2,411
Passenger-miles (millions)	N	N	N	N	21,800	21,200	20,981	18,818	19,096	19,604	20,360	21,205	21,241	22,022	21,842
Fuel consumed (million gallons diesel)	208	248	271	365	431	518	563	564	578	598	607	618	635	587	559
Energy intensity (Btu / passenger-mile)	N	N	N	N	2,742	3,389	3,723	4,155	4,196	4,228	4,133	4,044	4,147	3,697	4,415

KEY: Btu = British thermal unit; N = data do not exist; P = preliminary.

NOTES

Heat equivalent factor used for Btu conversion is 138,700 Btu/gallon.

SOURCE

American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: February 2004), tables 38 and 70, and similar tables.

TABLE 4-25: Energy Intensity of Class I Railroad^a Freight Service

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Revenue freight ton-miles (millions)	572,309	697,878	764,809	754,252	918,958	876,984	1,033,969	1,305,688	1,465,960	1,495,472	1,507,011	1,551,438
Car-miles (millions)	28,170	29,336	29,890	27,656	29,277	24,920	26,159	30,383	34,590	34,243	34,680	35,555
Tons per car load	44	49	55	61	67	68	67	65	63	64	63	62
Fuel consumed (million gallons)	3,463	3,592	3,545	3,657	3,904	3,110	3,115	3,480	3,700	3,710	3,730	3826
Energy intensity (Btu/revenue freight ton-mile)	839	714	643	672	589	492	418	370	350	344	343	342
Energy intensity (Btu/car-mile)	17,051	16,983	16,450	18,341	18,495	17,310	16,516	15,886	14,836	15,027	14,918	14,925

KEY: Btu = British thermal unit.

^a Class I railroads are those that have operating revenues of \$272 million or more in 2003.

NOTE

The heat equivalent factor used for Btu conversion is 138,700 Btu/gallon.

SOURCE

Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), pp. 34, 37, 40, and similar tables in earlier editions.

TABLE 4-26: Energy Intensity of Amtrak Services

	1975	1980	1985	1990	1995	2000	2001	2002	2003
Revenue passenger-miles (millions)	3,931	4,503	4,785	6,057	5,545	5,498	5,559	5,468	5,680
Locomotive fuel consumed									
Total fuel consumed (billion Btu) ^a	9,367	9,673	9,995	12,512	10,191	11,735	11,674	U	U
Electric (millions of kWh) ^a	180	254	295	330	304	350	377	U	U
Diesel (million gallons)	63	64	65	82	66	76	75	U	U
Energy intensity (Btu/revenue passenger-mile) ^a	2,383	2,148	2,089	2,066	1,838	2,134	2,100	U	U

KEY: Btu = British thermal unit; kWh = kilowatt hour; U = data are not available.

^a Does not include electric power generation and distribution losses, which, if included, would triple the electric conversion factor given below and increase the numbers in this row by about 20 percent.

NOTE

The heat equivalent factors used in Btu conversion are: diesel = 138,700 Btu/gallon; electric = 3,412 Btu/kWh.

SOURCES

Revenue passenger-miles:

Amtrak, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues).

Locomotive fuel consumed:

1975-2001: Ibid., State and Local Affairs Department, personal communication.

TABLE 4-27: Annual Wasted Fuel Due to Highway Congestion

Population group	Urban area	Gallons wasted (millions)											Percent change				
		1982	1985	1990	1995	1997	1998	1999	2000	2001	2002	Short-term 1997-2002		Long-term 1982-2002			
												Percent	Rank	Percent	Rank		
Medium	Akron, OH	1	1	2	4	8	8	8	8	7	6			-25	81	500	40
Medium	Albany-Schenectady, NY	(R) 2	(R) 1	(R) 3	(R) 3	(R) 3	4	5	5	(R) 5	5			67	11	150	68
Medium	Albuquerque, NM	2	(R) 3	6	(R) 15	20	(R) 22	23	17	(R) 16	14			-30	83	600	34
Small	Allentown-Bethlehem, PA-NJ	2	3	5	6	7	8	6	7	7	7			0	65	250	59
Small	Anchorage, AK	(R) 1	(R) 1	(R) 1	(R) 1	(R) 1	(R) 1	(R) 1	(R) 1	(R) 1	1			0	65	0	73
Large	Atlanta, GA	16	28	42	111	(R) 137	(R) 155	144	(R) 157	(R) 145	169			23	47	956	19
Medium	Austin, TX	3	7	(R) 9	(R) 18	(R) 28	25	30	(R) 33	(R) 36	37			32	37	1,133	10
Small	Bakersfield, CA	0	0	(R) 1	(R) 2	2	2	2	3	3	3			50	20	NM	NM
Large	Baltimore, MD	(R) 10	18	(R) 50	(R) 62	69	64	67	(R) 70	(R) 79	100			45	28	900	21
Small	Beaumont, TX	0	(R) 1	(R) 1	(R) 1	(R) 1	1	1	1	1	2			100	3	NM	NM
Medium	Birmingham, AL	2	(R) 4	5	10	(R) 12	(R) 14	15	15	(R) 15	16			33	34	700	31
Very large	Boston, MA-NH-RI	40	(R) 55	90	111	(R) 123	123	130	(R) 128	(R) 130	130			6	60	225	62
Small	Boulder, CO	0	0	0	0	(R) 1	(R) 1	(R) 1	(R) 1	(R) 1	1			0	65	NM	NM
Medium	Bridgeport-Stamford, CT-NY	3	5	10	13	16	18	22	22	24	25			56	16	733	28
Small	Brownsville, TX	0	0	0	0	0	0	(R) 1	(R) 1	(R) 1	1			NM	NM	NM	NM
Large	Buffalo, NY	2	2	(R) 4	(R) 4	5	5	7	9	9	9			80	8	350	49
Small	Cape Coral, FL	0	(R) 1	(R) 1	2	3	3	(R) 3	(R) 3	(R) 3	4			33	34	NM	NM
Small	Charleston-North Charleston, SC	2	(R) 3	6	6	6	(R) 8	8	9	(R) 8	9			50	20	350	49
Medium	Charlotte, NC-SC	2	(R) 4	(R) 8	12	17	18	20	(R) 23	(R) 23	29			71	10	1,350	6
Very large	Chicago, IL-IN	73	(R) 124	208	244	(R) 300	(R) 328	(R) 324	(R) 312	(R) 323	365			22	51	400	47
Large	Cincinnati, OH-KY-IN	(R) 4	6	(R) 14	26	38	39	(R) 41	(R) 43	(R) 44	49			29	41	1,125	11
Large	Cleveland, OH	2	(R) 3	9	27	38	(R) 31	31	(R) 27	24	21			-45	84	950	20
Small	Colorado Springs, CO	0	(R) 1	(R) 1	4	(R) 6	7	8	9	(R) 10	9			50	20	NM	NM
Small	Columbia, SC	1	1	2	2	2	2	2	3	3	3			50	20	200	64
Large	Columbus, OH	(R) 3	4	13	(R) 25	33	33	36	31	(R) 29	29			-12	74	867	24

TABLE 4-27: Annual Wasted Fuel Due to Highway Congestion—Continued

Population group	Urban area	Gallons wasted (millions)															Percent change			
		1982	1985	1990	1995	1997	1998	1999	2000	2001	2002	Short-term 1997-2002		Long-term 1982-2002						
												Percent	Rank	Percent	Rank					
Small	Corpus Christi, TX	(R) 1	(R) 1	(R) 1	(R) 1	1	1	(R) 2	1	2	2	100	3	100	71					
Very large	Dallas-Fort Worth-Arlington, TX	24	(R) 58	(R) 94	(R) 138	(R) 148	(R) 168	(R) 235	(R) 207	(R) 211	239	61	14	896	23					
Medium	Dayton, OH	1	2	3	8	11	11	13	11	10	8	-27	82	700	31					
Large	Denver-Aurora, CO	(R) 15	(R) 21	31	64	84	92	(R) 95	(R) 103	(R) 112	83	-1	72	453	45					
Very large	Detroit, MI	40	46	127	168	174	176	(R) 170	(R) 159	(R) 170	176	1	64	340	52					
Medium	El Paso, TX-NM	(R) 1	(R) 1	2	5	5	6	(R) 8	10	(R) 12	11	120	2	1,000	13					
Small	Eugene, OR	0	0	(R) 1	(R) 1	(R) 1	(R) 1	2	2	2	2	100	3	NM	NM					
Medium	Fresno, CA	2	2	(R) 5	(R) 4	6	7	8	(R) 9	(R) 7	7	17	54	250	59					
Medium	Grand Rapids, MI	1	1	3	5	7	9	9	9	9	9	29	42	800	26					
Medium	Hartford, CT	(R) 2	(R) 3	(R) 5	(R) 8	(R) 10	(R) 11	(R) 12	(R) 11	(R) 13	14	40	32	600	34					
Medium	Honolulu, HI	4	6	14	(R) 16	14	(R) 14	15	12	(R) 13	12	-14	75	200	64					
Very large	Houston, TX	78	(R) 131	(R) 115	125	(R) 170	(R) 162	(R) 196	(R) 178	(R) 188	199	17	53	155	67					
Large	Indianapolis, IN	2	3	6	(R) 33	41	33	32	35	(R) 37	35	-15	77	1,650	3					
Medium	Jacksonville, FL	(R) 3	(R) 4	(R) 12	24	25	21	21	(R) 21	23	25	0	65	733	28					
Large	Kansas City, MO-KS	(R) 2	3	7	(R) 14	21	23	27	(R) 22	(R) 22	22	5	61	1,000	13					
Small	Laredo, TX	0	0	0	0	(R) 1	(R) 1	(R) 1	(R) 1	(R) 1	1	0	65	NM	NM					
Large	Las Vegas, NV	2	4	(R) 14	(R) 20	(R) 27	29	31	(R) 33	32	33	22	48	1,550	5					
Small	Little Rock, AR	1	1	1	2	2	3	4	3	4	3	50	20	200	64					
Very large	Los Angeles-Long Beach-Santa Ana, CA	309	(R) 411	(R) 912	(R) 903	971	1,036	(R) 1,022	(R) 955	(R) 899	931	-4	73	201	63					
Medium	Louisville, KY-IN	5	6	7	(R) 18	(R) 27	(R) 28	(R) 30	(R) 29	26	29	7	59	480	43					
Medium	Memphis, TN-MS-AR	2	2	(R) 8	17	21	21	(R) 21	(R) 23	(R) 25	27	29	42	1,250	7					
Very Large	Miami, FL	(R) 26	(R) 35	(R) 82	(R) 135	(R) 154	(R) 157	(R) 178	(R) 195	(R) 207	221	44	29	750	27					
Large	Milwaukee, WI	5	7	12	24	26	29	32	(R) 32	(R) 31	29	12	58	480	43					
Large	Minneapolis-St. Paul, MN	(R) 4	(R) 11	29	(R) 64	90	94	(R) 105	(R) 86	(R) 95	93	3	63	2,225	2					
Medium	Nashville-Davidson, TN	(R) 5	6	9	15	(R) 20	18	22	(R) 23	(R) 23	26	30	39	420	46					

Continued next page

TABLE 4-27: Annual Wasted Fuel Due to Highway Congestion—Continued

Population group	Urban area	Gallons wasted (millions)											Percent change		
		1982	1985	1990	1995	1997	1998	1999	2000	2001	2002	Short-term 1997-2002		Long-term 1982-2002	
												Percent	Rank	Percent	Rank
Medium	New Haven, CT	1	2	3	4	6	8	10	11	13	11	83	7	1,000	13
Large	New Orleans, LA	7	9	12	20	(R) 19	(R) 19	20	(R) 18	(R) 18	16	-16	78	129	70
Very large	New York-Newark, NY-NJ-CT	(R) 159	(R) 178	(R) 475	484	(R) 530	(R) 562	(R) 624	(R) 579	(R) 613	646	22	50	306	54
Large	Oklahoma City, OK	(R) 2	(R) 3	3	7	(R) 11	(R) 11	14	11	12	14	27	44	600	34
Medium	Omaha, NE-IA	1	(R) 3	(R) 4	(R) 7	8	10	11	(R) 10	12	13	63	13	1,200	9
Large	Orlando, FL	(R) 5	(R) 10	16	32	(R) 41	47	(R) 46	(R) 56	(R) 60	55	34	33	1,000	13
Medium	Oxnard-Ventura, CA	2	3	7	10	9	11	13	14	16	16	78	9	700	31
Small	Pensacola, FL-AL	0	(R) 1	2	(R) 3	4	4	4	5	4	5	25	45	NM	NM
Very large	Philadelphia, PA-NJ-DE-MD	(R) 39	(R) 42	(R) 70	(R) 105	(R) 113	(R) 147	(R) 160	(R) 139	(R) 161	172	52	19	341	51
Large	Phoenix, AZ	17	(R) 21	(R) 44	(R) 59	87	82	105	(R) 105	(R) 115	115	32	36	576	39
Large	Pittsburgh, PA	(R) 10	(R) 12	18	(R) 20	21	(R) 23	(R) 25	(R) 19	(R) 20	18	-14	75	80	72
Large	Portland, OR-WA	5	6	17	(R) 37	(R) 47	49	(R) 52	(R) 51	(R) 54	54	15	57	980	18
Medium	Providence, RI-MA	(R) 3	(R) 5	(R) 11	16	(R) 30	(R) 20	(R) 25	(R) 23	(R) 26	35	17	54	1,067	12
Medium	Raleigh-Durham, NC	2	3	8	12	13	14	13	16	21	19	46	27	850	25
Medium	Richmond, VA	(R) 2	2	5	(R) 15	(R) 15	(R) 15	12	(R) 10	(R) 10	12	-20	80	500	40
Large	Riverside-San Bernardino, CA	6	12	(R) 41	50	57	(R) 67	65	(R) 65	(R) 71	80	40	31	1,233	8
Medium	Rochester, NY	0	(R) 1	(R) 2	3	4	3	4	4	4	4	0	65	NM	NM
Large	Sacramento, CA	(R) 7	10	27	30	34	36	38	(R) 41	(R) 40	48	41	30	586	38
Small	Salem, OR	0	0	(R) 1	(R) 1	2	2	2	2	2	3	50	20	NM	NM
Medium	Salt Lake City, UT	1	2	(R) 5	(R) 14	(R) 11	12	(R) 14	(R) 15	(R) 22	26	136	1	2,500	1
Large	San Antonio, TX	(R) 5	(R) 11	(R) 11	20	22	28	(R) 40	(R) 45	(R) 40	41	86	6	720	30
Large	San Diego, CA	(R) 11	22	65	63	78	75	(R) 93	(R) 92	(R) 101	119	53	18	982	17
Very large	San Francisco-Oakland, CA	67	130	(R) 219	198	(R) 187	(R) 214	(R) 224	(R) 230	(R) 236	245	31	38	266	58
Large	San Jose, CA	(R) 23	45	(R) 94	67	(R) 63	72	83	(R) 83	(R) 85	77	22	48	235	61
Medium	Sarasota-Bradenton, FL	2	3	3	4	5	6	7	7	8	8	60	15	300	56

TABLE 4-27: Annual Wasted Fuel Due to Highway Congestion—Continued

Population group	Urban area	Gallons wasted (millions)													Percent change			
		1982	1985	1990	1995	1997	1998	1999	2000	2001	2002	Short-term 1997-2002		Long-term 1982-2002				
												Percent	Rank	Percent	Rank			
Large	Seattle, WA	(R) 16	31	(R) 84	(R) 117	(R) 131	(R) 132	(R) 140	(R) 111	(R) 112	110	-16	79	588	37			
Small	Spokane, WA	0	(R) 1	(R) 1	2	(R) 3	3	3	3	(R) 3	3	0	65	NM	NM			
Medium	Springfield, MA-CT	2	3	3	3	4	4	4	5	4	5	25	45	150	68			
Large	St. Louis, MO-IL	(R) 18	25	(R) 31	(R) 60	(R) 68	(R) 66	(R) 71	(R) 74	(R) 66	71	4	62	294	57			
Large	Tampa-St Petersburg, FL	17	(R) 22	37	(R) 62	(R) 60	(R) 59	63	(R) 59	(R) 67	69	15	56	306	55			
Medium	Toledo, OH-MI	1	1	1	3	4	5	5	6	6	6	50	20	500	40			
Medium	Tucson, AZ	(R) 1	2	4	7	11	12	12	(R) 11	(R) 14	17	55	17	1,600	4			
Medium	Tulsa, OK	(R) 1	2	(R) 3	(R) 4	6	7	(R) 7	11	(R) 10	10	67	11	900	21			
Large	Virginia Beach, VA	9	14	20	27	(R) 30	(R) 34	35	(R) 26	(R) 31	39	30	39	333	53			
Very large	Washington, DC-MD-VA	(R) 45	67	110	158	172	(R) 198	206	(R) 188	(R) 198	204	19	52	353	48			
NA	85-Area Average	(R) 14	(R) 21	(R) 41	(R) 50	(R) 57	(R) 60	(R) 65	(R) 62	(R) 63	67	18	NA	379	NA			
NA	Very Large Area Average	(R) 82	(R) 116	(R) 228	(R) 252	(R) 276	(R) 297	(R) 315	(R) 297	(R) 303	321	16	NA	291	NA			
NA	Large Area Average	(R) 8	13	28	42	51	53	(R) 57	(R) 56	(R) 57	59	16	NA	638	NA			
NA	Medium Area Average	2	3	6	(R) 10	(R) 13	(R) 13	(R) 14	(R) 14	(R) 15	16	23	NA	700	NA			
NA	Small Area Average	(R) 1	(R) 1	1	(R) 2	2	(R) 3	3	3	3	3	50	NA	200	NA			

KEY: NA = not applicable; NM = not meaningful; R = revised.

Very large urban areas - over 3 million population.

Large urban areas - over 1 million and less than 3 million population.

Medium urban areas - over 500,000 and less than 1 million population.

Small urban areas - less than 500,000 population.

NOTES

"Wasted" fuel is the difference between the fuel consumed under estimated existing conditions and the fuel consumed if all traffic was moving at free-flow conditions. Calculations are made for peak period speeds and for free-flow speeds on both the freeway and principal arterial systems.

For a more detailed description of the formulas used, see the source document.

The urban areas included are those containing over 500,000 people and several smaller places mostly chosen by previous sponsors of the Texas Transportation Institute study on mobility.

Percent changes for area averages were calculated before rounding.

Rank is based on the calculated percent change with the highest number corresponding to a rank of 1.

SOURCE

1998-2002: Texas Transportation Institute, *The 2004 Annual Urban Mobility Report* (College Station, TX: 2004), Internet site <http://mobility.tamu.edu> as of Sept. 13, 2004.

TABLE 4-28: Annual Wasted Fuel Per Person Due to Highway Congestion

Population group	Urban area	Gallons wasted														Percent change	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002	Long-term 1982-2002			
		Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank			
Medium	Akron, OH	1	2	4	8	11	14	15	15	14	13	12	-14	75	1,100	7	
Medium	Albany-Schenectady, NY	(R) 5	(R) 2	(R) 5	(R) 6	(R) 7	(R) 7	8	(R) 9	(R) 9	(R) 10	10	43	16	100	80	
Medium	Albuquerque, NM	(R) 4	(R) 7	(R) 13	(R) 27	(R) 32	(R) 36	(R) 38	(R) 40	29	(R) 28	24	-33	83	500	29	
Small	Allentown-Bethlehem, PA-NJ	5	6	10	11	16	12	14	11	12	11	12	0	64	140	75	
Small	Anchorage, AK	(R) 3	(R) 4	(R) 4	(R) 2	(R) 2	(R) 2	(R) 3	(R) 3	(R) 3	(R) 4	4	100	4	33	85	
Large	Atlanta, GA	10	(R) 18	20	45	(R) 50	53	(R) 55	50	(R) 53	(R) 48	56	6	59	460	39	
Medium	Austin, TX	(R) 8	(R) 14	(R) 16	(R) 29	(R) 34	(R) 40	(R) 34	(R) 41	(R) 43	(R) 44	44	10	53	450	42	
Small	Bakersfield, CA	(R) 1	(R) 1	(R) 4	(R) 4	5	5	5	5	(R) 6	(R) 6	6	20	40	500	29	
Large	Baltimore, MD	6	10	25	29	30	32	30	31	(R) 32	(R) 36	44	38	20	633	18	
Small	Beaumont, TX	(R) 3	(R) 5	(R) 4	(R) 5	(R) 6	(R) 6	(R) 9	(R) 10	(R) 10	(R) 10	13	117	2	333	54	
Medium	Birmingham, AL	(R) 4	(R) 6	8	(R) 16	18	(R) 19	(R) 22	(R) 22	(R) 22	(R) 23	24	26	33	500	29	
Very large	Boston, MA-NH-RI	14	20	(R) 31	37	38	(R) 41	41	43	(R) 42	(R) 43	43	5	61	207	69	
Small	Boulder, CO	(R) 1	(R) 2	(R) 2	(R) 4	(R) 4	(R) 6	(R) 6	(R) 6	(R) 7	(R) 7	7	17	45	600	20	
Medium	Bridgeport-Stamford, CT-NY	4	7	14	18	17	21	24	28	28	29	29	38	19	625	19	
Small	Brownsville, TX	(R) 1	(R) 1	(R) 2	(R) 3	(R) 3	(R) 3	(R) 3	(R) 4	(R) 4	(R) 4	4	33	24	300	55	
Large	Buffalo, NY	2	2	(R) 4	(R) 4	(R) 4	(R) 4	5	6	8	8	8	100	4	300	55	
Small	Cape Coral, FL	(R) 2	(R) 3	(R) 5	8	(R) 9	(R) 10	(R) 10	(R) 10	(R) 10	(R) 10	11	10	53	450	42	
Small	Charleston-North Charleston, SC	(R) 7	(R) 9	(R) 16	14	(R) 13	(R) 15	(R) 17	(R) 19	(R) 19	(R) 18	19	27	32	171	72	
Medium	Charlotte, NC-SC	(R) 7	(R) 12	(R) 18	(R) 21	23	29	(R) 30	32	(R) 35	(R) 35	39	34	23	457	41	
Very large	Chicago, IL-IN	10	17	28	(R) 31	40	38	41	40	(R) 39	(R) 40	45	18	42	350	52	
Large	Cincinnati, OH-KY-IN	3	(R) 6	13	21	(R) 24	30	(R) 30	(R) 32	(R) 33	(R) 34	37	23	37	1,133	6	
Large	Cleveland, OH	1	1	5	15	17	(R) 21	16	17	(R) 15	13	11	-48	85	1,000	10	
Small	Colorado Springs, CO	(R) 1	(R) 3	(R) 3	(R) 9	(R) 10	(R) 14	16	18	19	(R) 20	19	36	22	1,800	1	
Small	Columbia, SC	2	4	5	5	5	5	5	6	8	7	7	40	17	250	64	
Large	Columbus, OH	(R) 3	(R) 4	15	(R) 25	(R) 28	32	32	(R) 34	(R) 29	(R) 28	27	-16	77	800	12	

TABLE 4-28: Annual Wasted Fuel Per Person Due to Highway Congestion—continued

Population group	Urban area	Gallons wasted														Percent change	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002	Long-term 1982-2002			
		Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank			
Small	Corpus Christi, TX	(R) 3	(R) 3	(R) 4	(R) 4	(R) 4	(R) 4	(R) 4	(R) 5	(R) 4	6	6	50	100			
Very large	Dallas-Fort Worth-Arlington, TX	10	21	(R) 29	(R) 39	(R) 38	(R) 40	(R) 44	(R) 60	(R) 52	(R) 52	58	45	480			
Medium	Dayton, OH	2	3	6	14	17	19	19	21	19	17	14	-26	600			
Large	Denver-Aurora, CO	(R) 11	(R) 14	(R) 19	37	42	47	50	(R) 51	(R) 54	(R) 55	41	-13	273			
Very large	Detroit, MI	(R) 11	12	32	42	(R) 41	43	44	(R) 42	(R) 40	(R) 42	44	2	300			
Medium	El Paso, TX-NM	(R) 2	(R) 2	4	8	(R) 6	8	9	(R) 13	15	(R) 18	17	113	750			
Small	Eugene, OR	(R) 1	(R) 2	(R) 3	(R) 4	(R) 4	(R) 5	(R) 6	(R) 8	(R) 10	(R) 8	8	60	700			
Medium	Fresno, CA	(R) 5	5	(R) 11	(R) 9	9	(R) 12	13	15	(R) 16	(R) 13	13	8	160			
Medium	Grand Rapids, MI	3	3	7	11	13	14	18	18	16	16	18	29	500			
Medium	Hartford, CT	(R) 3	(R) 4	(R) 6	(R) 9	(R) 10	(R) 12	(R) 13	(R) 14	(R) 14	(R) 16	16	33	433			
Medium	Honolulu, HI	7	10	21	(R) 22	(R) 22	(R) 19	21	(R) 21	17	(R) 18	16	-16	129			
Very large	Houston, TX	33	(R) 54	(R) 40	(R) 41	44	(R) 53	(R) 49	(R) 58	(R) 51	(R) 52	53	0	61			
Large	Indianapolis, IN	(R) 3	3	6	(R) 33	(R) 37	40	33	(R) 32	34	(R) 36	34	-15	1,033			
Medium	Jacksonville, FL	(R) 5	(R) 7	(R) 16	30	29	30	25	25	25	26	28	-7	460			
Large	Kansas City, MO-KS	1	3	6	11	(R) 14	15	(R) 16	(R) 20	(R) 16	(R) 15	15	0	1,400			
Small	Laredo, TX	(R) 1	(R) 1	(R) 1	(R) 3	(R) 3	(R) 4	(R) 5	(R) 5	(R) 5	(R) 6	6	50	500			
Large	Las Vegas, NV	4	8	19	(R) 21	23	(R) 26	26	27	(R) 27	(R) 24	24	-8	500			
Small	Little Rock, AR	2	2	3	6	6	8	8	11	9	11	9	13	350			
Very large	Los Angeles-Long Beach-Santa Ana, CA	31	39	80	75	(R) 81	79	(R) 84	(R) 83	(R) 77	(R) 73	73	-8	135			
Medium	Louisville, KY-IN	(R) 7	(R) 7	9	(R) 22	(R) 28	(R) 32	33	(R) 36	(R) 34	(R) 30	34	6	386			
Medium	Memphis, TN-MS-AR	(R) 2	3	(R) 9	18	(R) 19	(R) 21	22	(R) 22	(R) 24	(R) 25	27	29	1,250			
Very Large	Miami, FL	(R) 8	(R) 10	(R) 21	(R) 31	(R) 33	(R) 35	(R) 35	(R) 38	(R) 40	(R) 42	44	26	450			
Large	Milwaukee, WI	4	6	10	19	20	20	22	24	(R) 24	(R) 22	21	5	425			
Large	Minneapolis-St. Paul, MN	(R) 2	6	14	(R) 29	29	39	(R) 40	(R) 45	(R) 36	(R) 39	38	-3	1,800			
Medium	Nashville-Davidson, TN	(R) 10	(R) 12	16	24	26	(R) 31	(R) 28	(R) 34	(R) 34	(R) 34	38	23	280			

Continued next page

TABLE 4-28: Annual Wasted Fuel Per Person Due to Highway Congestion—continued

Population group	Urban area	Gallons wasted														Percent change	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002	Long-term 1982-2002			
		Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank			
Medium	New Haven, CT	3	4	7	9	8	11	15	19	20	25	20	82	7			
Large	New Orleans, LA	7	9	11	18	18	18	18	18	(R) 16	(R) 16	15	-17	79			
Very large	New York, Newark, NY-NJ	10	12	30	30	30	32	34	38	(R) 34	(R) 36	37	16	47			
Large	Oklahoma City, OK	2	3	4	(R) 7	(R) 9	(R) 11	(R) 11	13	10	11	13	18	43			
Medium	Omaha, NE-IA	(R) 3	(R) 5	(R) 8	(R) 13	14	(R) 15	(R) 16	(R) 17	(R) 17	19	20	33	24			
Large	Orlando, FL	(R) 8	(R) 15	(R) 18	(R) 30	34	(R) 37	42	41	(R) 47	(R) 49	43	16	46			
Medium	Oxnard-Ventura, CA	4	8	14	18	21	18	20	21	25	29	28	56	9			
Small	Pensacola, FL-AL	(R) 2	(R) 3	8	(R) 11	(R) 11	(R) 13	14	(R) 14	(R) 16	(R) 14	15	15	48			
Very large	Philadelphia, PA-NJ-DE-MD	(R) 9	(R) 9	(R) 15	(R) 23	(R) 23	(R) 24	(R) 31	(R) 34	(R) 29	(R) 34	36	50	10			
Large	Phoenix, AZ	12	13	(R) 23	(R) 26	(R) 33	36	32	39	(R) 38	(R) 40	39	8	55			
Large	Pittsburgh, PA	6	7	10	(R) 11	(R) 11	12	(R) 13	(R) 14	11	(R) 11	10	-17	79			
Large	Portland, OR-WA	(R) 5	5	14	(R) 28	32	33	(R) 34	35	(R) 34	(R) 34	34	3	62			
Medium	Providence, RI-MA	(R) 3	(R) 5	(R) 10	(R) 14	(R) 17	(R) 25	(R) 17	(R) 21	(R) 19	(R) 21	28	12	51			
Medium	Raleigh-Durham, NC	5	8	16	19	18	20	20	19	21	27	23	15	49			
Medium	Richmond, VA	(R) 3	(R) 3	(R) 7	(R) 21	(R) 24	(R) 21	(R) 20	(R) 16	(R) 12	(R) 12	14	-33	83			
Large	Riverside-San Bernardino, CA	(R) 6	(R) 12	(R) 34	37	40	42	(R) 48	46	(R) 44	(R) 47	50	19	41			
Medium	Rochester, NY	(R) 1	(R) 1	(R) 3	5	(R) 5	6	5	(R) 7	6	6	6	0	64			
Large	Sacramento, CA	(R) 8	11	(R) 24	24	29	26	(R) 26	28	(R) 30	(R) 28	32	23	38			
Small	Salem, OR	(R) 2	(R) 2	(R) 5	(R) 7	(R) 8	(R) 9	(R) 9	(R) 9	10	10	12	33	24			
Medium	Salt Lake City, UT	(R) 2	3	(R) 6	16	15	(R) 13	(R) 14	15	(R) 17	(R) 24	29	123	1			
Large	San Antonio, TX	(R) 5	(R) 11	10	(R) 17	(R) 17	18	23	(R) 32	(R) 35	(R) 31	33	83	6			
Large	San Diego, CA	(R) 6	12	28	(R) 24	(R) 25	30	28	34	(R) 34	(R) 36	42	40	17			
Very large	San Francisco-Oakland, CA	20	39	60	51	52	47	53	(R) 56	(R) 57	(R) 58	59	26	35			
Large	San Jose, CA	(R) 18	34	66	43	42	(R) 39	44	50	(R) 50	(R) 50	46	18	44			
Medium	Sarasota-Bradenton, FL	7	7	8	9	11	11	11	14	13	13	15	36	21			

TABLE 4-28: Annual Wasted Fuel Per Person Due to Highway Congestion—continued

Population group	Urban area	Gallons wasted													Percent change	
		1982	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	Short-term 1997-2002	Long-term 1982-2002		
		Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank	Percent Rank		
Large	Seattle, WA	(R) 9	(R) 15	(R) 38	(R) 47	(R) 48	(R) 51	(R) 54	(R) 43	(R) 42	41	-20	81	356	51	
Small	Spokane, WA	(R) 2	(R) 2	(R) 3	6	(R) 7	(R) 8	9	9	(R) 8	8	0	64	300	55	
Medium	Springfield, MA-CT	4	5	6	6	6	6	7	7	7	8	33	24	100	80	
Large	St. Louis, MO-IL	(R) 10	13	(R) 16	(R) 30	(R) 31	(R) 34	(R) 33	(R) 35	(R) 32	34	0	64	240	65	
Large	Tampa-St Petersburg, FL	12	14	22	(R) 34	33	(R) 32	33	(R) 30	(R) 33	34	6	57	183	71	
Medium	Toledo, OH-MI	1	1	3	6	7	9	9	10	11	12	33	24	1,100	7	
Medium	Tucson, AZ	(R) 3	4	8	(R) 12	(R) 13	(R) 16	18	(R) 17	(R) 20	23	44	15	667	16	
Medium	Tulsa, OK	(R) 2	4	(R) 5	(R) 5	(R) 6	8	9	10	(R) 13	12	50	10	500	29	
Large	Virginia Beach, VA	8	(R) 11	15	19	(R) 21	(R) 21	24	(R) 17	(R) 21	26	24	36	225	66	
Very large	Washington, DC-VA-MD	17	23	35	46	50	49	(R) 57	58	(R) 53	54	10	52	218	68	
NA	85-Area Average	11	(R) 15	(R) 28	(R) 32	(R) 34	(R) 36	(R) 37	(R) 39	(R) 38	39	8	NA	255	NA	
NA	Very Large Area Average	16	(R) 22	(R) 40	(R) 42	(R) 45	(R) 45	(R) 48	(R) 51	(R) 48	50	11	NA	213	NA	
NA	Large Area Average	7	(R) 10	(R) 19	(R) 27	(R) 29	32	(R) 32	(R) 34	(R) 33	34	6	NA	386	NA	
NA	Medium Area Average	4	(R) 5	(R) 9	(R) 15	(R) 17	(R) 19	(R) 19	(R) 20	(R) 21	22	16	NA	450	NA	
NA	Small Area Average	(R) 3	(R) 4	(R) 6	(R) 7	(R) 8	(R) 9	(R) 9	(R) 10	10	10	11	NA	233	NA	

KEY: NA = not applicable; R = revised.

Very large urban areas - over 3 million population.

Large urban areas - over 1 million and less than 3 million population.

Medium urban areas - over 500,000 and less than 1 million population.

Small urban areas - less than 500,000 population.

NOTES

"Wasted" fuel is the difference between the fuel consumed under estimated existing conditions and the fuel consumed if all traffic was moving at free-flow conditions.

Calculations are made for peak period speeds and for free-flow speeds on both the freeway and principal arterial system.

For a more detailed description of the formulas used, see the source document.

The urban areas included are those containing over 500,000 people and several smaller places mostly chosen by previous sponsors of the Texas Transportation Institute study on mobility.

Rank is based on the calculated percent change with the highest number corresponding to a rank of 1.

SOURCE

1998-2002: Texas Transportation Institute, *The 2004 Annual Urban Mobility Report* (College Station, TX: 2004), Internet site <http://mobility.tamu.edu> as of Sept. 13, 2004.

Section D
Air Pollution

TABLE 4-29: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Vehicles ^{a, b} (Grams per mile)

Engine type and pollutant	Prior to control ^d	1968-1969	1970-1971	1972	1973-1974	1975-1976	1977-1979	1980	1981	1982-1986	1987-1993	Tier 1 ⁱ 1994-2003 ^b	Interim Tier 2 ⁱ 2004-2006	Tier 2 ⁱ 2007+
Gasoline														
HC (total)	11 ^g	2.2	3.4	0.41	0.41	1.5	0.41	0.41	0.41	0.41	0.41	(^h)	0.41	0.100 (0.125)
NMHC	^e											(0.31)	0.25	0.100 (0.125)
NMOG	^e												0.125	0.100 (0.125)
CO	80	23	39	7.0	3.4	15	7.0	3.4	3.4	3.4	3.4	(4.2)	0.125	0.100 (0.125)
Cold-temp. CO ^c	^e										10	(^h)		
NO _x	4					3.0	3.1	2.0	1.0	0.4	0.4	(0.6)		0.14 (0.20)
Particulates	^e												0.08	0.02 (0.02)
Formaldehyde	^e												0.015	0.015 (0.018)
Diesel														
HC (total)	11 ^h					1.5	0.41	0.41	0.41	0.41	0.41	(^h)	0.41	0.100 (0.125)
NMHC	^e												0.25	0.100 (0.125)
NMOG	^e													0.100 (0.125)
CO	80					15	7.0	3.4	3.4	3.4	3.4	(4.2)	0.125	0.100 (0.125)
NO _x	4					3.1	2.0	1.0	1.0	1.0	1.0	(1.25)	0.14	0.14 (0.20)
Particulates	^e									0.60	0.20	0.08	0.08	0.02 (0.02)
Formaldehyde	^e												0.015	0.015 (0.018)
Test procedure		7-mode	CVS-72	CVS-75										
Useful life, intermediate ^{b, f}	^h												5 years/50,000 miles	10 years/120,000 miles
Useful life, full		5 years/50,000 miles												

KEY: CO = carbon monoxide; CVS = constant volume sampler; HC = hydrocarbons; NMHC = non-methane hydrocarbons; NMOG = nonmethane organic gases; NO_x = nitrogen oxides.

^a The test procedure for measuring exhaust emissions has changed several times over the course of vehicle emissions regulations. The 7-mode procedure was used through model year 1971 and was replaced by the CVS-72 procedure beginning in model year 1972. The CVS-75 procedure became the test procedure as of model year 1975. While it may appear that the total HC and CO standards were relaxed in 1972-74, these standards were actually more stringent due to the more stringent nature of the CVS-72 test procedure. Additional standards for CO and composite standards for NMHC and NO_x tested under the new Supplemental Federal Test Procedure will be phased-in beginning with model year 2000; these standards are not shown in this table.

TABLE 4-29: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Vehicles ^{a,b} (Grams per mile)—*Continued*

- b All emissions standards must be met for a useful life of 5 years/50,000 miles. Beginning with model year 1994, a second set of emissions standards must also be met for a full useful life of 10 years/100,000 miles; these standards are shown in parentheses. Tier 1 exhaust standards were phased-in during 1994-96 at a rate of 40%, 80%, and 100%, respectively.
- c The cold CO emissions standard is measured at 20 °F (rather than 75 °F) and is applicable for a 5-year/50,000-mile useful life.
- d The "Prior to control" column reports emissions estimates of a typical newly manufactured car in the years before exhaust emissions certification standards were implemented.
- e No estimate available.
- f Manufacturers can opt to certify vehicles for a full useful life of 15 years/150,000 miles and have either 1) intermediate useful life standards waived or 2) receive additional NOx credits.
- g In 1968-69, exhaust emissions standards were issued in parts per million rather than grams per mile and are, therefore, incompatible with this table.
- h No standard has been set.
- i The term "tier" refers to a level of standards and is associated with specific years. Interim Tier 2 refers to an intermediate level of standards that move manufacturers toward compliance with Tier 2 standards. Interim Tier 2 and Tier 2 standards are established as "bins." Each bin is a set of standards for NOx, CO, NMOG, formaldehyde, and particulate matter; HC and NMHC standards are dropped for Tier 2 and Interim Tier 2. Manufacturers may certify any given vehicle family to any of the bins available for that vehicle class as long as the resulting sales-weight corporate average NOx standard is met for the full useful life of the vehicle. The Tier 2 corporate average NOx standard is 0.07 grams/mile. Interim corporate-based average NOx standards are based on vehicle type. The interim sales-weighted average for light-duty vehicles (LDVs) is 9.3 grams/mile. For LDVs, Tier 2 standards will be phased in at a rate of 25% in 2004, 50% in 2005, 75% in 2006, and 100% in 2007. During this period, all LDVs not meeting the Tier 2 standards must meet Interim Tier 2 standards.

SOURCES

40 CFR 86, Subpart A (July 1, 2000).
Federal Register, Vol. 65, No. 28, pp. 6851-6858.

TABLE 4-30a: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT1)^{a,b,c} (Grams per mile)

Engine type and pollutant	Prior to control ^g	1968-1969	1970-1971	1972	1973-1974	1975	1976-1978	1979-1981	1982-1983	1984	1985-1986	1987	1988-1993	Tier 1 ^k 1994	1995-2003	Interim Tier 2 ^k 2004-2006	Tier 2 ^k 2007+							
Gasoline																								
HC (total)	11	2.2	3.4	2.0	1.7	0.80																		
NMHC														0.25 (0.31)										
NMOG															0.125 (0.156)	0.100 (0.125)								
CO	80	23	39	20	18	10								3.4 (4.2)										
Cold-temp. CO ^d														10 ^j										
NO _x	4			3.0	3.1	2.3							1.2	0.4 (0.6)			0.14 (0.20)							
Particulates															0.08 (0.10)	0.08 (0.08)	0.02 (0.02)							
Formaldehyde																0.015 (0.018)								
Diesel																								
HC (total)	11			2.0	1.7	0.80																		
NMHC														0.25 (0.31)										
NMOG																0.100 (0.125)								
CO	80			20	18	10								3.4 (4.2)			3.4 (4.2)							
NO _x	4			3.1	2.3								1.2	1.0 (1.25)			0.14 (0.20)							
Particulates															0.08 (0.10)	0.08 (0.10)	0.02 (0.02)							
Formaldehyde										0.60						0.015 (0.018)								
LDT1 weight criteria ^e		GVWR up through 6,000 pounds						GVWR up through 8,500 pounds						GVWR up through 6,000 lbs; LVW up through 3,750 pounds										
Test procedure ^b		7-mode		CVS-72	CVS-75																			
Useful life, intermediate ^{c,f}																		5 years/50,000 miles	5 years/50,000 miles	10 years/100,000 miles	10 years/ 20,000 miles			

KEY: CO=carbon monoxide; CVS = constant volume sampler; GVWR=gross vehicle weight rating; HC=hydrocarbons; LVW=loaded vehicle weight; NMHC=non-methane hydrocarbons; NMOG= nonmethane organic gases; NO_x=nitrogen oxides.

^a Light-duty truck categories LDT1-LDT4 were not created until 1994. From 1968 to 1978, all trucks with a GVWR up to 6,000 pounds were classified as light-duty trucks and were required to meet the same standards. As of 1979, the maximum weight was raised to 8,500 pounds GVWR. During 1988-93, light duty trucks were divided into two subcategories that coincide with the current LDT1-LDT4 categories. The standards for LDT2, LDT3, and LDT4 are shown in tables 4-30b through 4-30d.

TABLE 4-30a: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT1)^{a,b,c} (Grams per mile)—Continued

- b The test procedure for measuring exhaust emissions has changed several times over the course of vehicle emissions regulation. The 7-mode procedure was used through model year 1971 and was replaced by the CVS-72 procedure beginning in model year 1972. The CVS-75 procedure became the test procedure as of model year 1975. While it may appear that total HC and CO standards were relaxed in 1972-74, these standards were actually more stringent due to the more stringent nature of the CVS-72 test procedure. Additional standards for CO and composite standards for NMHC and NO_x tested over the new Supplemental Federal Test Procedure will be phased-in beginning with model year 2000. These standards are not shown in this table.
- c Emissions standards had to be met for a useful life of 5 years/50,000 miles through model year 1983, and a full useful life of 11 years/120,000 miles was defined for 1985-93 (several useful life options were available for 1984). Beginning in model year 1994, emissions standards were established for an intermediate useful life of 5 years/50,000 miles as well as a full useful life (full useful life standards are shown in parentheses). HC standards, however, were established only for full useful life. Tier 1 exhaust standards, except particulates standards, were phased in during 1994-96 at a rate of 40%, 80%, and 100%, respectively. Particulate matter standards were phased-in at a rate of 40%, 80%, and 100% during 1995-97.
- d The cold CO emissions standard is measured at 20 °F (rather than 75 °F) and is applicable for a 5-year/50,000-mile useful life.
- e GVWR is the maximum design loaded weight. LVW is the curb weight (nominal vehicle weight) plus 300 pounds.
- f Manufacturers can opt to certify vehicles for a full useful life of 15 years/150,000 miles and either have (1) intermediate useful life standards waived or (2) receive additional NO_x credits.
- g The "Prior to controls" column reports emissions estimates of a typical newly manufactured car in the years before exhaust emissions certification standard were implemented.
- h No estimate available.
- i In 1968-69, exhaust emissions standards were issued in parts per million rather than grams per mile and are, therefore, incompatible with this table.
- j No standard has been set.
- k The term "tier" refers to a level of standards for specific years. Interim Tier 2 refers to an intermediate level of standards that move manufacturers toward compliance with Tier 2 standards. Interim Tier 2 and Tier 2 standards are established as "bins." Each bin is a set of standards for NO_x, CO, NMOG, formaldehyde, and particulates (HC and NMHC standards are dropped for Tier 2 and Interim Tier 2). Manufacturers may certify any given vehicle family to any of the bins available for that vehicle class as long as the resulting sales-weighted corporate average NO_x standard is met for the full useful life. The Tier 2 corporate average NO_x standard is 0.07 grams/mile. Interim corporate-based average NO_x standards are based on vehicle type. The interim corporate sales-weighted average for LDT1 vehicles is 0.3 grams/mile. Tier 2 standards will be phased in at a rate of 25% in 2004, 50% in 2005, 75% in 2006, and 100% in 2007. During this period, all LDT1 vehicles not meeting the Tier 2 standards must meet Interim Tier 2 standards.

SOURCES

40 CFR 86, Subpart A (July 1, 2000).
Federal Register, Vol. 65, No. 28, pp. 6851-6858.

TABLE 4-30b: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT2)^{a,b,c} (Grams per mile)

Engine type and pollutant	Prior to control ^g	1968-1969	1970-1971	1972	1973-1974	1975	1976-1978	1979-1981	1982-1983	1984	1985-1986	1987	1988-1990	1991-1993	Tier 1k 1994	Tier 1k 1995-2003	Interim Tier 2 ^k 2004-2006	Tier 2 ^k 2007+		
Gasoline																				
HC (total)	11	2.2	3.4	2.0	1.7	0.80									j	(0.80)				
NMHC	h														j	(0.40)				
NMOG	h																0.125	(0.156)	0.100 (0.125)	
CO	80	23	39	20	18	10									4.4	(5.5)	3.4	(4.2)		
Cold-temp. CO ^d	h														12.5	∅				
NO _x	4			3.0	3.1	2.3							1.7		0.7	(0.97)	0.4	(0.6)	0.14 (0.20)	
Particulates	h																0.08	(0.10)	0.08 (0.08)	
Formaldehyde	h																		0.015 (0.018)	
Diesel																				
HC (total)	11				2.0	1.7	0.80								j	(0.80)				
NMHC	h														0.32	(0.40)				
NMOG	h																		(0.156)	
CO	80				20	18	10								4.4	(5.5)			(4.2)	3.4 (4.2)
NO _x	4				3.1	2.3							1.7		j	(0.97)			(0.6)	0.14 (0.20)
Particulates	h																0.50	0.45	0.13	0.08 (0.10)
Formaldehyde	h						0.60													0.015 (0.018)
LDT2 weight criteria ^e		GVWR up through 6,000 pounds			GVWR up through 8,500 pounds			GVWR up through 6,000 pounds			GVWR up through 6,000 pounds; LVW over 3,750 pounds									
Test procedure ^b		7-mode	CVS-72	CVS-75																
Useful life, intermediate ^{c,f}														5 years/50,000 miles			5 years/50,000miles			
Useful life, full		5 years/50,000 miles			11 years/120,000 miles			10 years/100,000 miles			10 years/120,000 miles			10 years/120,000 miles						

KEY: CO=carbon monoxide; GVWR=gross vehicle weight rating; HC=hydrocarbons; LVW=loaded vehicle weight; NMHC=non-methane hydrocarbons; NMOG=non-methane hydrocarbons; NO_x=nitrogen oxides.

^a Light-duty truck categories LDT1-LDT4 were not created until 1994. From 1968 to 1978 all trucks with a GVWR up to 6,000 pounds were classified as light-duty trucks and were required to meet the same standards. As of 1979, the maximum weight was raised to 8,500 pounds GVWR. During 1988-93, light-duty trucks were divided into two subcategories that coincide with the current LDT1-LDT4 categories. The standards for LDT1, LDT3, and LDT4 are shown in tables 4-30a, 4-40c, and 4-30d.

Continued next page

TABLE 4-30b: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT2)^{a,b,c} (Grams per mile)—*Continued*

- b The test procedure for measuring exhaust emissions has changed several times over the course of vehicle emissions regulation. The 7-mode procedure was used through model year 1971 and was replaced by the CVS-72 procedure beginning in model year 1972. The CVS-75 procedure became the test procedure as of model year 1975. While it may appear that the total HC and CO standards were relaxed in 1972-74, these standards were actually more stringent due to the more stringent nature of the CVS-72 test procedure. Additional standards for CO and composite standards for NMHC and NOx tested over the new Supplemental Federal Test Procedure will be phased-in beginning with model year 2000. These standards are not shown in this table.
- c Emissions standards had to be met for a useful life of 5 years/50,000 miles through model year 1983, and a full useful life of 11 years/120,000 miles was defined for 1985-93 (several useful life options were available for 1984). Beginning in model year 1994, emissions standards were established for an intermediate useful life of 5 years/50,000 miles as well as a full useful life (full useful life standards are shown in parentheses). HC standards, however, were established only for full useful life. Tier 1 exhaust standards, except particulates standards, were phased-in during 1994-96 at a rate of 40%, 80%, and 100%, respectively. Particulates standards were phased-in at a rate of 40%, 80%, and 100% during 1995-97.
- d The cold CO emissions standard is measured at 20 °F (rather than 75 °F) and is applicable for a 5-year/50,000-mile useful life.
- e GVWR is the maximum design loaded weight. LVW is the curb weight (nominal vehicle weight) plus 300 pounds.
- f Manufacturers can opt to certify vehicles for a full useful life of 15 years/150,000 miles and either have (1) intermediate useful life standards waived or (2) receive additional NOx credits.
- g The "Prior to controls" reports emissions estimates of a typical newly manufactured car in the years before exhaust emissions certification standards were implemented.
- h No estimate available.
- i In 1968-69, exhaust emissions standards were issued in parts per million rather than grams per mile and are, therefore, incompatible with this table.
- j No standard has been set.
- k The term "tier" refers to a level of standards for specific years. Interim 2 refers to an intermediate level of standards that move manufacturers toward compliance with Tier 2 standards. Interim Tier 2 and Tier 2 standards are established as "bins." Each bin is a set of standards for NOx, CO, NMOG, formaldehyde, and particulates (HC and NMHC standards are dropped for Tier 2 and Interim Tier 2). Manufacturers may certify any given vehicle family to any of the bins available for that vehicle class as long as the resulting sales-weighted corporate average NOx standard is met for the full useful life. The Tier 2 corporate average NOx standard is 0.07 grams/mile. Interim corporate-based average NOx standards are based on vehicle type. The interim corporate sales-weighted average for LDT2 vehicles is 0.3 grams/mile. Tier 2 standards will be phased in at a rate of 25% in 2004, 50% in 2005, 75% in 2006, and 100% in 2007. During this period all LDT2 vehicles not meeting the Tier 2 standards must meet Interim Tier 2 standards.

SOURCES

40 CFR 86, Subpart A (July 1, 2000).
Federal Register, Vol. 65, No. 28, pp. 6851-6858.

TABLE 4-30c: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT3)^{a,b,c} (Grams per mile)

Engine type and pollutant	Prior to control ^g	1968-1969	1970-1971	1972	1973-1974	1975	1976-1978	1979-1981	1982-1983	1984	1985-1986	1987	1988-1989	1990	1991-1995	Tier 1 ^k 1996-2007	Interim Tier 2 ^k 2008	Tier 2 ^k 2009+	
Gasoline																			
HC (total)	11	2.2	3.4	2.0	1.7	0.80										(0.80)			
NMHC	^h															0.32	(0.46)		
NMOG	^h																0.160	(0.230)	0.125 (0.156)
CO	80	23	39	20	18	10									4.4	(6.4)	3.4	4.2	
Cold-temp. CO ^d	^h														12.5	⁰			
NO _x	4			3.0	3.1	2.3		2.3			2.3	1.7			0.7	(0.98)	0.4	(0.6)	0.14 (0.20)
Particulates	^h															(0.10)	0.08	(0.08)	0.02 (0.02)
Formaldehyde	^h																0.018	(0.027)	0.015 (0.018)
Diesel																			
HC (total)	11			2.0	1.7	0.80										(0.80)			
NMHC	^h															0.32	(0.46)		
NMOG	^h																		
CO	80			20	18	10									4.4	(6.4)	(0.230)	0.125 (0.156)	
NO _x	4			3.1	2.3						2.3	1.7				(0.98)	(0.6)	0.14 (0.20)	
Particulates	^h					0.60					0.50	0.45				(0.10)	(0.08)	0.02 (0.02)	
Formaldehyde	^h																(0.027)	0.015 (0.018)	
LDT3 weight criteria ^e		GVWR up through 6,000 pounds			GVWR up through 8,500 pounds			GVWR up through 5,750 pounds			ALVW up through 5,750 pounds			GVWR 6,001-8,500 pounds					
Test procedure ^b		7-mode	CVS-72	CVS-75															
Useful life, intermediate ^{c,f}		5 years/50,000 miles																	
Useful life, full		11 years/120,000 miles																	

KEY: ALVW=adjusted loaded vehicle weight; CO = carbon monoxide; GVWR=gross vehicle weight rating; HC = hydrocarbons; NMHC=nonmethane hydrocarbon; NMOG=nonmethane organic gases; NOx=nitrogen oxides.

^a Light-duty truck categories LDT1-LDT4 were not created until 1994. From 1968 to 1978 all trucks with a GVWR up to 6,000 pounds were classified as light-duty trucks and were required to meet the same standards. As of 1979, the maximum weight was raised to 8,500 pounds GVWR. During 1988-93, light-duty trucks were divided into two subcategories that coincide with the current LDT1-LDT4 categories. The standards for LDT1, LDT2, and LDT4 are given in tables 4-30a, 4-40b, and 4-30d.

TABLE 4-30c: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT3)^{a,b,c} (Grams per mile)—*Continued*

- b The test procedure for measuring exhaust emissions has changed several times over the course of vehicle emissions regulation. The 7-mode procedure was used through model year 1971 and was replaced by the CVS-72 procedure beginning in model year 1972. The CVS-75 procedure became the test procedure as of model year 1975. While it may appear that the total HC and CO standards were relaxed in 1972-74, these standards were actually more stringent due to the more stringent nature of the CVS-72 test procedure. Additional standards for CO and composite standards for NMHC and NOx tested over the new Supplemental Federal Test Procedure will be phased-in beginning with model year 2002. These standards are not shown in this table.
- c Emissions standards had to be met for a full useful life of 5 years/50,000 miles through model year 1983, and a full useful life of 11 years/120,000 miles was defined for 1985-93 (several useful life options were available for 1984). Beginning in model year 1996, emissions standards were established for an intermediate useful life of 5 years/50,000 miles as well as a full useful life of 11 years/120,000 miles (intermediate and full useful life standards are shown in parentheses). This applied to all pollutants except HC and particulates for all LDT3 vehicles and NOx for diesel-powered LDT3 vehicles, which were only required to meet full useful life standards. Tier 1 exhaust standards were phased-in during 1996-97 at a rate of 50% and 100%, respectively.
- d The cold CO emissions standard is measured at 20 °F (rather than 75 °F) and is applicable for a 5-year/50,000-mile useful life.
- e GVWR is the maximum design loaded weight. ALVW is the numerical average of the GVWR and the curb weight.
- f Manufacturers can opt to certify vehicles for a full useful life of 15 years/150,000 miles and either have (1) intermediate useful life standards waived or (2) receive additional NOx credits.
- g The "Prior to controls" column reports emissions estimates of a typical newly manufactured car in the years before exhaust emissions certification standards were implemented.
- h No estimate available.
- i In 1968-69, exhaust emissions standards were issued in parts per million rather than grams per mile and are, therefore, incompatible with this table.
- j No standard has been set.
- k The term "tier" refers to a level of standards for specific years. Interim 2 refers to an intermediate level of standards that moves manufacturers toward compliance with Tier 2 standards. Interim Tier 2 and Tier 2 standards are established as "bins." Each bin is a set of standards for NOx, CO, NMOG, formaldehyde, and particulates (HC and NMHC standards are dropped for Tier 2 and Interim Tier 2). Manufacturers may certify any given vehicle family to any of the bins available for that vehicle class as long as the resulting sales-weighted corporate average NOx standard is met for full useful life. The Tier 2 corporate average NOx standard is 0.07 grams/mile. Interim corporate-based average NOx standards are based on vehicle type. The interim corporate sales-weighted average for LDT3 vehicles is 0.6 grams/mile. Tier 2 LDT3 standards will be phased in during 2008 and 2009. In 2008, 50% of LDT3 vehicles must meet Tier 2 standards; the others must meet Interim Tier 2 standards. Beginning in 2009, all LDT3 vehicles must meet Tier 2 standards.

SOURCES

40 CFR 86, Subpart A (July 1, 2000).
Federal Register, Vol. 65, No. 28, pp. 6851-6858.

TABLE 4-30d: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT4)^{a,b,c} (Grams per mile)

Engine type and pollutant	Prior to control ^g	1968-1969	1970-1971	1972	1973-1974	1975	1976-1978	1979-1981	1982-1983	1984	1985-1986	1987	1988-1989	1990	1991-1995	Tier 1 ^k 1996-2007	Interim Tier 2 ^k 2008	Tier 2k 2009+
Gasoline																		
HC (total)	11	2.2	3.4	2.0	1.7	0.80										(0.80)		
NMHC																0.39 (0.56)		
NMOG																	0.160 (0.230)	0.125 (0.156)
CO	80	23	39	20	18	10										5.0 (7.3)	4.4 (6.4)	3.4 (4.2)
Cold-temp. CO ^d																12.5 ^o		
NO _x	4			3.0	3.1	2.3						2.3	1.7			1.1 (1.53)	0.4 (0.6)	0.14 (0.20)
Particulates																	0.08 (0.08)	0.02 (0.02)
Formaldehyde																	0.018 (0.027)	0.015 (0.018)
Diesel																		
HC (total)	11				2.0	1.7	0.80											
NMHC																0.39 (0.56)		
NMOG																	0.230 (0.156)	0.125 (0.156)
CO	80				20	18	10									5.0 (7.3)	(6.4)	3.4 (4.2)
NO _x	4				3.1	2.3						2.3	1.7				(0.6)	0.14 (0.20)
Particulates									0.60			0.50	0.45	0.13			(0.08)	0.02 (0.02)
Formaldehyde																	(0.027)	0.015 (0.018)
LDT4 weight criteria ^e		GVWR up through 6,000 pounds			GVWR up through 8,500 pounds			GVWR up through 8,500 pounds			Any ALVW			ALVW over 5,750 pounds				
Test procedure ^b		7-mode			CVS-72			CVS-75										
Useful life, intermediate ^{c,f}		5 years/50,000 miles			11 years/120,000 miles			5 years/50,000 miles										

KEY: ALVW=adjusted loaded vehicle weight; CO = carbon monoxide; GVWR=gross vehicle weight rating; HC = hydrocarbons; NMHC=nonmethane hydrocarbon; NMOG=nonmethane organic gases; NOx=nitrogen oxides.

^a Light-duty truck categories LDT1-LDT4 were not created until 1994. From 1968 to 1978 all trucks with a GVWR up to 6,000 pounds were classified as light-duty trucks and were required to meet the same standards. As of 1979, the maximum weight was raised to 8,500 pounds GVWR. During 1988-93, light-duty trucks were divided into two subcategories that coincide with the current LDT1-LDT4 categories. The standards for LDT1, LDT2, and LDT3 are given in tables 4-30a, 4-40b, and 4-30c.

TABLE 4-30d: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light-Duty Trucks (Category LDT4)^{a,b,c} (Grams per mile)—*Continued*

- b The test procedure for measuring exhaust emissions has changed several times over the course of vehicle emissions regulation. The 7-mode procedure was used through model year 1971 and was replaced by the CVS-72 procedure beginning in model year 1972. The CVS-75 procedure became the test procedure as of model year 1975. While it may appear that the total HC and CO standards were relaxed in 1972-74, these standards were actually more stringent due to the more stringent nature of the CVS-72 test procedure.
- c Additional standards for CO and composite standards for NMHC and NOx tested over the new Supplemental Federal Test Procedure will be phased-in beginning with model year 2002. These standards are not shown in this table.
- d Emissions standards had to be met for a full useful life of 5 years/50,000 miles through model year 1983, and a full useful life of 11 years/120,000 miles was defined for 1985-93 (several useful life options were available for 1984). Beginning in model year 1996, emissions standards were established for an intermediate useful life of 5 years/50,000 miles as well as a full useful life of 11 years/120,000 miles (intermediate and full useful life standards are shown in parentheses). This applied to all pollutants except HC and particulates for all LDT4 vehicles and NOx for diesel-powered LDT4 vehicles, which were only required to meet full useful life standards. Tier 1 exhaust standards were phased-in during 1996-97 at a rate of 50% and 100%, respectively.
- e The cold CO emissions standard is measured at 20 °F (rather than 75 °F) and is applicable for a 5-year/50,000-mile useful life.
- f GVWR is the maximum design loaded weight. ALVW is the numerical average of the GVWR and the curb weight.
- g Manufacturers can opt to certify vehicles for a full useful life of 15 years/150,000 miles and either have (1) intermediate useful life standards waived or (2) receive additional NOx credits.
- h The "Prior to control" column reports emissions estimates of a typical newly manufactured car in the years before exhaust emissions certification standards were implemented.
- i No estimate available.
- j In 1968-69, exhaust emissions standards were issued in parts per million rather than grams per mile and are, therefore, incompatible with this table.
- k No standard has been set.
- l The term "tier" refers to a level of standards for specific years. Interim 2 refers to an intermediate level of standards that moves manufacturers toward compliance with Tier 2 standards. Interim Tier 2 and Tier 2 standards are established as "bins." Each bin is a set of standards for NOx, CO, NMOG, formaldehyde, and particulate matter (HC and non-methane HC standards are dropped for Tier 2 and interim Tier 2). Manufacturers may certify any given vehicle family to any of the bins available for that vehicle class as long as the resulting sales-weighted corporate average NOx standard is met for full useful life. The Tier 2 corporate average NOx standard is 0.07 grams/mile. Interim corporate-based average NOx standards are based on vehicle type. The interim corporate sales-weighted average for LDT4 vehicles is 0.6 grams/mile. Tier 2 standards will be phased in during 2008 and 2009. In 2008, 50% of LDT4 vehicles must meet Tier 2 standards; the others must meet Interim Tier 2 standards. Beginning in 2009, all LDT4 vehicles must meet Tier 2 standards.

SOURCES

40 CFR 86, Subpart A (July 1, 2000).
Federal Register, Vol. 65, No. 28, pp. 6851-6858.

TABLE 4-31: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Medium-Duty Passenger Vehicles (MDPV)^{a,b} (Grams per mile)

Engine type and pollutant	Interim Tier 2 ^f		Tier 2 ^f	
	2004	2008	2009+	
<i>Gasoline</i>				
NMOG	0.195	(0.280)	0.125	(0.156)
CO	5.0	(7.3)	3.4	(4.2)
Cold-temp. CO ^c	12.5			
NO _x	0.6	(0.9)	0.14	(0.20)
Particulates	0.12	(0.12)	0.02	(0.02)
Formaldehyde	0.022	(0.032)	0.015	(0.018)
<i>Diesel</i>				
HC	1.3 g/bhp-hr			
NMHC + NO _x	2.4 g/bhp-hr			
NMOG		^g (0.280)	0.125	(0.156)
CO	15.5 g/bhp-hr	^g (7.3)	3.4	(4.2)
NO _x	4.0 g/bhp-hr	^g (0.9)	0.14	(0.20)
Particulates	0.10 g/bhp-hr	^g (0.12)	0.02	(0.02)
Formaldehyde		^g (0.032)	0.015	(0.018)
Smoke opacity (acceleration / lugging / peak) ^d	20/15/50			
Weight Criteria	Greater than 8,500 pounds GVWR; less than 10,000 pounds GVWR			
Test procedure, gasoline	CVS-75			
Test procedure, diesel	EPA Transient	CVS-75		
Useful life-gasoline, intermediate ^{b,e}	5 years/50,000 miles			
Useful life-gasoline, full	11 years/120,000 miles			
Useful life-diesel, intermediate ^{b,e}	^g	5 years/50,000 miles		
Useful life-diesel, full	8 years/110,000 miles	11 years/120,000 miles		

KEY: CO = carbon monoxide; g/bhp-hr = grams per brake horsepower/hour; GVWR = gross vehicle weight rating; HC = hydrocarbons; NMHC=nonmethane hydrocarbon; NMOG = nonmethane organic gases; NO_x = nitrogen oxides.

- ^a The MDPV category was created for the Interim Tier 2 and Tier 2 vehicle emissions standards. This category was specifically designed to help bring passenger vehicles (such as large sport utility vehicles and passenger vans) over 8,500 pounds GVWR into the Tier 2 program. MDPVs are defined as any complete heavy-duty vehicle less than 10,000 pounds GVWR designed primarily for transportation of persons, including conversion vans (i.e., vans which are intended to be converted to vans used primarily for transporting people). This does not include vehicles that have 1) a capacity of more than 12 persons total, or 2) are designed to accommodate more than 9 persons seated rearward of the driver's seat, or 3) have a cargo box (i.e., a pickup-bed or box) of six feet or more in interior length. Prior to Tier 2 standards, these vehicles would have been regulated as light heavy-duty trucks.

Continued next page

TABLE 4-31: Federal Exhaust Emission Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Medium-Duty Passenger Vehicles (MDPV)^{a,b} (Grams per mile)—*continued*

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- b Diesel MDPVs can continue to use light heavy-duty truck standards for new vehicle certification until 2008. Note that these standards are measured in grams per brake horsepower-hour (g/bhp-hr). Beginning in 2008, MDPVs must use the same on-chassis testing procedure as heavy light-duty trucks (categories LDT3 and LDT4) and must meet standards for MDPVs. Beginning in 2009, MDPVs must meet the same standards as light heavy-duty trucks, except MDPVs are not required to meet Supplemental Federal Test Procedure standards.
 - c The cold CO emissions standard is measured at 20 °F (rather than 75 °F) and is applicable for a full useful life of 5-years/50,000-miles.
 - d Smoke opacity is expressed as a percentage for acceleration, lugging, and peak operation modes. Lugging occurs when a vehicle is carrying a load.
 - e Manufacturers can opt to certify vehicles for a useful life of 15 years/150,000 miles and have either 1) intermediate useful life standards waived or 2) receive additional NO_x credits.
 - f The term "tier" refers to a level of standards for specific years. Interim 2 refers to an intermediate level of standards that moves manufacturers toward compliance with Tier 2 standards. Tier 2 and interim Tier 2 standards are established as "bins." Each bin is a set of standards for NO_x, CO, NMOG, formaldehyde, and particulates (HC and NMHC standards are dropped for Tier 2 and Interim Tier 2). Manufacturers may certify any given vehicle family to any of the bins available for that vehicle class as long as the resulting sales-weighted corporate average NO_x standard is met for full useful life. The Tier 2 corporate average NO_x standard is 0.07 grams/mile. Interim corporate-based average NO_x standards are based on vehicle type. The interim corporate sales-weighted average for MDPVs is 0.6 grams/mile. Tier 2 MDPV standards will be phased in during 2008 and 2009. In 2008, 50% of MDPVs must meet Tier 2 standards; the other 50% of MDPVs must meet interim Tier 2 standards. Beginning in 2009, all MDPVs must meet Tier 2 standards.
 - g Diesel MDPVs are not required to meet intermediate life standards during this time period.

SOURCE

40 CFR 86, Subpart A (July 1, 2000) Federal Register, Vol. 65, No. 28, pp. 6851-6858.

TABLE 4-32a: Federal Exhaust Emissions Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light Heavy-Duty Trucks (Grams per brake horsepower-hour)

Engine type and pollutant	1970-73	1974-78	1979-83	1984	1985-86	1987	1988-89	1990	1991-93	1994-97	1998-2003	2004	2005-06	2007	2008+
Gasoline															
HC + NO _x	j	16	10	j								1.0			j
NO _x + NMHC	j														
NMHC	j														0.14
HC	k	j	1.5	1.9	1.1							j			
NO _x	j			10.6	6.0	5.0	4.0								0.20
CO	k	40	25	37.1	14.4										
Particulates	j														0.01
Diesel															
HC + NO _x	j	16	10	j											
HC	k	j	1.5	1.3											
NO _x	j			10.7	6.0	5.0	4.0								0.20
NO _x + NMHC	j										2.4				j
NMHC	j														0.14
CO	k	40	25	15.5											
Particulates	j														0.01
Smoke opacity (acceleration / lugging / peak) ^a	40/20/j	20/15/50			0.60	0.25	0.10								
Weight criteria for light heavy-duty trucks ^b	GVWR over 6,000 lbs	GVWR over 8,500 lbs	GVWR over 14,000 lbs												
Test procedure, gasoline ^c	9-mode steady-state	MVMA transient													
Test procedure, diesel ^c	13-mode steady-state	EPA transient													
Useful life (gasoline) ^d	5 years/50,000 miles	8 years/110,000 miles	10 years/110,000 miles												

Continued next page

TABLE 4-32a: Federal Exhaust Emissions Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light Heavy-Duty Trucks (Grams per brake horsepower-hour)—continued

Complete Vehicles - (Grams per mile) ^{e,f}			
Weight range and pollutant	2005-06	2007	2008+
GVWR 8,500 through 10,000 lbs			
NMOC ^g	0.28		e
NMHC ^h	e	0.195	
CO	7.3		
NO _x	0.9		0.2
Particulates	e		0.02
HCHO	e		0.032
GVWR 10,001 lbs through 14,000 lbs			
NMOC ⁱ	0.33		e
NMHC ^j	e	0.230	
CO	8.1		
NO _x	1.0		0.4
Particulates	e		0.02
HCHO	e		0.040
Test procedure ⁱ	EPA HD-UDDS		

KEY: CO = carbon monoxide; HC = hydrocarbon; NO_x = nitrogen oxides; NMHC = nonmethane hydrocarbons; NMOC = nonmethane organic gas; HCHO = formaldehyde.

- ^a Smoke opacity is expressed in percentage for acceleration, lugging, and peak modes (acceleration/lugging/peak). Lugging is when a vehicle is carrying a load.
- ^b Gross vehicle weight rating (GVWR) is the maximum design loaded weight.
- ^c Several testing procedures have been used during the course of exhaust emissions control. A steady-state 9-mode test procedure (13-mode for diesel) was used for 1970-83 standards. For 1984, either the steady-state tests or the U.S. Environmental Protection Agency (EPA) transient test procedure could be used. For diesels, the EPA transient test was required from 1985 to the present. For gasoline-powered vehicles, either the EPA or the Motor Vehicle Manufacturers Association (MVMA) transient test procedure could be used during 1985-86, and the MVMA procedure was required thereafter.
- ^d Emissions standards apply to the useful life of the vehicle. Useful life was 5 years/50,000 miles through 1983 and became 8 years/110,000 miles beginning in model year 1985. 1984 was a transitional year in which vehicles could meet the older standard (and test procedure) or the newer one. Useful life requirement for gasoline-powered trucks meeting NO_x standards for 1998 and after is 10 years/110,000 miles. Starting in 2004, the useful life will be 10 years/110,000 miles. The useful life requirements for heavy-duty diesel truck standards are more complex and vary by vehicle weight, pollutant, test procedure, and year. Consult the U.S. Code of Federal Regulations for further information.
- ^e No standard set.

TABLE 4-32a: Federal Exhaust Emissions Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Light Heavy-Duty Trucks (Grams per brake horsepower-hour)—*continued*

- f Although emissions standards for HC and CO were in effect for these years, they were not measured in grams per brake horsepower-hour and are, therefore, incompatible with the engine certification section of this table.
- g Vehicles can meet a NMHC + NO_x standard of 2.5 g/bhp-h, given they meet a NMHC standard of no more than 0.5 g/bhp-h.
- h Starting in 2005, complete gasoline heavy-duty vehicles of 14,000 lbs GVWR or below will have to be chassis certified.
- i The manufacturer has the option of satisfying this standard by measurement of nonmethane hydrocarbons or total hydrocarbons.
- j The manufacturer has the option of satisfying this standard by measurement of nonmethane organic gas or total hydrocarbons.
- k This test procedure currently exists to test complete vehicles that have been optionally chassis certified. However, chassis certification is not required until 2005.
- l Required for complete gasoline heavy-duty vehicles only.

NOTE

Tables 4-32a and 4-32b are identical for heavy-duty diesel engines.

SOURCES

40 CFR 86, Electronic Code of Federal Regulations, Internet site at http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr86_00.html as of Oct. 9, 2001.

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, personal communication, October 2001.

TABLE 4-32b: Federal Exhaust Emissions Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Heavy-Duty Trucks (Grams per brake horsepower-hour)

Engine type and pollutant	1970-73	1974-78	1979-83	1984	1985-86	1987	1988-89	1990	1991-93	1994-97	1998-2003	2004	2005-2006	2007	2008+	
Gasoline																
HC + NO _x	e	16	10	e												
NO _x + NMHC	e															
NMHC	e															
HC	f	e	1.5	1.9												
NO _x	e															
CO	f	40	25	37.1	6.0	5.0	4.0	e								
Particulates	e															
Diesel																
HC + NO _x	e	16	10	e												
HC	f	e	1.5	1.3												
NO _x	e															
NO _x + NMHC	e															
NMHC	e															
CO	f	40	25	15.5												
Particulates	e															
Smoke opacity (acceleration / lugging / peak) ^a	40/20 ^e	20/15/50														
Weight criteria for heavy heavy-duty trucks ^b	GVWR over 6,000 lbs			GVWR over 8,500 lbs			GVWR over 14,000 lbs									
Test procedure, gasoline ^c	13-mode steady-state			MVMA transient												
Test procedure, diesel ^c	13-mode steady-state			EPA transient												
Useful life (gasoline) ^d	5 years/50,000 miles			8 years/110,000 miles			10 years/110,000 miles									

KEY: CO = carbon monoxide; HC = hydrocarbon; NO_x = nitrogen oxides; NMHC = nonmethane hydrocarbons.

- ^a Smoke opacity is expressed in percentage for acceleration, lugging, and peak modes (acceleration/lugging/peak). Lugging is when a vehicle is carrying a load.
- ^b Gross vehicle weight rating (GVWR) is the maximum design loaded weight.
- ^c Several testing procedures have been used during the course of exhaust emissions control. A steady-state 9-mode test procedure (13-mode for diesel) was used for 1970-83 standards. For 1984, either the steady-state tests or the U.S. Environmental Protection Agency (EPA) transient test procedure could be used. For diesels, the EPA transient test was required from 1985 to the present. For gasoline-powered vehicles, either the EPA or the Motor Vehicle Manufacturers Association (MVMA) transient test procedure could be used during 1985-86, and the MVMA procedure was required thereafter.

TABLE 4-32b: Federal Exhaust Emissions Certification Standards for Newly Manufactured Gasoline- and Diesel-Powered Heavy-Duty Trucks (Grams per brake horsepower-hour)—*continued*

- ^d Emissions standards apply to the useful life of the vehicle. Useful life was 5 years/50,000 miles through 1983 and became 8 years/110,000 miles beginning in model year 1985. 1984 was a transitional year in which vehicles could meet the older standard (and test procedure) or the newer one. Useful life requirement for gasoline-powered trucks meeting NO_x standards for 1998 and after is 10 years/110,000 miles. Starting in 2004, the useful life will be 10 years/110,000 miles. The useful life requirements for heavy-duty diesel truck standards are more complex and vary by vehicle weight, pollutant, test procedure, and year. Consult the U.S. Code of Federal Regulations for further information.
- ^e No standard set.
- ^f Although emissions standards for HC and CO were in effect for these years, they were not measured in grams per brake horsepower-hour and are, therefore, incompatible with this table.
- ^g Vehicles can meet a NMHC + NO_x standard of 2.5 g/bhp-h, given they meet a NMHC standard of no more than 0.5 g/bhp-h.

NOTE

Tables 4-32a and 4-32b are identical for heavy-duty diesel engines.

SOURCES

40 CFR 86, Electronic Code of Federal Regulations, internet site at http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr86_00.html as of Oct. 9, 2001.

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, personal communication, October 2001.

TABLE 4-33: Federal Exhaust Emissions Standards for Newly Manufactured Motorcycles^a (g/km)^b

Pollutant	Engine displacement	Emissions prior to controls ^c	1978-79	1980-89	1990-96	1997+
<i>Gasoline-powered</i>						
HC	50-169 cc	1.0-13.8	5			
	170-749 cc		$5 + 0.0155(D-170)^d$	5.0		
	750 cc and greater		14	5.0		
CO	50 cc and greater	11.0-31.0	17	12		
<i>Methanol-powered</i>						
Total HC equivalent	50 cc and greater				5.0	
CO	50 cc and greater				12	
<i>Natural gas and LPG-powered</i>						
HC	50 cc and greater					5.0
CO	50 cc and greater					12
Useful life	(Class I)	50-169 cc		5 years or 12,000 km (7,456 mi), whichever comes first		
	(Class II)	170-279 cc		5 years or 18,000 km (11,185 mi), whichever comes first		
	(Class III)	280 cc and greater		5 years or 30,000 km (18,641 mi), whichever comes first		

KEY: cc = cubic centimeters; D = engine displacement; g = gram; HC = hydrocarbon; h = hour; kg = kilogram; km = kilometer; lb = pound; LPG = liquefied petroleum gas; mi = miles; mph = miles per hour.

- ^a A motorcycle is any motor vehicle with a headlight, taillight, and stoplight, and having two or three wheels and a curb mass less than or equal to 793 kg (1,749 lb). (The limit was 680 kg, or 1,499 lb prior to the 1998 model year.) A motorcycle is excluded from the standards if it has a displacement of less than 50 cc (3.1 cubic inches) or if with a 80 kg (176 lb) driver it cannot start from a dead stop using only the engine or exceed a speed of 40 km/h (25 mph) on a level, paved surface.
- ^b Readers who wish to compare motorcycle regulations with passenger car and truck regulations should note that 5.0 g/km = 8.0 g/mi and 12 g/km = 19 g/mi. The formula for 1978-79 HC emissions by motorcycles 170-749 cc becomes, in g/mi., approximately $8.0 + 0.025(D-170)$.
- ^c Estimates of emissions rates prior to controls are ranges of emissions for all engine displacements. Not available for motorcycles powered by fuels other than gasoline.
- ^d D = engine displacement in cubic centimeters (cc). For example, the standard for a 300 cc engine would be $5.0 + 0.0155(300-170) = 7.0$ g/km.

SOURCE:

40 CFR 86 Subpart E (July 1, 2000). U.S. Environmental Protection Agency, Office of Air and Radiation, personal communication, Aug. 28, 2001.

TABLE 4-34: Federal Exhaust Emissions Standards for Newly Manufactured and In-Use Aircraft Engines^{a,b}

Engine type ^c	Pollutant	Year of engine manufacture						
		1974-75	1976-77	1978-82	1983	1984-96	1997-99	2000+
Turboprop								
	Smoke					^g 187(rO) ^{-0.188}		
Class T3 turbojet								
	CO (g/kN) ^d						118	
	HC (g/kN) ^d				19.6			
	NO _x (g/kN) ^d						^e 40 + 2(rPR)	^f 32 + 1.6(rPR)
	Smoke		25				^h 83.6(rO) ^{-0.274}	
Class T8 turbojet								
	CO (g/kN) ^d						118	
	HC (g/kN) ^d				19.6			
	NO _x (g/kN) ^d						^e 40 + 2(rPR)	^f 32 + 1.6(rPR)
	Smoke	30					^h 83.6(rO) ^{-0.274}	
Turbofan and turbojet engines other than Classes T3, T8, and TSS								
	CO (g/kN) ^d						118	
	HC (g/kN) ^d				19.6			
	NO _x (g/kN) ^d						^e 40 + 2(rPR)	^f 32 + 1.6(rPR)
	Smoke					^h 83.6(rO) ^{-0.274}		
TSS engines (supersonic aircraft engines)								
	HC (g/kN)						140(0.92) ^{iPR}	
	Smoke						^h 83.6(rO) ^{-0.274}	

KEY: CO = carbon monoxide; g = gram; g/kN = grams of pollutant per kilonewtons of thrust; HC = hydrocarbon, kN = kilonewtons; kW = kilowatt; NO_x = nitrogen oxides; rO = rated output, which is the maximum power or thrust available for takeoff; rPR = rated pressure ratio.

^a Federal standards apply to all planes operating in the United States, regardless of where they were manufactured. This table primarily displays exhaust emissions standards for newly manufactured aircraft engines. Only two standards (smoke standards) have been set for in-use aircraft engines (see footnotes i and k). Therefore, unless otherwise noted, emissions in this table apply to new aircraft engines only.

^b HC, CO, and NO_x are measured using the International Civil Aviation Organization (ICAO) Gaseous Emissions Test Procedure. Smoke is measured using the ICAO Smoke Emission Test Procedure. There is no useful life or warranty period for purposes of compliance with emissions standards.

Continued next page

TABLE 4-34: Federal Exhaust Emissions Standards for Newly Manufactured and In-Use Aircraft Engines^{a,b}—Continued

- c Examples of commercial aircraft that use each engine type include the following:
 - Class T3 turbojet–Boeing 707-320s (Class T3 engines are currently out of production, though some are still in use).
 - Class T8 turbojet–Boeing 727s and 737-200s, and McDonnell-Douglas MD-80s and DC-9s.
 - Turboprops and turbojets other than T3, T8, and TSS—Boeing 747-400s, 757s, 767-200s and 777s, and McDonnell-Douglas MD-11s; Canadair Regional Jets.
 - Turboprops—Used mostly in regional airliners such as ATR 72, Dornier 328, and Saab SF 340.
 - TSS—British Aircraft Corp./Aerospatiale Concorde (the only supersonic aircraft currently used in commercial civil aviation).
- d Applies to engines with $rO > 26.7$ kN.
- e Effective as of July 7, 1997. This standard applies only to those engines of a type or model for which the date of manufacture of the first individual production model was on or before Dec. 31, 1995 and for which the date of manufacture of the individual engine was on or before Dec. 31, 1999.
- f Effective as of July 7, 1997. This standard also applies to engines of a type or model for which the date of manufacture of the first individual production model was after Dec. 31, 1995 and for which the date of manufacture of the individual engine was after Dec. 31, 1999.
- g Engines with $rO \geq 1,000$ kW.
- h Engines manufactured on or after Jan. 1, 1984 and with $rO \geq 26.7$ kN. Smoke number may not exceed 50.
- i Engines with rated output $rO \geq 129$ kN. This is also the in-use standard for all such aircraft engines.
- j Engines with $rO < 26.7$ kN. Smoke number may not exceed 50.
- k Class T8 turbojet engines shall not exceed a smoke number of 30 beginning Feb. 1, 1974.

SOURCE:

40 CFR 87, Subparts A-D (July 1, 2000), and U.S. Environmental Protection Agency, Office of Air and Radiation, personal communication, Aug. 28, 2001.

TABLE 4-35: Federal Exhaust Emissions Standards for Locomotives^a (g/bhph except where noted)

Pollutant	Duty-cycle ^f	Tier 0 1973-2001 ^h	Tier 1 2002-2004	Tier 2 2005+
Total HC ^b	Line-haul	1.00	0.55	0.30
	Switch	2.10	1.20	0.60
Nonmethane HC ^c	Line-haul	1.00	0.55	0.30
	Switch	2.10	1.20	0.60
Total HC equivalent ^d	Line-haul	1.00	0.55	0.30
	Switch	2.10	1.20	0.60
CO	Line-haul	5.0	2.2	1.5
	Switch	8.0	2.5	2.4
	Line-haul (optional standard) ^g	10.0	10.0	10.0
	Switch (optional standard) ^g	12.0	12.0	12.0
NO _x	Line-haul	9.5	7.4	5.5
	Switch	14.0	11.0	8.1
Particulates	Line-haul	0.60	0.45	0.20
	Switch	0.72	0.54	0.24
	Line-haul (optional standard) ^g	0.30	0.22	0.10
	Switch (optional standard) ^g	0.36	0.27	0.12
Smoke opacity (% opacity-normalized) ^h	Steady-state	30%	25%	20%
	30-second peak	40%	40%	40%
	3-second peak	50%	50%	50%
Useful life		7.5 MWh per hp or 10 years ^{i,j}		

KEY: bhp = brake horsepower; bhph = brake horsepower hour; CO = carbon monoxide; g = gram; h = hour; MW = megawatt; MWh = megawatt hour; NO_x = nitrogen oxides; PM = particulate matter.

- ^a Locomotive standards apply to both new and remanufactured locomotives, except as noted.
- ^b The line-haul duty-cycle is weighted toward operation in the higher power notches and is typical of line-haul applications. The switch duty-cycle is typical of switch operations, with more emphasis on idle and low power notch emissions. Locomotives generally are required to meet the standards for both duty-cycles. However, Tier 0 dedicated switch locomotives rated at 2,300 hp or less are only required to meet the switch duty-cycle standard.
- ^c Tier 0 standards apply to all new production locomotives in the 2001 model year, as well as for any 1994 through 2001 model year freight locomotives remanufactured on or after Jan. 1, 2001. They also apply to all other 1973 through 2001 model year locomotives remanufactured on or after Jan. 1, 2002. Other phase-in options are also available for manufacturers (see 40 CFR 92 for more detail on phase-in options).
- ^d Total HC standards apply to locomotives powered by any fuel except alcohol or natural gas or fuels primarily composed of alcohol or natural gas.
- ^e Nonmethane HC standards apply to locomotives powered by natural gas or fuels that are primarily composed of natural gas.
- ^f Total HC equivalent standards apply to locomotives powered by alcohol or fuels that are primarily composed of alcohol.
- ^g Manufacturers and remanufacturers can elect to comply with the alternate CO and PM standards. However, a manufacturer or remanufacturer using the alternate standards must meet both the CO and the PM standards. This allows locomotives to have higher CO emissions in exchange for meeting more stringent PM standards.
- ^h Smoke opacity values are normalized to be equivalent to a 1 meter path length.
- ⁱ For Tier 0 locomotives not equipped with MW/h meters, the minimum useful life is 750,000 miles or 10 years, whichever comes first.
- ^j This is a minimum standard. The certifying manufacturer or remanufacturer must specify a longer useful life if the locomotive or locomotive engine is designed to last longer than the applicable minimum useful life.

SOURCE:

40 CFR 92, Jul. 1, 2000, and U.S. Environmental Protection Agency, Office of Air and Radiation, personal communication, Aug. 28, 2001.

TABLE 4-36: Federal Exhaust Emissions Standards for Newly Manufactured Marine Spark-Ignition Outboard, Personal Watercraft, e and Jet-Boat Engines^a (g/kWh)

Year	HC + NOx (g/kWh)		Warranty period	Useful life ^d
	Rated power < 4.3 kW	Rated power ≥ 4.3 kW ^{c,d}		
1998 ^b	278.00	$(0.917 \times (151 + 557/P^{0.5})) + 2.44$	1 yr for all emissions-related components	Outboard engines: 350 hr/10 yr; Personal watercraft: 350 hr/5 yr
1999	253.00	$(0.833 \times (151 + 557/P^{0.5})) + 2.89$		
2000	228.00	$(0.750 \times (151 + 557/P^{0.5})) + 3.33$	1 yr for all emission-related components; 3 yr/200 hr for specified major emissions control components	
2001	204.00	$(0.667 \times (151 + 557/P^{0.5})) + 3.78$		
2002	179.00	$(0.583 \times (151 + 557/P^{0.5})) + 4.22$	2 yr/200 hr for all emissions-related components; 3 yr/200 hr for specified major emissions control components	
2003	155.00	$(0.500 \times (151 + 557/P^{0.5})) + 4.67$		
2004	130.00	$(0.417 \times (151 + 557/P^{0.5})) + 5.11$		
2005	105.00	$(0.333 \times (151 + 557/P^{0.5})) + 5.56$		
2006+	81.00	$(0.250 \times (151 + 557/P^{0.5})) + 6.00$		

KEY: g = gram; hr = hour; HC = hydrocarbon; hp = horsepower; kW = kilowatt; kWh = kilowatt hour; NOx = nitrogen oxide; yr = year.

^a The standards apply to marine spark-ignition outboard, personal watercraft, and jet-boat engines only. There are currently no federal standards for marine spark-ignition sterndrive/inboard engines (previously proposed standards have not been finalized). Marine compression-ignition engines under 50 hp are covered under the proposed nonroad compression-ignition engine standards. Federal standards are in development for marine compression-ignition engines over 50 hp.

^b P = the average power of the engine family in kilowatts (sales-weighted).

^c As an example, the standards for an outboard engine of 125 hp (just over 93 kW) would be 149.53 g/kWh in 1998, 123.63 g/kWh in 2000, 97.74 g/kWh in 2002, 72.00 g/kWh in 2004, and 46.10 g/kWh in 2006.

^d All emissions standards must be met for the useful life of the engine.

^e The standards for personal watercraft did not go into effect until 1999, although the standard went into effect for outboard engines in 1998.

SOURCE:

40 CFR 91 July 1, 2000 edition, pp. 301-302, 398, and U.S. Environmental Protection Agency, Office of Air and Radiation, personal communication, Aug. 28, 2001.

TABLE 4-37: Tier 2 Federal Exhaust Emissions Standards for Newly Manufactured Commercial Marine Compression-Ignition Engines^{a, b}

Engine category ^c	Displacement (liters/cylinder)	Rated power (kW)	Year	NOx + THC (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Useful Life ^d	Warranty Period
1	<0.9		2005	7.5	0.40			
	0.9 to < 1.2		2004	7.2	0.30		10 yrs or 10,000 hrs operation	5 yrs or 5,000 hrs operation
	1.2 to < 2.5	37 kW and above	2004	7.2	0.20	5.0		
	2.5 to < 5.0		2007	7.2	0.20			
2	5.0 to < 15.0	37 kW and above		7.8	0.27			
	15.0 to < 20.0	37 kW to < 3,300 kW		8.7	0.50			
	15.0 to < 20.0	3,300 kW and above	2007	9.8	0.50	5.0	10 yrs or 20,000 hrs operation	5 yrs or 10,000 hrs operation
	20.0 to < 25.0	37 kW and above		9.8	0.50			
	25.0 to < 30.0	37 kW and above		11.0	0.50			
3	30 and above	37 kW and above						

No Tier 2 emissions standards have been set for Category 3 commercial marine vessels.

KEY: CO=carbon monoxide; disp=displacement; g/kW-hr=gram per kilowatt-hour; hrs=hours; kW=kilowatt; NOx=nitrogen oxides; PM=particulate matter; THC=total hydrocarbons; yrs=years.

^a Tier 2 emissions standards established by Congress apply to commercial compression-ignition (diesel) engines with a power rating of at least 37 kW. Both propulsion and auxiliary engines are covered under these standards, but land-based engines used in portable auxiliary equipment must meet standards for land-based engines. Smaller compression-ignition engines are covered under a separate rule. The U.S. Environmental Protection Agency (EPA) also intends to regulate recreational marine diesel engine emissions under a separate rule and is establishing provisions to allow exemptions for category 1 and 2 engines used as auxiliary engines in U.S.-flagged vessels engaged in foreign trade or overseas operations at least 75 percent of the time (i.e., operation will occur more than 320 nautical kilometers outside the United States, not including trips between U.S. ports in Alaska, Hawaii, the continental United States, or its territories).

^b MARPOL Annex VI nitrogen oxide (NOx) standards (international standards adopted by the International Maritime Convention on the Prevention of Pollution from Ships) are referred to as Tier 1 emissions standards. These standards apply to any diesel engine over 130 kW installed on a vessel constructed on or after Jan. 1, 2000 and to any engine that undergoes major conversion after that date. MARPOL standards are currently voluntary for ships engaged in domestic travel but will be required for ships engaged in foreign trade with countries that ratify MARPOL standards. Although they have not yet been ratified by the United States, the EPA encourages engine manufacturers to make compliant engines and encourages owners to purchase them. If ratified by the United States, MARPOL Annex VI NOx standards will be retroactively effective Jan. 1, 2000.

^c Emissions standards are based on displacement/cylinder and rated power. The three standards categories are as follows:

Category 1 (< 5 liters displacement/cylinder and rated power >=37 kW): These engines are typically used as propulsion engines on relatively small commercial vessels (fishing vessels, tugboats, crewboats, etc.). They are also used as auxiliary engines on vessels of all sizes and applications.

Category 2 (>= 5 liters displacement/cylinder to < 30 liters displacement/cylinder and rated power >=37 kW): The largest engines that are widely used as propulsion engines in harbor and coastal vessels in U.S. waters. These engines also provide auxiliary power on very large vessels. Many of these engines are of similar size and configuration as locomotive engines or use comparable emissions control technologies.

Category 3 (>= 30 liters displacement/cylinder and rated power >=37kW): These are very large high-power engines that are used almost exclusively for propulsion on vessels engaged in international trade.

Continued next page

TABLE 4-37: Tier 2 Federal Exhaust Emissions Standards for Newly Manufactured Commercial Marine Compression-Ignition Engines^{a, b}—continued

^d Manufacturers must demonstrate that the engine or engine family will meet all standards for its useful life. Certification for useful life is accomplished by testing a sample of engines. The warranty period applies to each engine manufactured. The manufacturer of each engine must provide a warranty to the ultimate purchaser or owner (and each subsequent purchaser or owner) that the engine is designed, built, and equipped so as to conform at the time of sale with Tier 2 standards and is free from defects in materials and workmanship that would cause the engine to fail to conform to these standards for the warranty period. Furthermore, this warranty cannot be shorter than any mechanical warranty on the engine and must be at least one half of the useful life period.

SOURCE:

Federal Register, Vol. 64, No. 249, Dec. 29, 1999, pp 73,299 to 73,373, and U.S. Environmental Protection Agency, Office of Air and Radiation, personal communication, Aug. 28, 2001.

TABLE 4-38: Estimated National Average Vehicle Emissions Rates by Vehicle Type and Fuel (Grams per mile)

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
GASOLINE (assuming zero RFG)										
Light-duty vehicles										
Exhaust HC	2.79	1.57	1.39	1.25	1.14	1.05	0.97	0.89	0.81	0.74
Nonexhaust HC	1.21	1.05	1.03	1.01	0.98	0.95	0.92	0.88	0.84	0.81
Total HC	3.99	2.62	2.41	2.26	2.12	2.00	1.89	1.77	1.65	1.54
Exhaust CO	42.89	26.60	24.18	22.38	20.86	19.54	18.53	18.03	17.58	17.13
Exhaust NO _x	2.70	1.78	1.64	1.55	1.46	1.35	1.29	1.25	1.20	1.14
Light-duty trucks										
Exhaust HC	3.68	2.21	1.96	1.80	1.65	1.54	1.45	1.35	1.24	1.13
Nonexhaust HC	1.36	1.10	1.07	1.04	1.02	0.99	0.97	0.94	0.89	0.84
Total HC	5.04	3.31	3.03	2.85	2.67	2.53	2.42	2.29	2.13	1.98
Exhaust CO	56.23	37.51	34.47	32.20	30.23	28.28	26.81	25.61	24.32	22.30
Exhaust NO _x	2.62	1.84	1.73	1.65	1.59	1.55	1.54	1.53	1.50	1.45
Heavy-duty vehicles										
Exhaust HC	3.66	2.16	1.94	1.73	1.51	1.35	1.22	1.09	0.98	0.82
Nonexhaust HC	2.74	2.07	1.97	1.87	1.79	1.69	1.62	1.54	1.48	1.41
Total HC	6.40	4.24	3.91	3.60	3.29	3.04	2.84	2.63	2.46	2.24
Exhaust CO	85.61	54.16	48.52	43.26	38.82	34.54	31.08	27.59	24.73	20.60
Exhaust NO _x	7.19	6.11	5.89	5.73	5.56	5.40	5.26	5.13	5.01	4.91
Motorcycles										
Exhaust HC	2.01	1.69	1.63	1.63	1.62	1.61	1.61	1.61	1.61	1.61
Nonexhaust HC	0.74	0.71	0.70	0.69	0.70	0.70	0.70	0.70	0.70	0.70
Total HC	2.74	2.40	2.34	2.32	2.32	2.31	2.31	2.31	2.31	2.31
Exhaust CO	15.15	14.67	14.59	14.59	14.59	14.59	14.59	14.59	14.59	14.59
Exhaust NO _x	1.26	1.26	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
DIESEL										
Light-duty vehicles										
Exhaust HC	0.68	0.77	0.79	0.81	0.81	0.82	0.80	0.76	0.73	0.73
Exhaust CO	1.49	1.69	1.73	1.76	1.78	1.79	1.78	1.75	1.73	1.74
Exhaust NO _x	1.83	1.89	1.89	1.88	1.86	1.85	1.81	1.72	1.62	1.54
Light-duty trucks										
Exhaust HC	1.59	1.67	1.69	1.63	1.51	1.42	1.02	0.88	0.96	0.97
Exhaust CO	2.67	2.85	2.89	2.79	2.60	2.44	1.77	1.54	1.66	1.68
Exhaust NO _x	2.71	2.46	2.42	2.31	2.17	2.07	1.76	1.64	1.67	1.66
Heavy-duty vehicles										
Exhaust HC	2.21	1.23	1.10	1.00	0.92	0.85	0.79	0.74	0.69	0.61
Exhaust CO	10.06	6.32	5.73	5.23	4.80	4.43	4.10	3.82	3.58	3.37
Exhaust NO _x	23.34	20.49	20.24	20.04	19.84	19.14	18.05	16.68	15.52	13.92

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TABLE 4-38: Estimated National Average Vehicle Emissions Rates by Vehicle Type and Fuel (Grams per mile)—*continued*

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
AVERAGE OF ALL VEHICLES, GASOLINE AND DIESEL										
Exhaust HC	2.98	1.76	1.56	1.43	1.32	1.23	1.15	1.08	0.99	0.91
Nonexhaust HC	1.21	1.01	0.99	0.96	0.94	0.91	0.88	0.85	0.81	0.77
Total HC	4.19	2.77	2.55	2.40	2.25	2.14	2.04	1.93	1.80	1.68
Exhaust CO	45.07	29.12	26.65	24.90	23.40	22.00	20.94	20.20	19.42	18.27
Exhaust NO _x	4.15	3.36	3.24	3.18	3.12	3.02	2.91	2.78	2.65	2.48

KEY: CO = carbon monoxide; HC = hydrocarbon; NO_x = nitrogen oxide; RFG = reformulated gasoline.

NOTES

As of July 1 of each year. Vehicles types are defined as follows: light-duty vehicles (passenger cars up to 6,000 lb GVWR); light-duty trucks (pickups and minivans up to 8,500 lb GVWR); heavy-duty vehicles (8,501 lbs or more GVWR); motorcycle (highway only). This table is based on MOBILE6, the U.S. Environmental Protection Agency's (EPA) latest highway vehicle emissions factor model. Interested readers can learn more about the MOBILE6 model at the following USEPA Internet site <http://www.epa.gov/otaq/m6.htm>.

Emissions factors are national averages based on the following assumptions: ambient temperature 75 °F, daily temperature range 60-84 °F, average traffic speed 27.6 mph (representative of overall traffic in urban areas), standard operating mode (cold-start, hot-start, stabilized), vehicle-miles traveled fractions, no inspection/maintenance or antitampering programs, and gasoline volatility 9.0 per square inch RVP (Reid vapor pressure).

See Table 4-39 for emissions from vehicles operating on reformulated gasoline.

Data for nonexhaust HC is negligible for diesel light-duty vehicles, light-duty trucks, and heavy-duty vehicles.

SOURCE

U.S. Environmental Protection Agency, National Vehicle and Fuel Emissions Laboratory, personal communications, July 31, 2002 and Nov. 26, 2003.

TABLE 4-39: Estimated National Average Vehicle Emissions Rates by Vehicle Type Using Reformulated Gasoline (Grams per mile)

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Light-duty vehicles									
Exhaust HC	1.45	1.28	1.15	1.04	0.97	0.84	0.76	0.68	0.62
Nonexhaust HC	0.89	0.87	0.86	0.84	0.82	0.65	0.63	0.61	0.59
Total HC	2.34	2.15	2.01	1.88	1.78	1.48	1.39	1.29	1.21
Exhaust CO	22.78	20.84	19.43	18.25	17.21	15.36	14.85	14.31	13.88
Exhaust NO _x	1.78	1.64	1.55	1.46	1.35	1.24	1.19	1.12	1.06
Light-duty trucks									
Exhaust HC	2.09	1.85	1.69	1.55	1.44	1.28	1.18	1.07	0.97
Nonexhaust HC	0.92	0.90	0.88	0.86	0.84	0.67	0.66	0.63	0.62
Total HC	3.01	2.74	2.58	2.41	2.28	1.95	1.84	1.71	1.59
Exhaust CO	31.86	29.46	27.70	26.19	24.63	22.25	21.23	20.08	18.39
Exhaust NO _x	1.84	1.73	1.65	1.59	1.55	1.47	1.45	1.41	1.36
Heavy-duty vehicles									
Exhaust HC	2.14	1.91	1.70	1.48	1.32	1.16	1.03	0.92	0.77
Nonexhaust HC	1.72	1.64	1.56	1.50	1.43	1.12	1.07	1.03	1.01
Total HC	3.86	3.55	3.26	2.98	2.75	2.28	2.10	1.96	1.78
Exhaust CO	46.02	41.15	36.62	32.80	29.12	25.87	22.88	20.41	16.87
Exhaust NO _x	6.13	5.90	5.74	5.57	5.41	5.18	5.01	4.86	4.75
Motorcycles									
Exhaust HC	1.69	1.63	1.63	1.62	1.61	1.61	1.61	1.61	1.61
Nonexhaust HC	0.55	0.54	0.53	0.53	0.53	0.43	0.43	0.43	0.44
Total HC	2.24	2.17	2.16	2.16	2.14	2.04	2.04	2.04	2.05
Exhaust CO	12.64	12.56	12.56	12.56	12.56	12.56	12.56	12.56	12.56
Exhaust NO _x	1.26	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Average of all RFG and diesel vehicles									
Exhaust HC	1.65	1.46	1.34	1.23	1.15	1.02	0.94	0.86	0.78
Nonexhaust HC	0.85	0.84	0.82	0.80	0.78	0.62	0.60	0.58	0.57
Total HC	2.50	2.30	2.16	2.03	1.93	1.64	1.54	1.44	1.35
Exhaust CO	24.92	22.93	21.56	20.38	19.27	17.44	16.76	15.99	15.01
Exhaust NO _x	3.36	3.24	3.18	3.12	3.02	2.85	2.71	2.58	2.40

KEY: CO = carbon monoxide; HC = hydrocarbon; NO_x = nitrogen oxide; RFG = reformulated gasoline.

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TABLE 4-39: Estimated National Average Vehicle Emissions Rates by Vehicle Type Using Reformulated Gasoline (Grams per mile)—*continued*

NOTES

As of July 1 of each year. Vehicle types are defined as follows: light-duty vehicles (passenger cars up to 6,000 lb gross vehicle weight rating GVWR) ; light-duty trucks (pickups and minivans up to 8,500 lb GVWR); heavy-duty vehicles (8,501 lb or more GVWR); motorcycle (on-highway only). The data in this table are based on MOBILE6, and reflect the introduction of RFG starting in 1995. Emissions factors are national averages based on the following assumptions: ambient temperature 75 °F, daily temperature range 60 -84 °F, average traffic speed 27.6 mph (representative of overall traffic in urban areas), standard operating mode (cold-start, hot-start, stabilized), vehicle-miles traveled fractions and no inspection/maintenance or antitampering programs.

Emissions estimates in this table assume 100% RFG.

SOURCE

U.S. Environmental Protection Agency, National Vehicle and Fuel Emissions Laboratory, personal communications, July 31, 2002 and Nov. 26, 2003.

TABLE 4-40: Estimated National Emissions of Carbon Monoxide^R (Million short tons)

	1970	1975	1980	1985	1990	1995	2000	2001	2002
TOTAL all sources	204.04	188.40	185.41	176.84	154.19	126.78	(R) 114.47	(R) 106.30	112.05
Transportation, total	166.29	157.34	147.70	138.13	114.34	88.22	72.49	(R) 67.99	66.60
On-road vehicles	163.23	153.55	143.83	134.19	110.26	83.88	68.06	(R) 63.48	62.16
Off-road	3.06	3.78	3.87	3.94	4.08	4.34	4.43	4.51	4.44
Aircraft	0.17	0.18	0.21	0.22	0.24	0.25	0.27	0.26	0.26
Railroads	0.11	0.11	0.12	0.09	0.09	0.10	0.10	0.10	0.09
Marine vessels	0.13	0.13	0.13	0.14	0.13	0.14	0.13	0.13	0.13
Other off-road ^a	2.65	3.36	3.42	3.49	3.62	3.85	3.93	4.02	3.97
Nontransportation, total	37.75	31.06	37.71	38.72	39.85	38.56	(R) 41.97	(R) 38.31	45.45
Fuel combustion	4.63	4.48	7.30	8.49	5.51	5.93	(R) 4.78	(R) 4.83	4.43
Industrial processes ^b	9.84	7.54	6.95	5.27	4.77	4.60	(R) 2.63	(R) 2.79	2.66
Waste disposal and recycling	7.06	3.23	2.30	1.94	1.08	1.19	(R) 1.85	(R) 1.85	1.85
Miscellaneous ^c	16.22	15.81	21.15	23.02	28.49	26.84	(R) 32.71	(R) 28.84	36.51

KEY: R = revised.

- ^a Other off-road comprises nonroad gasoline- and diesel-powered recreational, airport service and railway maintenance vehicles, and recreational marine vessels.
- ^b Industrial processes comprises chemical and allied product manufacturing, metals processing, petroleum and related industries, and other industrial processes; and solvent utilization, storage, and transport.
- ^c Miscellaneous comprises nonroad gasoline- and diesel-powered construction, industrial, lawn and garden, farm, light-commercial, logging vehicles and other nonroad sources; agriculture and forestry, health services, cooling towers, fugitive dust; and other combustion sources that could not be accurately allocated to specific source categories.

NOTES

The methodologies used to estimate emissions constantly evolve and undergo major changes. These improved methods are often used to revise estimates for previous years and, therefore, some estimates in this table may not match estimates produced in previous reports. Numbers may not add to totals due to rounding.

SOURCE

1970-2002: U.S. Environmental Protection Agency, Clearinghouse for Inventories and Emissions Factors (CHIEF), *Current Emission Trends Summaries*, available at Internet website <http://www.epa.gov/ttn/chief/trends/> as of Dec. 21, 2004.

TABLE 4-41: Estimated National Emissions of Nitrogen Oxides^R (Million short tons)

	1970	1975	1980	1985	1990	1995	2000	2001	2002
TOTAL all sources	26.88	26.38	27.08	25.76	25.53	24.96	(R) 22.60	(R) 21.55	21.10
Transportation, total	14.83	14.26	13.74	13.06	11.68	11.10	10.57	(R) 9.95	9.44
On-road vehicles	12.62	12.06	11.49	10.93	9.59	8.88	8.39	(R) 7.77	7.37
Off-road, total	2.20	2.20	2.25	2.13	2.08	2.23	2.18	(R) 2.18	2.07
Aircraft	0.05	0.06	0.06	0.07	0.07	0.07	0.09	0.08	0.08
Railroads	1.14	1.11	1.18	0.96	0.94	1.03	1.00	1.00	0.89
Marine vessels	0.98	0.99	0.95	1.04	1.00	1.05	1.01	1.01	1.01
Other off-road ^a	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.08	0.09
Nontransportation, total	12.06	12.12	13.34	12.70	13.86	13.85	(R) 12.03	(R) 11.60	11.67
Fuel combustion	10.06	10.49	11.32	10.05	10.89	10.83	(R) 8.82	(R) 8.45	8.29
Industrial processes ^b	0.77	0.54	0.56	0.80	0.80	0.77	(R) 0.81	(R) 0.85	0.85
Waste disposal and recycling	0.44	0.16	0.11	0.09	0.09	0.10	(R) 0.13	(R) 0.13	0.15
Miscellaneous ^c	0.78	0.94	1.35	1.76	2.07	2.15	(R) 2.26	(R) 2.17	2.37

KEY: R = revised.

^a Other off-road comprises nonroad gasoline- and diesel-powered recreational, airport service and railway maintenance vehicles, and recreational marine vessels.

^b Industrial processes comprises chemical and allied product manufacturing, metals processing, petroleum and related industries, and other industrial processes; and solvent utilization, storage, and transport.

^c Miscellaneous comprises nonroad gasoline- and diesel-powered construction, industrial, lawn and garden, farm, light-commercial, logging vehicles, and other nonroad sources; agriculture and forestry, health services, cooling towers, fugitive dust; and other combustion sources that could not be accurately allocated to specific source categories.

NOTES

The methodologies used to estimate emissions constantly evolve and undergo major changes. These improved methods are often used to revise estimates for previous years and, therefore, some estimates in this table may not match estimates produced in previous reports. The most recent revision of these estimates is based on Version 2 of the 1999 National Emissions Inventory (NEI) and provides a generally consistent time trend of the estimates. However, state-submitted data on mobile sources is only reflected in the estimates for 1999 and the EPA plans to correct this inconsistency in future publications.

Numbers may not add to totals due to rounding.

SOURCE

1970-2002: U.S. Environmental Protection Agency, Clearinghouse for Inventories and Emissions Factors (CHIEF), *Current Emission Trends Summaries*, available at Internet website <http://www.epa.gov/ttn/chief/trends/> as of Dec. 20, 2004.

TABLE 4-42: Estimated National Emissions of Volatile Organic Compounds^B (Million short tons)

	1970	1975	1980	1985	1990	1995	2000	2001	2002
Total all sources	34.66	19.67	31.11	27.40	24.12	22.04	(R) 17.51	(R) 17.12	16.54
Transportation, total	17.81	16.39	14.94	13.47	10.54	8.05	6.68	(R) 6.30	5.93
On-road vehicles	16.91	15.39	13.87	12.35	9.39	6.75	5.33	(R) 4.95	4.54
Off-road	0.90	1.00	1.07	1.11	1.16	1.30	1.36	1.35	1.38
Aircraft	0.06	0.05	0.05	0.03	0.03	0.03	0.03	0.02	0.02
Railroads	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Marine vessels	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Other off-road ^a	0.77	0.88	0.94	1.01	1.06	1.20	1.26	1.26	1.30
Nontransportation, total	16.85	3.28	16.16	13.94	13.57	13.99	(R) 10.83	(R) 10.81	10.55
Fuel combustion	0.72	0.66	1.05	1.57	1.00	1.07	1.18	(R) 1.19	1.01
Industrial processes ^b	12.33		12.10	9.50	9.01	9.71	(R) 7.21	(R) 7.41	6.96
Waste disposal and recycling	1.98	0.98	0.76	0.98	0.99	1.07	(R) 0.42	(R) 0.42	0.46
Miscellaneous ^c	1.82	1.63	2.25	1.89	2.57	2.14	(R) 2.02	(R) 1.80	2.12

KEY: R = revised.

^a Other off-road comprises nonroad gasoline- and diesel-powered recreational, airport service and railway maintenance vehicles, and recreational marine vessels.

^b Industrial processes comprises chemical and allied product manufacturing, metals processing, petroleum and related industries, and other industrial processes; and solvent utilization, storage, and transport.

^c Miscellaneous comprises nonroad gasoline- and diesel-powered construction, industrial, lawn and garden, farm, light-commercial, logging vehicles, and other nonroad sources; geogenic sources, catastrophic and accidental releases, health services, cooling towers, nontransportation-related fugitive dust, agriculture and forestry, structural fires, agriculture fires, slash/prescribed burning, forest wildfires, and other combustion sources that could not be accurately allocated to specific source categories.

NOTES

The methodologies used to estimate emissions constantly evolve and undergo major changes. These improved methods are often used to revise estimates for previous years and, therefore, some estimates in this table may not match estimates produced in previous reports. Numbers may not add to totals due to rounding.

SOURCE

1970-2002: U.S. Environmental Protection Agency, Clearinghouse for Inventories and Emissions Factors (CHIEF), *Current Emission Trends Summaries*, available at Internet website <http://www.epa.gov/ftn/chief/trends/> as of Dec. 21, 2004.

TABLE 4-43: Estimated National Emissions of Particulate Matter (PM-10)^{a, R} (Million short tons)

	1970	1975	1980	1985	1990	1995	2000	2001	2002
Total all sources	13.02	7.56	7.01	41.32	27.76	25.82	(R) 23.75	(R) 22.89	22.15
Transportation, total	N	N	N	17.24	13.98	13.19	11.92	(R) 11.37	10.99
Transportation-fuel-related, total	0.58	0.56	0.54	0.51	0.49	0.42	0.35	(R) 0.33	0.32
On-road vehicles	0.48	0.46	0.43	0.41	0.39	0.30	(R) 0.23	(R) 0.21	0.20
Off-road, total	0.10	0.10	0.10	0.10	0.11	0.12	0.12	0.12	0.12
Aircraft	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Railroads	0.03	0.03	0.03	0.02	(R) 0.07	0.03	(R) 0.03	(R) 0.03	0.02
Marine vessels	0.04	0.04	0.04	(R) 0.05	N	0.05	0.04	0.04	0.04
Other off-road ^b	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.05
Transportation-related fugitive dust, total	N	N	N	16.72	13.48	12.77	11.57	(R) 11.04	10.67
Unpaved highways	N	N	N	11.64	11.23	10.36	8.75	(R) 8.95	8.60
Paved highways	N	N	N	5.08	2.25	2.41	2.82	(R) 2.09	2.08
Nontransportation, total	12.44	7.00	6.48	24.09	13.78	12.62	(R) 11.82	(R) 11.52	11.15
Fuel combustion	2.87	2.25	2.45	1.54	1.20	1.18	(R) 1.47	(R) 1.49	1.37
Industrial processes ^c	7.67	3.70	2.75	1.06	1.03	0.94	(R) 0.71	(R) 0.81	0.68
Waste disposal and recycling	1.00	0.37	0.27	0.28	0.27	0.29	(R) 0.36	(R) 0.36	0.44
Miscellaneous ^d	0.90	0.68	1.01	21.21	11.28	10.21	(R) 9.28	(R) 8.86	8.65

KEY: N = data do not exist; R = revised.

^a Fine particulate matter less than 10 microns.

^b Other off-road comprises nonroad gasoline- and diesel-powered recreational, airport service and railway maintenance vehicles, and recreational marine vessels.

^c Industrial processes comprises chemical and allied product manufacturing, metals processing, petroleum and related industries, and other industrial processes; solvent utilization; and storage and transport.

^d Miscellaneous comprises nonroad gasoline- and diesel-powered construction, industrial, lawn and garden, farm, light-commercial, logging vehicles and other non-road sources; geogenic sources; agriculture and forestry, cooling towers, nontransportation-related fugitive dust, wildfires, managed burning, and other combustion sources that could not be accurately allocated to specific source categories.

NOTES

The methodologies used to estimate emissions constantly evolve and undergo major changes. These improved methods are often used to revise estimates for previous years and, therefore, some estimates in this table may not match estimates produced in previous reports.

TABLE 4-43: Estimated National Emissions of Particulate Matter (PM-10)^{a, R} (Million short tons)—*continued*

Numbers may not add to totals due to rounding.

SOURCE

1970-2002: U.S. Environmental Protection Agency, Clearinghouse for Inventories and Emissions Factors (CHIEF), *Current Emission Trends Summaries*, available at Internet website <http://www.epa.gov/ftm/chief/trends/> as of Dec. 21, 2004.

TABLE 4-44: Estimated National Emissions of Particulate Matter (PM-2.5)^{a,R} (Million short tons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total all sources	7.56	7.32	7.20	7.15	7.54	6.93	6.73	6.26	6.26	(R) 7.33	(R) 7.29	(R) 6.63	6.80
Transportation, total	2.67	2.69	2.64	2.71	2.71	2.50	2.30	2.40	2.38	(R) 2.29	(R) 2.30	(R) 1.92	1.85
On-road vehicles	0.32	0.31	0.29	0.28	0.26	0.24	0.23	0.22	0.20	0.18	0.17	0.16	0.15
Aircraft	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Railroads	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Marine vessels	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Other off-road ^b	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Transportation-related fugitive dust													
Unpaved roads	1.69	1.68	1.64	1.72	1.71	1.56	1.37	1.43	1.41	(R) 1.31	1.32	(R) 1.35	1.29
Paved roads	0.56	0.60	0.61	0.62	0.63	0.58	0.60	0.65	0.67	(R) 0.69	0.71	(R) 0.31	0.31
Nontransportation, total	4.89	4.63	4.56	4.44	4.83	4.43	4.42	3.86	3.88	(R) 5.04	(R) 4.98	(R) 4.71	4.95
Fuel combustion	0.91	0.89	0.93	0.85	0.84	0.90	0.67	0.67	0.63	(R) 1.40	(R) 1.29	(R) 1.30	1.16
Industrial processes ^c	0.56	0.57	0.58	0.50	0.50	0.50	0.37	0.38	0.39	0.49	0.50	(R) 0.59	0.42
Waste disposal and recycling	0.23	0.24	0.24	0.29	0.27	0.25	0.43	0.44	0.46	(R) 0.44	(R) 0.33	(R) 0.33	0.42
Miscellaneous ^d	3.19	2.92	2.81	2.80	3.22	2.79	2.96	2.37	2.41	(R) 2.71	(R) 2.85	(R) 2.49	2.96

KEY: R = revised.^a Particulate matter less than 2.5 microns in size.^b Other off-road comprises nonroad gasoline- and diesel-powered recreational, airport service and railway maintenance vehicles, and recreational marine vessels.^c Industrial processes comprises chemical and allied product manufacturing, metals processing, petroleum and related industries, and other industrial processes; solvent utilization; and storage and transportation.^d Miscellaneous comprises nonroad gasoline- and diesel-powered construction, industrial, lawn and garden, farm, light-commercial, logging vehicles and other non-road sources; geogenic sources, agriculture and forestry, cooling towers, nontransportation-related fugitive dust, wildfires, managed burning, and other fugitive dust and combustion that could not accurately be allocated to specific source categories.**NOTES**

The emissions estimates shown here are those that are directly emitted, which represent only a portion of the total PM-2.5 emissions found in the air. Secondary formation of fine particulates resulting from emissions of nitrogen oxide, sulfur dioxide, volatile organic compounds, and other substances, is also a significant source of PM-2.5.

Numbers may not add to totals due to rounding.

TABLE 4-44: Estimated National Emissions of Particulate Matter (PM-2.5)^{a,R} (Million short tons)—continued

The methodologies used to estimate emissions constantly evolve and undergo major changes. These improved methods are often used to revise estimates for previous years and, therefore, some estimates in this table may not match estimates produced in previous reports.

Except for residential wood combustion, included in the fuel combustion category, combustion source emissions for 1999-2001 include both the condensible and filterable PM fractions. Emissions prior to 1999 include only the filterable PM fraction. Residential wood combustion emissions include both the condensible and filterable PM fractions for all years.

SOURCE

1990-2002: U.S. Environmental Protection Agency, Clearinghouse for Inventories and Emissions Factors (CHIEF), *Current Emission Trends Summaries*, available at Internet website <http://www.epa.gov/ttn/chief/trends/> as of Dec. 21, 2004.

TABLE 4-45: Estimated National Emissions of Sulfur Dioxide^R (Million short tons)

	1970	1975	1980	1985	1990	1995	2000	2001	2002
TOTAL all sources	31.22	28.04	25.93	23.31	23.08	18.62	(R) 16.35	(R) 15.93	15.35
Transportation, total	0.51	0.57	0.63	0.69	0.73	0.56	0.49	(R) 0.47	0.49
On-road vehicles	0.27	0.33	0.39	0.45	0.50	0.34	0.26	(R) 0.25	0.28
Off-road, total	0.24	0.24	0.24	0.24	0.23	0.23	0.23	(R) 0.23	0.22
Aircraft	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Railroads	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05
Marine vessels	0.16	0.16	0.16	0.17	0.17	0.16	0.16	0.16	0.16
Nontransportation, total	30.70	27.47	25.30	22.61	22.34	18.06	(R) 15.86	(R) 15.46	14.86
Fuel combustion	23.46	22.66	21.39	20.02	20.29	16.23	(R) 14.16	(R) 13.74	13.17
Industrial processes ^a	7.09	4.68	3.77	2.43	1.86	1.59	(R) 1.38	(R) 1.43	1.37
Waste disposal and recycling	<0.01	0.05	0.03	0.03	0.04	0.05	0.03	0.04	0.03
Miscellaneous ^b	0.15	0.08	0.10	0.13	0.15	0.19	(R) 0.28	(R) 0.26	0.30

KEY: R = revised.

^a Industrial processes comprises chemical and allied product manufacturing, metals processing, petroleum and related industries, and other industrial processes; solvent utilization; and storage and transport.

^b Miscellaneous comprises nontransportation-related fugitive dust, agriculture and forestry, nonroad gasoline, nonroad diesel, other nonroad sources and other miscellaneous combustion that could not be accurately allocated to specific source categories.

NOTES

The methodologies used to estimate emissions constantly evolve and undergo major changes. These improved methods are often used to revise estimates for previous years and, therefore, some estimates in this table may not match estimates produced in previous reports.

Numbers may not add to totals due to rounding.

SOURCE

1970-2002: U.S. Environmental Protection Agency, Clearinghouse for Inventories and Emissions Factors (CHIEF), *Current Emission Trends Summaries*, available at Internet website <http://www.epa.gov/ttn/chieftrends/> as of Dec. 21, 2004.

TABLE 4-46: Estimated National Emissions of Lead (Thousand short tons)

	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000
TOTAL all sources	220.88	159.67	74.16	22.89	4.98	3.93	4.08	4.14	4.06	4.20	4.23
Transportation, total	173.36	131.33	61.39	18.74	1.04	0.56	0.52	0.52	0.52	0.54	0.56
Highway vehicles	171.96	130.21	60.50	18.05	0.42	0.02	0.02	0.02	0.02	0.02	0.02
Aircraft	1.40	1.12	0.89	0.69	0.62	0.54	0.51	0.50	0.50	0.52	0.55
Nontransportation, total	47.52	28.34	12.77	4.15	3.94	3.37	3.55	3.61	3.54	3.66	3.66
Fuel combustion	10.62	10.35	4.30	0.52	0.50	0.49	0.49	0.49	0.49	0.50	0.50
Industrial processes ^a	26.36	11.38	3.94	2.53	2.48	2.27	2.27	2.32	2.24	2.35	2.35
Waste disposal and recycling	2.20	1.60	1.21	0.87	0.80	0.60	0.79	0.80	0.81	0.81	0.81
Miscellaneous ^b	8.34	5.01	3.32	0.23	0.16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

^a Industrial processes comprise chemical and allied product manufacturing, metals processing, and other industrial processes.

^b Miscellaneous comprises other nonroad gasoline, engines and vehicles that could not be accurately allocated to specific source categories.

NOTES

Total lead emissions decreased sharply from 1970 to 1995 as a result of regulatory actions. The lead content of leaded gasoline was reduced dramatically in 1985. In addition, unleaded gasoline was introduced in 1975 for use in automobiles equipped with catalytic control devices. By 1995, unleaded gasoline sales accounted for 99% of the gasoline market.

The EPA now treats lead as a hazardous air pollutant (HAP) and the HAPs emission inventory report is published every three years.

The methodologies used to estimate emissions constantly evolve and undergo major changes. Improved methods are often used to revise estimates for previous years. Therefore, some estimates in this table may not match estimates produced in previous reports, and some trends may not be consistent across years in which major changes in methodology have occurred.

Numbers may not add to totals due to rounding.

SOURCES

1970, 1975: U.S. Environmental Protection Agency, *National Air Quality and Emissions Trends Report: 1999* (EPA-454/R-01-004) (Research Triangle Park, NC: March 2001), table A-2; available at Internet website <http://www.epa.gov/oar/aqtrnd99/toc.html> as of Sept. 5, 2001.

1980-2000: Ibid, Current Emission Trends Summaries, available at internet website <http://www.epa.gov/ttn/chief/trends/trends00/trends2000.pdf> as of Oct. 17, 2002.

**TABLE 4-47: Air Pollution Trends in Selected Metropolitan Statistical Areas
(Number of days with AQI values greater than 100 at trend sites and all monitoring sites)**

	All sites		Trend sites					
	Total number of sites ^R	AQI days > 100 (2003)	Number of trend sites ^R	1995	2000	2001	2002	2003
Akron, OH	2	4	2	12	4	12	22	4
Albany-Schenectady-Troy, NY	4	5	3	3	1	11	8	5
Albuquerque, NM	11	3	8	0	0	1	(R) 0	2
Allentown-Bethlehem-Easton, PA	3	4	1	7	5	9	18	4
Ann Arbor, MI	2	6	1	5	2	5	11	5
Atlanta, GA	11	13	6	36	(R) 30	(R) 14	(R) 30	11
Austin-San Marcos, TX	4	4	1	10	6	0	5	3
Bakersfield, CA	8	116	8	(R) 106	(R) 82	(R) 85	(R) 91	116
Baltimore, MD	8	10	7	36	(R) 16	(R) 26	(R) 39	10
Baton Rouge, LA	7	16	7	22	(R) 30	5	6	16
Birmingham, AL	10	4	6	32	(R) 21	(R) 11	(R) 13	3
Boston, MA-NH	6	5	2	7	1	12	(R) 13	3
Buffalo-Niagara Falls, NY	2	7	2	6	5	13	21	7
Charleston-North Charleston, SC	3	0	3	1	4	0	1	0
Charlotte-Gastonia-Rock Hill, NC-SC	8	9	6	18	(R) 24	(R) 26	(R) 36	9
Chicago, IL	19	4	20	24	(R) 1	(R) 16	(R) 20	4
Cincinnati, OH-KY-IN	9	11	5	(R) 23	(R) 9	(R) 6	(R) 26	7
Cleveland-Lorain-Elyria, OH	9	9	7	(R) 24	(R) 4	(R) 17	(R) 29	6
Columbia, SC	3	2	2	2	8	7	3	1
Columbus, OH	7	7	3	18	(R) 6	(R) 7	(R) 19	5
Dallas, TX	11	20	3	29	22	16	15	12
Dayton-Springfield, OH	5	7	4	11	(R) 6	(R) 4	28	6
Denver, CO	8	17	8	(R) 3	(R) 2	(R) 2	(R) 7	17
Detroit, MI	7	7	7	(R) 12	(R) 3	(R) 16	(R) 21	7
El Paso, TX	6	1	2	3	(R) 3	(R) 1	(R) 4	0
Fort Lauderdale, FL	3	0	2	1	(R) 1	(R) 2	(R) 1	0
Fort Wayne, IN	3	4	2	12	4	2	15	4
Fort Worth-Arlington, TX	8	28	2	28	16	17	23	22
Fresno, CA	8	97	5	61	(R) 78	(R) 92	(R) 91	96
Gary, IN	6	5	3	18	(R) 5	(R) 10	20	3
Grand Rapids-Muskegon-Holland, MI	5	8	4	18	(R) 3	(R) 11	(R) 20	7
Greensboro-Winston-Salem-High Pt., NC	7	6	6	13	(R) 20	(R) 18	(R) 30	6
Greenville-Spartanburg-Anderson, SC	4	4	4	7	11	13	28	4
Harrisburg-Lebanon-Carlisle, PA	3	3	3	13	(R) 5	(R) 17	(R) 17	3
Hartford, CT	3	7	3	(R) 13	7	16	21	7
Houston, TX	18	38	9	66	(R) 43	(R) 28	23	30
Indianapolis, IN	12	13	7	21	(R) 4	(R) 8	(R) 23	11
Jacksonville, FL	2	0	1	0	0	0	(R) 0	0
Jersey City, NJ	1	2	1	16	(R) 3	(R) 6	(R) 6	2
Kansas City, MO-KS	8	14	4	21	(R) 10	4	7	10

**TABLE 4-47: Air Pollution Trends in Selected Metropolitan Statistical Areas
(Number of days with AQI values greater than 100 at trend sites and all monitoring sites)—continued**

	All sites		Trend sites					
	Total number of sites ^R	AQI days > 100 (2003)	Number of trend sites ^R	1995	2000	2001	2002	2003
Knoxville, TN	7	14	7	26	(R) 36	(R) 17	45	14
Las Vegas, NV-AZ	15	11	4	(R) 0	(R) 0	1	(R) 2	2
Little Rock-North Little Rock, AR	3	1	2	7	16	4	9	1
Los Angeles-Long Beach, CA	14	86	14	(R) 97	(R) 45	(R) 37	(R) 35	61
Louisville, KY-IN	7	7	7	26	(R) 10	(R) 10	(R) 26	7
McAllen-Edinburg-Mission, TX	2	1	2	0	0	1	1	1
Memphis, TN-AR-MS	4	9	4	21	24	13	16	9
Miami, FL	4	1	4	2	(R) 0	1	0	1
Middlesex-Somerset-Hunterdon, NJ	2	7	2	20	11	21	29	7
Milwaukee-Waukesha, WI	10	8	8	14	(R) 4	(R) 12	12	8
Minneapolis-St. Paul, MN-WI	7	1	4	(R) 3	(R) 0	2	1	1
Mobile, AL	3	3	1	1	6	1	0	1
Monmouth-Ocean, NJ	2	12	2	20	11	21	31	12
Nashville, TN	7	6	6	26	(R) 16	7	16	6
Nassau-Suffolk, NY	3	6	2	10	5	3	13	6
New Haven-Meriden, CT	2	11	1	14	(R) 6	(R) 11	(R) 20	9
New Orleans, LA	6	8	6	20	17	5	2	8
New York, NY	7	7	4	(R) 20	(R) 11	(R) 16	(R) 30	7
Newark, NJ	2	4	1	20	(R) 6	(R) 13	(R) 27	4
Norfolk-VA Beach-Newport News, VA-NC	3	4	3	6	5	(R) 6	15	4
Oakland, CA	11	4	7	(R) 8	(R) 1	(R) 3	(R) 5	2
Oklahoma City, OK	6	2	3	13	6	2	2	2
Omaha, NE-IA	3	0	3	(R) 0	(R) 0	(R) 0	0	0
Orange County, CA	4	10	2	(R) 8	(R) 3	(R) 2	(R) 0	3
Orlando, FL	5	1	4	1	3	(R) 3	1	0
Philadelphia, PA-NJ	12	14	10	(R) 30	(R) 17	(R) 27	33	13
Phoenix-Mesa, AZ	26	12	7	(R) 19	(R) 9	(R) 6	(R) 6	7
Pittsburgh, PA	12	8	11	(R) 25	(R) 4	(R) 19	(R) 28	7
Portland-Vancouver, OR-WA	5	0	3	2	(R) 0	(R) 0	(R) 1	0
Providence-Fall River-Warwick, RI-MA	2	10	1	7	(R) 2	10	9	4

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TABLE 4-47: Air Pollution Trends in Selected Metropolitan Statistical Areas (Number of days with AQI values greater than 100 at trend sites and all monitoring sites)—continued

	All sites		Trend sites					
	Total number of sites ^R	AQI days > 100 (2003)	Number of trend sites ^R	1995	2000	2001	2002	2003
Raleigh-Durham-Chapel Hill, NC	8	8	8	(R) 16	(R) 18	(R) 9	29	8
Richmond-Petersburg, VA	4	5	3	14	(R) 5	(R) 12	(R) 21	3
Riverside-San Bernardino, CA	19	103	15	(R) 119	(R) 98	(R) 92	(R) 96	102
Rochester, NY	2	3	2	6	1	5	13	3
Sacramento, CA	16	43	11	41	(R) 31	(R) 35	(R) 39	36
St. Louis, MO-IL	17	11	14	(R) 36	(R) 16	(R) 14	(R) 32	11
Salt Lake City-Ogden, UT	9	6	6	5	(R) 7	(R) 4	(R) 7	3
San Antonio, TX	3	7	1	17	0	0	17	4
San Diego, CA	9	6	9	48	(R) 14	(R) 17	(R) 13	6
San Francisco, CA	3	0	3	2	(R) 0	(R) 0	(R) 0	0
San Jose, CA	6	6	5	14	(R) 1	(R) 3	(R) 6	6
Sarasota-Bradenton, FL	6	3	2	1	5	4	0	2
Scranton-Wilkes Barre-Hazleton, PA	4	3	4	12	(R) 1	(R) 10	(R) 16	3
Seattle-Bellevue-Everett, WA	4	2	1	(R) 0	(R) 0	(R) 0	(R) 0	0
Springfield, MA	3	3	4	9	(R) 2	13	12	3
Stockton-Lodi, CA	2	2	3	9	3	2	3	2
Syracuse, NY	3	5	2	5	1	4	9	2
Tacoma, WA	3	1	2	0	(R) 0	(R) 0	0	0
Tampa-St. Petersburg-Clearwater, FL	10	6	7	2	(R) 6	4	0	4
Toledo, OH	5	6	2	9	2	9	13	6
Tucson, AZ	9	1	5	3	0	0	(R) 1	1
Tulsa, OK	6	9	2	(R) 19	10	(R) 4	5	7
Vallejo-Fairfield-Napa, CA	3	0	4	5	0	0	0	0
Ventura, CA	6	31	6	66	(R) 30	(R) 23	(R) 15	31
Washington, DC-MD-VA-WV	20	8	15	32	11	22	34	8
West Palm Beach-Boca Raton, FL	2	0	1	0	0	1	0	0
Wichita, KS	2	1	2	1	1	3	2	1
Wilmington-Newark, DE-MD	5	7	4	27	18	19	21	7
Worcester, MA	1	1	1	7	1	6	8	1
Youngstown-Warren, OH	3	5	2	11	(R) 2	(R) 12	(R) 16	4

KEY: AQI = Air Quality Index; R = revised.

NOTES

The Air Quality Index (AQI) integrates information on 5 major pollutants (particulate matter less than 10 microns in diameter, sulfur dioxide, carbon monoxide, ozone, and nitrogen dioxide and for 2000-2003 particulate matter less than 2.5 microns in diameter is also included as a sixth major pollutant) across an entire monitoring network into a single number that represents the worst daily air quality experienced in an urban area. An AQI greater than 100 indicates that at least 1 criteria pollutant exceeded air quality standards on a given day; therefore, air quality would be in the unhealthful range on that day. Air quality monitoring sites are selected as "trend sites" if they have complete data for at least 8 of the 10 last years.

SOURCE

U.S. Environmental Protection Agency, Office of Air and Radiation, Air Trends, *Factbook and Related Information*, available at <http://www.epa.gov/airtrends/aqi10year.pdf> as of Aug. 25, 2004.

**TABLE 4-48: Areas in Nonattainment of National Ambient Air Quality Standards for Criteria Pollutants
(Condensed nonattainment area list as of September 2002)**

Ref. no.	States	Consolidated nonattainment area name ^a	Number of areas in nonattainment ^d							Area population, in 1,000s ^h						
			O ₃ ^e	CO	SO ₂	PM-10	Pb	NO ₂	O ₃	CO	SO ₂	PM-10	Pb	Total exposed		
1	AK	Anchorage	.	1	.	1	.	.	.	.	.	255	195	255
2	AK	Fairbanks	.	1	.	.	.	.	.	.	.	39	.	39
3	AK	Juneau	.	.	.	1	.	.	.	.	.	.	13	13
4	AL	Birmingham	1	.	.	.	.	.	.	.	805	.	.	805
5	AZ	Ajo	.	.	1	1	.	.	.	.	7	7	7	7
6	AZ	Douglas	.	.	1	1	.	.	.	.	15	15	15	15
7	AZ	Miami-Hayden	.	.	2	1	.	.	.	.	4	4	4	4
8	AZ	Morenci	.	.	1	.	.	.	.	.	8	.	.	8
9	AZ	Nogales	.	.	.	1	.	.	.	.	.	24	24	24
10	AZ	Paul Spur	.	.	.	1	.	.	.	.	1	1	1	1
11	AZ	Phoenix	1	1	.	1	.	.	.	.	3,028	3,028	3,111	3,111
12	AZ	Rillito	.	.	.	1	.	.	.	.	.	.	0	0
13	AZ	San Manuel	.	.	.	1	.	.	.	.	7	.	7	7
14	AZ	Yuma	.	.	.	.	.	.	.	.	.	82	82	82
15	CA	Imperial Valley	.	.	.	1	.	.	.	.	.	119	119	119
16	CA	Los Angeles-South Coast Air Basin	1	1	.	1	.	.	.	.	14,550	14,550	14,550	14,550
17	CA	Mono Basin (in Mono Co.)	.	.	.	1	.	.	.	.	.	.	0	0
18	CA	Owens Valley	.	.	.	1	.	.	.	.	.	7	7	7
19	CA	Sacramento Metro	1	.	.	1	.	.	.	.	1,978	1,223	1,978	1,978
20	CA	San Diego	1	.	.	.	.	.	.	.	2,813	2,813	2,813	2,813
21	CA	San Francisco-Oakland-San Jose	1	.	.	.	.	.	.	.	6,541	.	.	6,541
22	CA	San Joaquin Valley	2	.	.	1	.	.	.	.	3,302	3,080	3,302	3,302
23	CA	Santa Barbara-Santa Maria-Lompoc	1	.	.	.	.	.	.	.	399	.	.	399
24	CA	Searles Valley	.	.	.	3	22	22	22		
25	CA	Southeast Desert Modified AQMA	1	.	.	2	1,024	424	1,024	1,024		

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TABLE 4-48: Areas in Nonattainment of National Ambient Air Quality Standards for Criteria Pollutants (Condensed nonattainment area list as of September 2002)—continued

Ref. no.	States	Consolidated nonattainment area name ^a	Number of areas in nonattainment ^d							Area population, in 1,000s ^h							
			O ₃ ^e	CO	SO ₂	PM-10	Pb	NO ₂	O ₃	CO	SO ₂	PM-10	Pb	Total exposed			
26	CA	Ventura Co.	1	753	753
27	CO	Aspen	.	.	.	1	5	.	.	5
28	CO	Denver-Boulder	.	.	.	1	2,389	.	.	2,389
29	CO	Fort Collins	.	1	143	.	.	.	143
30	CO	Lamar	.	.	.	1	.	.	.	.	.	.	8	.	.	8
31	CO	Steamboat Springs	.	.	.	1	.	.	.	.	.	.	9	.	.	9
32	CT	Greater Connecticut	1	.	.	1	.	.	.	.	.	2,532	123	.	.	2,532
33	DC-MD-VA	Washington	1	.	.	.	.	.	.	.	.	4,544	.	.	.	4,544
34	DE	Sussex County	1	.	.	.	.	.	.	.	.	156	.	.	.	156
35	GA	Atlanta	1	.	.	.	.	.	.	.	.	3,698	.	.	.	3,698
36	GU ^b	Piti Power Plant	.	.	1	.	.	.	.	.	.	1	.	.	.	1
37	GU ^b	Tanguisson Power Plant	.	.	1	.	.	.	.	.	.	1	.	.	.	1
38	ID	Boise	.	1	.	.	.	.	.	.	197	.	.	.	.	197
39	ID	Bonner Co. (Sandpoint)	.	.	.	1	.	.	.	.	.	.	36	.	.	36
40	ID	Pocatello Area	.	.	.	2	.	.	.	.	.	.	66	.	.	66
41	ID	Shoshone Co.	.	.	.	2	.	.	.	.	.	.	12	.	.	12
42	IL-IN	Chicago-Gary-Lake County	1	.	1	3	.	.	.	.	.	8,757	484	322	.	8,757
43	KY-WV	Ashland-Huntington	.	.	1	.	.	.	.	.	.	.	49	.	.	49
44	LA	Baton Rouge	1	.	.	.	.	.	.	.	.	636	.	.	.	636
45	MA	Boston-Lawrence	1	.	.	.	.	.	.	.	.	5,883	.	.	.	5,883
46	MA	Springfield (W. Mass)	1	.	.	.	.	.	.	.	.	814	.	.	.	814
47	MD	Baltimore	1	.	.	.	.	.	.	.	.	2,512	.	.	.	2,512
48	MD	Kent and Queen Anne Cos.	1	.	.	.	.	.	.	.	.	59	.	.	.	59
49	ME	Knox/Lincoln County	1	.	.	.	.	.	.	.	.	73	.	.	.	73
50	ME	Lewiston-Auburn	1	.	.	.	.	.	.	.	.	220	.	.	.	220

**TABLE 4-48: Areas in Nonattainment of National Ambient Air Quality Standards for Criteria Pollutants
(Condensed nonattainment area list as of September 2002)—continued**

Ref. no.	States	Consolidated nonattainment area name ^a	Number of areas in nonattainment ^d							Area population, in 1,000s ^h						
			O ₃ ^e	CO	SO ₂	PM-10	Pb	NO ₂	O ₃	CO	SO ₂	PM-10	Pb	Total exposed		
51	ME	Portland	1	.	.	.	.	.	.	.	.	487	.	.	.	487
52	MO	Liberty-Arcadia	.	.	.	.	.	1	.	.	.	.	.	6	.	6
53	MO-IL	St. Louis	1	.	.	.	.	91	.	.	.	2,482	.	2	.	2,482
54	MT	Billings/Laurel (Yellowstone Co.)	.	.	1	.	.	.	.	.	6	.	.	.	.	6
55	MT	Butte	.	.	.	.	1	.	.	.	34	.	.	.	.	34
56	MT	Columbia Falls	.	.	.	.	.	.	.	.	3	.	.	.	.	3
57	MT	East Helena (Lewis & Clark Co.)	.	.	1	.	.	1	.	.	2	.	.	2	.	2
58	MT	Kalispell	.	.	.	1	.	.	.	.	15	.	.	.	.	15
59	MT	Lame Deer	.	.	.	.	.	1	.	.	0	.	.	.	.	0
60	MT	Libby	.	.	.	.	1	.	.	.	3	.	.	.	.	3
61	MT	Missoula	.	1	.	1	.	.	.	.	52	.	.	52	.	52
62	MT	Polson	.	.	.	1	.	.	.	.	3	.	.	3	.	3
63	MT	Ronan	.	.	.	1	.	.	.	.	2	.	.	2	.	2
64	MT	Thompson Falls	.	.	.	1	.	.	.	.	1	.	.	1	.	1
65	MT	Whitefish	.	.	.	1	.	.	.	.	5	.	.	5	.	5
66	NH	Manchester	1	.	.	.	.	.	.	.	364	.	.	.	.	364
67	NH	Portsmouth-Dover-Rochester	1	.	.	.	.	.	.	.	192	.	.	.	.	192
68	NJ	Atlantic City	1	.	.	.	.	.	.	.	354	.	.	.	.	354
69	NM	Anthony	.	.	.	1	.	.	.	.	2	.	.	2	.	2
70	NM	Grant Co.	.	.	1	.	.	.	.	.	31	.	.	.	.	31
71	NM	Sunland Park	1	.	.	.	.	.	.	.	10	.	.	.	.	10
72	NV	Lake Tahoe	.	1	.	.	.	.	.	.	29	.	.	.	.	29
73	NV	Las Vegas	.	1	.	1	478	.	1,375	.	1,375	
74	NV	Reno	1	1	.	1	339	.	339	.	339	
75	NY	Albany-Schenectady	1	892	892

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TABLE 4-48: Areas in Nonattainment of National Ambient Air Quality Standards for Criteria Pollutants (Condensed nonattainment area list as of September 2002)—continued

Ref. no.	States	Consolidated nonattainment area name ^a	Number of areas in nonattainment ^d							Area population, in 1,000s ^h							
			O ₃ ^e	CO	SO ₂	PM-10	Pb	NO ₂	O ₃	CO	SO ₂	PM-10	Pb	Total exposed			
76	NY	Buffalo-Niagara Falls	1	.	.	.	.	.	.	.	.	1,170	.	.	.	.	1,170
77	NY	Essex City, Whiteface	1	.	.	.	.	.	.	.	.	0	.	.	.	.	0
78	NY	Jefferson Co.	1	.	.	.	.	.	.	.	.	111	.	.	.	.	111
79	NY	Poughkeepsie	1	.	.	.	.	.	.	.	.	600	.	.	.	.	600
80	NY-NJ-CT	New York-N. New Jersey-Long Island	1	.	.	1	.	.	.	.	.	19,171	.	.	1,537	.	19,171
81	OH	Cleveland-Akron-Lorain	.	.	1	.	.	.	.	.	.	1,095	.	.	.	.	1,095
82	OH	Lucas Co. (Toledo)	.	.	1	.	.	.	.	.	.	455	.	.	.	.	455
83	OH-KY	Cincinnati-Hamilton	1	.	.	.	.	.	.	.	.	1,514	.	.	.	.	1,514
84	OH-PA	Youngstown-Warren	1	.	.	.	.	.	.	.	.	120	.	.	.	.	120
85	OR	Grants Pass	.	.	.	1	.	.	.	.	.	.	.	20	.	.	20
86	OR	Klamath Falls	.	.	.	1	.	.	.	.	.	.	.	19	.	.	19
87	OR	LaGrande	.	.	.	1	.	.	.	.	.	.	.	12	.	.	12
88	OR	Lakeview	.	.	.	1	.	.	.	.	.	.	.	3	.	.	3
89	OR	Medford	.	.	.	1	.	.	.	.	.	.	.	78	.	.	78
90	OR	Oakridge	.	.	.	1	.	.	.	.	.	.	.	3	.	.	3
91	OR	Springfield-Eugene	.	.	.	1	.	.	.	.	.	.	.	179	.	.	179
92	OR	Salem	.	1	.	.	.	.	.	.	.	.	135	.	.	.	135
93	PA	Altoona	1	.	.	.	.	.	.	.	.	129	.	.	.	.	129
94	PA	Erie	1	.	.	.	.	.	.	.	.	280	.	.	.	.	280
95	PA	Harrisburg-Lebanon	1	.	.	.	.	.	.	.	.	629	.	.	.	.	629
96	PA	Johnstown	1	.	.	.	.	.	.	.	.	232	.	.	.	.	232
97	PA	Lancaster	1	.	.	.	.	.	.	.	.	470	.	.	.	.	470
98	PA	Pittsburgh-Beaver Valley	.	1	2	1	.	.	.	.	.	335	410	21	.	.	410
99	PA	Scranton-Wilkes-Barre	1	.	.	.	.	.	.	.	.	763	.	.	.	.	763
100	PA	Warren Co	.	.	2	.	.	.	.	.	.	.	20	.	.	.	20

**TABLE 4-48: Areas in Nonattainment of National Ambient Air Quality Standards for Criteria Pollutants
(Condensed nonattainment area list as of September 2002)—continued**

Ref. no.	States	Consolidated nonattainment area name ^a	Number of areas in nonattainment ^d						Area population, in 1,000s ^h							
			O ₃ ^e	CO	SO ₂	PM-10	Pb	NO ₂	O ₃	CO	SO ₂	PM-10	Pb	Total exposed		
101	PA	York	1	473	.	.	.	473
102	PA-DE-NJ-MD	Philadelphia-Wilmington-Trenton	1	6,311	.	.	.	6,311
103	PA-NJ	Allentown-Bethlehem	1	.	1	740	102	.	.	740
104	PR	Guaynabo Co.	.	.	.	1	92	.	92
105	RI	Providence (all of RI)	1	1,048	.	.	.	1,048
106	TX	Beaumont-Port Arthur	1	385	.	.	.	385
107	TX	Dallas-Fort Worth	1	4,589	.	.	.	4,589
108	TX	El Paso	1	1	.	1	.	.	.	.	.	679	62	563	679
109	TX	Houston-Galveston-Brazoria	1	4,669	.	.	.	4,669
110	UT	Ogden	.	.	.	1	.	.	.	.	.	.	77	.	77
111	UT	Salt Lake City	.	.	1	1	.	.	.	.	.	.	898	898	898
112	UT	Tooele Co.	.	.	1	.	.	.	.	.	.	.	40	40	40
113	UT	Utah Co. (Provo)	.	1	.	1	.	.	.	.	.	118	.	368	368
114	VA	Smyth Co., White Top	1	.	.	.	.	.	.	.	.	0	.	.	0
115	WA	Spokane	.	1	.	1	.	.	.	.	.	322	204	204	322
116	WA	Wallula	.	.	.	1	.	.	.	.	.	.	0	0	0
117	WA	Yakima	.	1	.	1	.	.	.	.	.	.	63	63	63
118	WI	Door Co.	1	.	.	.	.	.	.	.	27	.	.	27	27
119	WI	Manitowoc Co.	1	.	.	.	.	.	.	.	82	.	.	82	82
120	WI	Milwaukee-Racine	1	.	.	.	.	.	.	.	1,839	.	.	1,839	1,839
121	WV	Follansbee	.	.	.	1	.	.	.	.	.	.	2	2	2
122	WV	New Manchester Gr. (in Hancock Co)	.	.	1	.	.	.	.	.	.	.	9	9	9
123	WV	Wier - Butler-Clay (in Hancock Co)	.	.	1	1	.	.	.	.	.	.	16	15	16
124	WY	Sheridan	.	.	.	1	.	.	.	.	.	.	15	15	15

Continued next page

TABLE 4-48: Areas in Nonattainment of National Ambient Air Quality Standards for Criteria Pollutants (Condensed nonattainment area list as of September 2002)—continued

KEY: CO = carbon monoxide; NO₂ = nitrogen dioxide; O₃ = ozone; Pb = lead; PM-10 = particulate matter smaller than 10 microns; SO₂ = sulfur dioxide; . = all areas in attainment for a particle or pollutant.

- a This is a simplified listing of classified nonattainment areas. Unclassified and Section 185a (transitional) nonattainment areas are not included. Names of nonattainment areas are listed alphabetically within each state. Note that several smaller nonattainment areas may be inside one larger nonattainment area. In these cases, the smaller nonattainment areas are listed on the same line as the larger one, and the number of nonattainment areas are indicated under each pollutant.
- b Guam (U.S. territory)
- c National total includes Guam (U.S. territory).
- d The number of nonattainment areas for each of the criteria pollutants is listed. A dot (.) indicates that all areas are in attainment for that pollutant.
- e 1-hour ozone standard.
- f Ozone nonattainment area is a portion of Dona Ana County, New Mexico.
- g Lead nonattainment area is Herculaneum, Missouri in Jefferson County.
- h Population figures were obtained from the 2000 census data. For nonattainment areas defined as only partial counties, population figures for just the nonattainment area were used when these were available. Otherwise, whole county population figures were used. When a larger nonattainment area encompasses a smaller one, double counting the population in the "Total exposed" column is avoided by only counting the population of the larger nonattainment area.

The "Total exposed" values represent estimated population living in areas that are in nonattainment for at least one pollutant.

NOTE

Reference numbers 1-124 do not indicate ranking.

SOURCE

U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Quality and Emissions Trends Report, 2002* (Research Triangle Park, NC: 2002), table A-19. Internet website <http://www.epa.gov/airtrends/> as of Oct. 2, 2003.

TABLE 4-49: U.S. Carbon Dioxide Emissions from Energy Use by Sector (Million metric tons of carbon)

Sector	1990	1995	1996	1997	1998	1999	2000	2001	(P) 2002
Total U.S. CO ₂ Emissions from energy use by sector	(R) 1,360.4	(R) 1,433.3	(R) 1,484.5	(R) 1,502.8	(R) 1,514.2	(R) 1,535.5	(R) 1,581.3	(R) 1,552.1	1,562.4
Transportation	(R) 428.0	(R) 453.1	(R) 465.0	(R) 469.8	(R) 479.4	(R) 492.5	(R) 504.3	(R) 498.3	504.4
Natural gas	9.8	10.4	10.6	11.2	9.6	9.7	9.7	9.2	9.6
Electricity	0.7	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.9
Petroleum	(R) 417.5	(R) 441.8	(R) 453.6	(R) 457.7	(R) 468.9	(R) 481.9	(R) 493.6	(R) 488.1	493.9
Motor gasoline	260.5	(R) 276.9	(R) 282.0	(R) 284.3	(R) 292.6	(R) 299.9	(R) 301.6	(R) 303.0	310.5
Liquid petroleum gas	0.4	0.3	(R) 0.2	0.2	0.3	0.2	0.2	0.2	0.2
Jet fuel	60.1	60.0	62.7	63.3	64.2	(R) 66.2	68.5	65.6	63.9
Distillate fuel	(R) 72.3	(R) 82.8	(R) 88.3	(R) 92.3	(R) 95.0	(R) 98.8	(R) 102.0	(R) 104.5	103.4
Residual fuel	21.6	19.4	18.1	15.1	14.3	14.2	18.9	(R) 12.5	13.6
Lubricants	1.8	1.7	1.6	1.7	1.8	1.8	1.8	1.6	1.6
Aviation gas	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
Industrial	(R) 460.5	(R) 472.3	(R) 486.8	(R) 491.0	(R) 484.3	(R) 481.9	(R) 483.8	(R) 459.6	456.4
Residential	(R) 259.3	(R) 279.7	(R) 296.0	(R) 293.6	(R) 298.9	(R) 306.5	(R) 318.9	(R) 316.6	325.3
Commercial	212.6	(R) 228.2	(R) 236.7	(R) 248.5	(R) 251.5	(R) 254.6	(R) 274.3	(R) 277.7	276.2
Total U.S. CO ₂ Emissions (Incl. adj. and other sources) ^a	(R) 1,365.2	(R) 1,450.4	(R) 1,502.3	(R) 1,519.6	(R) 1,527.8	(R) 1,550.6	(R) 1,596.4	(R) 1,567.6	1,580.5

KEY: CO₂ = carbon dioxide; P = preliminary; R = revised.

^a "Adjustments" comprise the addition of U.S. territories and the subtraction of military bunker fuels and international bunker fuels. "Other sources" comprise the addition of gas flaring, CO₂ in natural gas, cement production, other industrial, and waste combustion.

NOTES

Electric utility emissions are distributed across end-use sectors.

Numbers may not add to totals due to rounding.

Tons of carbon can be converted to tons of carbon dioxide gas by multiplying by 3.667. One ton of carbon equals 3.667 tons of carbon dioxide gas.

SOURCE

U.S. Department of Energy, Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2003*, Washington, DC: 2004, available at Internet website <http://www.eia.doe.gov/oiaf/1605/ggrpt/index.html> as of Dec. 20, 2004.

Section E
Water Pollution, Noise,
and Solid Waste

TABLE 4-50: Petroleum Oil Spills Impacting Navigable U.S. Waterways

Source	1985		1990		1995		2000		2001	
	Incidents	Gallons spilled	Incidents	Gallons spilled	Incidents	Gallons spilled	Incidents	Gallons spilled	Incidents	Gallons spilled
TOTAL all spills	6,169	8,436,248	8,177	7,915,007	9,038	2,638,229	8,354	1,431,370	7,559	854,520
Vessel sources, total	1,662	4,862,911	2,485	6,387,158	5,478	1,624,153	5,560	1,033,643	5,021	569,856
Tankship	164	732,397	249	4,977,251	148	125,491	111	608,176	95	125,217
Tank barge	385	3,683,548	457	992,025	353	1,101,938	229	133,540	246	212,298
Other vessels ^a	1,113	446,966	1,779	417,882	4,977	396,724	5,220	291,927	4,680	232,341
Nonvessel sources, total	2,802	3,250,229	2,584	1,408,472	1,116	958,222	1,645	373,761	1,465	270,523
Offshore pipelines	23	17,977	73	46,228	7	1,143	4	17	13	1,241
Onshore pipelines	362	759,040	76	270,700	23	10,751	21	17,004	21	12,336
Other ^b	2,417	2,473,212	2,435	1,091,544	1,086	946,328	1,620	356,740	1,431	256,946
Mystery spills ^c	1,705	323,108	3,108	119,377	2,444	55,854	1,149	23,966	1,073	14,141

^a Other vessels include commercial vessels, fishing boats, freight barges, freight ships, industrial vessels, oil recovery vessels, passenger vessels, unclassified public vessels, recreational boats, research vessels, school ships, tow and tug boats, mobile offshore drilling units, offshore supply vessels, publicly owned tank and freight ships, as well as vessels not fitting any particular class (unclassified).

^b Other nonvessel sources include designated waterfront facilities, nonmarine land facilities, fixed offshore and inshore platforms, mobile facility, municipal facility, aircraft, land vehicles, railroad equipment, bridges, factories, fleeting areas, industrial facilities, intakes, locks, marinas, MARPOL reception facilities, nonvessel common carrier facilities, outfalls, sewers, drains, permanently moored facilities, shipyards, ship repair facilities.

^c Mystery spills are spills from unknown or unidentified sources. U.S. Coast Guard investigators are unable to identify the vessel or facility that spilled the oil into U.S. navigable waters.

SOURCE

U.S. Coast Guard, Oil Spill Compendium 2001, <http://www.uscg.mil/hq/g-m/nmc/response/stats/aa.htm> as of Dec. 12, 2003.

TABLE 4-51: Leaking Underground Storage Tank Releases and Cleanups

	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total confirmed releases	87,528	303,635	317,488	341,773	371,387	397,821	412,392	418,918	427,307	439,385
Cleanups initiated	51,770	238,671	252,615	292,446	314,965	346,300	367,603	379,243	384,029	403,558
Cleanups not initiated	35,758	64,964	64,873	49,327	56,422	51,521	44,789	39,675	43,278	35,827
Cleanups completed	16,905	131,272	152,683	178,297	203,247	228,925	249,759	268,833	284,602	303,120
Releases not cleaned up	70,623	172,363	164,805	163,476	168,140	168,896	162,633	150,085	142,705	136,265

NOTES

All numbers are cumulative.

Data represent fiscal year, October 1 through September 30.

SOURCES

1990: U.S. Environmental Protection Agency, Office of Underground Storage Tanks, personal communications, Nov. 17 and 18, 1998.

1995-2003: Ibid., Internet site <http://www.epa.gov/swrust1/cat/camarchv.htm> as of June 10, 2004.

TABLE 4-52: Highway Noise Barrier Construction (Miles)

	Unknown	1963-80	1981-89	1990	1995	1996	1997	1998	1999	2000	2001	Total 1963-2001
TOTAL length	6	224	531	(R) 64	(R) 129	(R) 54	(R) 88	(R) 129	51	76	69	1,831
Type I barriers ^a	%	144	380	44	(R) 90	(R) 37	(R) 55	(R) 105	30	62	40	1,293
Type II barriers ^b	0	78	120	19	32	15	31	(R) 23	17	10	10	429
All other types ^c	N	2	31	(R) 1	(R) 7	(R) 2	(R) 2	1	4	4	19	108
Cost (2001 \$ millions)	N	187	716	101	181	75	140	205	97	124	98	2,564

KEY: N = data do not exist; R = revised.

^a A Type I barrier is built on a new highway project or a physically altered existing highway.

^b A Type II barrier is built to abate noise along an existing highway (often referred to as retrofit abatement) and is not mandatory.

^c All other types of barriers are nonfederally funded.

^d Have not been assigned a year of construction or a cost.

NOTES

Twenty-eight miles of barriers, while assigned a year of construction, cannot be assigned a cost. Data are produced on a 3-year cycle. California and Arizona did not provide data for the years 1999, 2000, and 2001 and therefore these years may not be comparable with previous years.

SOURCE

U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, *Highway Traffic Noise Barrier Construction Trends* (Washington, DC: 2003), tables 1 and 3.

TABLE 4-53: Number of People Residing in High Noise Areas Around U.S. Airports^{a,b,c} (Within 65 dB DNL noise-level contours)

Year	Exposure		U.S. resident population (millions)
	People (thousands)	Percent of U.S. resident population	
1975	7,000	3.25	215.5
1980	5,200	2.29	227.2
1985	3,400	1.43	237.9
1990	2,700	1.08	249.6
1995	1,700	0.64	266.3
1996	1,500	0.56	269.4
1997	1,300	0.48	272.6
1998	1,100	0.40	275.9
1999	680	0.24	279.0
2000	440	0.16	282.2
2001	411	0.14	285.1
2002	294	0.10	288.0
2003	289	0.10	290.8

KEY: dB = decibels; DNL = day-night sound level.

- ^a Noise-level contours are graphical representations of noise levels on a map, similar to elevation contours on a topographic map. Noise-level contours are lines that join points of equal sound levels. Areas between given noise-level contour lines would have a noise level between the two contour values. The U.S. Department of Transportation, Federal Aviation Administration (FAA) has identified DNL 65 dB as the highest threshold of airport noise exposure that is normally compatible with indoor and outdoor activity associated with a variety of land uses, including residential, recreational, schools, and hospitals.
- ^b Estimates are for areas surrounding airport property of 250 of the largest civil airports with jet operations in the United States. They exclude exposure to aircraft noise within an airport boundary.
- ^c 1975 exposure estimates were made by the U.S. Environmental Protection Agency. 1980–2003 estimates were made by FAA. See the source and accuracy statement for more details on how exposure estimates are made.

SOURCES

Exposure:

1975-2003: U.S. Department of Transportation, Federal Aviation Administration, Office of Environment and Energy (AEE-12), personal communications, Sept. 19, 2002, Jan. 18, 2004, and Oct. 15, 2004.

Population:

1975-1999: U.S. Department of Commerce, Census Bureau, *Statistical Abstract of the United States 2002* (Washington, DC: 2002), table 2.

2000-03: Ibid., *Monthly Population Estimates for the United States*, Internet site <http://www.census.gov/popest/states/tables/NST-EST2003-01.pdf> as of Oct. 18, 2004.

TABLE 4-54: Motor Vehicles Scrapped^a (Thousands)

	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL motor vehicles	8,298	6,576	10,137	9,829	11,073	10,332	10,811	12,509	11,665	11,664	14,299	14,122	13,296
Passenger cars	7,461	5,669	8,405	7,729	8,897	7,414	7,527	8,244	6,819	7,216	8,085	7,650	U
Trucks	837	908	1,732	2,100	2,177	2,918	3,284	4,265	4,846	4,447	6,214	6,472	U

KEY: U = data are not available.

^a Data are for the period July 1 to June 30 of the given year.

NOTES

Figures represent vehicles that are not re-registered.
Numbers may not add to totals due to rounding.

SOURCES

1970-2001: The Polk Co., personal communication, July 31, 2002.

2002: National Automobile Dealers Association, *2003 NADA Data*, (McLean, VA: 2003), p. 16, http://www.nada.org/Content/NavigationMenu/Newsroom/NADADATA/NADA_Data.htm as of July 2003.

Metric Conversion Tables

TABLE 1-1M: System Kilometers Within the United States (Statute kilometers)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Highway ^a	5,706,240	5,937,942	6,002,985	6,176,897	6,211,806	6,218,364	6,223,214	6,296,117	6,334,735	6,354,229	6,383,439	6,395,705
Class I rail ^{b,c}	333,672	321,544	316,202	308,222	265,255	234,584	192,732	174,234	159,727	157,421	161,136	159,528
Amtrak ^c	N	N	N	N	N	38,624	38,624	38,624	37,015	37,015	37,015	36,492
Transit ^d												
Commuter rail ^c	N	N	N	N	N	5,752	6,649	6,695	8,383	8,382	7,145	U
Heavy rail	N	N	N	N	N	2,081	2,174	2,346	2,507	2,530	2,530	U
Light rail	N	N	N	N	N	618	777	913	1,343	1,444	1,518	U
Navigable channels ^e	40,234	40,234	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843
Oil pipeline ^f	307,295	339,358	351,917	363,533	351,469	343,764	335,954	292,759	284,847	U	U	258,892
Gas pipeline ^g	1,015,416	1,235,204	1,469,761	1,575,971	1,692,666	1,800,655	(R) 1,913,832	(R) 2,056,098	(R) 2,203,675	(R) 2,210,434	2,271,398	U

KEY: N = data do not exist; R = revised; U = data are not available.

^a All public road and street mileage in the 50 states and the District of Columbia. For years prior to 1980, some miles of nonpublic roadways are included. No consistent data on private road mileage are available. Beginning in 1998, approximately 43,000 miles of Bureau of Land Management Roads are excluded.

^b Data represent miles of road owned (aggregate length of road, excluding yard tracks, sidings, and parallel lines).

^c Portions of Class I freight railroads, Amtrak, and commuter rail networks share common trackage. Amtrak data represent miles of track operated.

^d Transit system mileage is measured in directional route-miles. A directional route-mile is the mileage in each direction over which public transportation vehicles travel while in revenue service. Directional route-miles are computed with regard to direction of service, but without regard to the number of traffic lanes or rail tracks existing in the right-of-way.

^e These are estimated sums of all domestic waterways which include rivers, bays, channels, and the inner route of the Southeast Alaskan Islands, but does not include the Great Lakes or deep ocean traffic. The Waterborne Commerce Statistics Center monitored 12,612 miles as commercially significant inland shallow-draft waterways in 2001.

^f Includes trunk and gathering lines for crude-oil pipeline.

^g Excludes service pipelines. Data not adjusted to common diameter equivalent. Mileage as of the end of each year. Includes gathering, transmission, and distribution mains. Prior to 1990 data also include field lines. See table 1-10 for a more detailed breakout of oil and gas pipeline mileage. In the past, mileage data reported in *Gas Facts* was taken from the American Gas Association's member survey, the Uniform Statistical Report, supplemented with estimates for companies that did not participate. For 2002 and revised data back to 1990, *Gas Facts* mileage data is now based on information reported to the U.S. Department of Transportation on Form 7100.

NOTE

1.609344 kilometers = 1 mile.

SOURCES

Highway:

1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: Annual issues), table HM-212.

2000-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table HM-20.

Continued next page

TABLE 1-1M: System Kilometers Within the United States (Statute kilometers)—continued

- Class I rail:**
 1960-2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 45, and similar tables in earlier editions.
- Amtrak:**
 1980: Amtrak, Corporate Planning and Development, personal communication (Washington, DC).
 1985-2001: Amtrak, Corporate Planning and Development, *Amtrak Annual Report, Statistical Appendix* (Washington, DC: Annual issues).
 2002-03: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 77 and similar tables in earlier editions.
- Transit:**
 1985-2002: U.S. Department of Transportation, Federal Transit Administration, *National Transit Database* (Washington, DC: Annual issues), table 23 and similar tables in earlier editions.
- Navigable channels:**
 1960-95: U.S. Army Corps of Engineers, Ohio River Division, Huntington District, *Ohio River Navigation System Report, 1996, Commerce on the Ohio River and its Tributaries* (Fort Belvoir, VA: 1996), p. 2.
 2000-03: *Ibid.*, personal communication, Aug. 12, 2003 and July 23, 2004.
- Oil pipeline:**
 1960-2000: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 58.
 2001-03: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, Pipeline Statistics, Internet site <http://ops.dot.gov/stats.htm> as of Dec. 8, 2004.
- Gas pipeline:**
 1960-2002: American Gas Association, *Gas Facts* (Arlington, VA: Annual issues), tables 5-1 and 5-3 and similar tables in earlier editions.

TABLE 1-6M: Estimated U.S. Roadway Lane-Kilometers by Functional System^a

	1980	1985	1990	1995	(R) 2000	2001	2002	2003
TOTAL lane-kilometers	12,749,503	12,903,711	12,956,959	13,129,436	13,235,639	13,280,060	13,349,784	13,381,890
Urban, total	2,245,429	2,482,154	2,688,403	2,961,365	3,082,703	3,165,655	3,229,046	3,393,543
Interstates	77,986	92,207	100,124	114,870	118,950	119,837	120,873	128,089
Other arterials ^b	536,995	598,111	642,733	717,491	734,152	736,383	744,893	779,198
Collectors	233,561	261,320	270,000	297,780	303,474	305,032	307,132	333,707
Local	1,396,888	1,530,515	1,675,546	1,831,224	1,926,127	2,004,404	2,056,148	2,152,549
Rural, total	10,504,074	10,421,557	10,268,556	10,168,070	10,152,936	10,114,405	10,120,738	9,988,347
Interstates	210,792	212,284	218,663	212,298	216,597	216,679	216,569	209,833
Other arterials ^b	816,095	820,773	832,581	854,089	869,781	872,807	875,501	859,837
Collectors ^c	2,303,401	2,360,568	2,361,876	2,281,129	2,276,686	2,275,862	2,267,167	2,234,598
Local	7,173,786	7,027,931	6,855,435	6,820,554	6,789,872	6,749,058	6,761,501	6,684,079

KEY: R = revised.

^a Includes the 50 States and the District of Columbia.

^b For urban: the sum of other freeways and expressways, other principal arterials, and minor arterials.
For rural: the sum of other principal arterials and minor arterials.

^c Includes minor and major collectors.

^d Beginning in 1998, approximately 86,000 lane-miles of Bureau of Land Management roads are excluded.

NOTE

In estimating rural and urban lane kilometers, the U.S. Department of Transportation, Federal Highway Administration assumed that rural minor collectors and urban/rural local roads are two lanes wide.

SOURCES

1980-95: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, table HM-260 (unpublished).

2000-03: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table HM-60, Internet site www.fhwa.dot.gov/policy/ohpi as of Dec. 10, 2004.

TABLE 1-32M: U. S. Vehicle-Kilometers (Millions)

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Air												
Air carrier, large certificated, domestic, all services	4,060	4,902	6,378	7,450	7,743	7,903	8,103	8,582	9,115	(R) 9,039	9,793	9,793
General aviation ^a	8,375	7,520	7,319	6,107	5,671	6,239	N	N	N	N	N	N
Highway ^b , total	2,457,943	2,856,306	3,451,016	3,898,951	4,000,585	4,122,648	4,235,024	4,330,835	4,420,747	(R) 4,501,797	4,595,894	4,652,441
Passenger car ^{b,c}	1,788,940	2,006,527	2,266,384	2,314,710	2,365,501	2,418,129	2,493,802	2,525,222	2,575,412	(R) 2,620,546	2,669,322	2,672,844
Motorcycle ^c	16,438	14,622	15,381	15,767	15,965	16,224	16,549	17,033	16,848	(R) 15,512	15,374	15,352
Other 2-axle 4-tire vehicle ^b	468,214	629,191	924,682	1,271,428	1,314,094	1,369,132	1,397,353	1,450,054	1,485,519	(R) 1,517,945	1,554,922	1,606,132
Truck, single-unit 2-axle 6-tire or more	64,073	73,130	83,527	100,914	103,114	107,654	109,469	113,143	113,459	(R) 116,594	122,128	124,824
Truck, combination	110,527	125,630	151,827	185,800	191,349	200,499	206,574	213,051	217,294	(R) 219,811	223,124	222,608
Bus	9,751	7,207	9,215	10,332	10,562	11,011	11,277	12,331	12,215	(R) 11,389	11,022	10,683
Transit ^d , total	3,681	4,492	5,217	5,713	5,875	6,028	6,105	6,393	6,568	6,753	(P) 6,883	U
Motor bus ^e	2,699	2,998	3,428	3,514	3,574	3,612	3,500	3,663	3,726	3,825	(P) 3,880	U
Light rail	28	27	39	56	61	66	70	78	85	87	(P) 98	U
Heavy rail	619	725	864	865	874	898	910	930	958	979	(P) 999	U
Trolley bus	21	25	22	22	22	23	22	23	24	21	(P) 22	U
Commuter rail	288	295	342	383	389	403	418	428	436	446	(P) 457	U
Demand responsive ^e	N	398	492	815	882	942	1,080	1,156	1,221	1,270	(P) 1,292	U
Ferry boat	i	i	4	5	4	5	5	5	5	5	(P) 5	U
Other	25	24	26	55	69	80	101	111	114	121	(P) 129	U
Rail												
Class I freight, train-kilometers	689	558	612	737	754	764	764	789	811	804	804	830
Class I freight, car-kilometers	47,117	40,105	42,099	48,897	51,040	50,952	52,556	54,478	55,667	55,109	55,812	57,220
Intercity/Amtrakf, train-kilometers	48	48	53	51	48	51	53	55	56	58	61	60
Intercity/Amtrakf, car-kilometers	378	404	484	470	444	463	502	550	592	608	609	534
Total train-kilometers ^g	737	607	665	789	803	816	818	843	867	862	865	891

TABLE 1-32M: U.S. Vehicle-Kilometers (Millions)—Continued

KEY: N = data do not exist; P = preliminary; R = revised.

- ^a All operations other than those operating under 14 CFR 121 and 14 CFR 135. Data for 1996 are estimated using new information on nonrespondents and are not comparable to earlier years. Mileage in source is multiplied by 1.151 to convert to nautical-miles for 1985-1997. These numbers were then converted to kilometers.
- ^b In July 1997, the FHWA published revised vehicle-kilometers data for the highway modes for many years. The major change reflected the reassignment of some vehicles from the passenger car category to the other 2-axle 4-tire vehicle category. This category was calculated prior to rounding.
- ^c U.S. Department of Transportation, Federal Highway Administration (FHWA), provides data separately for passenger car and motorcycle in its annual *Highway Statistics* series. However, the 1995 summary report provides updated data for passenger car and motorcycle combined. Passenger car figures in this table were computed by U.S. Department of Transportation, Bureau of Transportation Statistics, by subtracting the most current motorcycle figures from the aggregate passenger car and motorcycle figures.
- ^d Prior to 1985, excludes demand responsive and most rural and smaller systems funded via Sections 18 and 16(b)2, Federal Transit Act. The series is not continuous between 1980 and 1985. Transit rail modes are measured in car-kilometers. Car-kilometers measure individual vehicle-kilometers in a train. A 10-car train traveling 1 kilometer would equal 1 train-kilometer and 10 car-kilometers.
- ^e Motor bus and demand responsive figures are also included in the bus figure for highway.
- ^f Amtrak began operations in 1971.
- ^g Although both train-kilometers and car-kilometers are shown for rail, only train-kilometers are included in the total. A train-kilometer is the movement of a train, which can consist of multiple vehicles (cars), the distance of 1 kilometer. This differs from a vehicle-kilometer, which is the movement of 1 vehicle the distance of 1 kilometer. A 10-vehicle train traveling 1 kilometer would be measured as 1 train-kilometer and 10 vehicle-kilometers. Caution should be used when comparing train-kilometers with vehicle kilometers.
- ^h 1960-65, motorcycle data are included in passenger car, and other 2-axle 4-tire vehicle data included in single-unit 2-axle 6-tire or more truck.
- ⁱ Ferry boat included with other.

NOTE

1.609344 kilometers = 1 mile.

SOURCES**Air:***Air carrier:*

1980: Civil Aeronautics Board, *Air Carrier Traffic Statistics* (Washington, DC: 1976, 1981), p. 4 (December 1976) and p. 2 (December 1981).
 1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 3, line 25 plus line 46.

General aviation:

1980: U.S. National Transportation Safety Board estimate, personal communication, Dec. 7, 1998.
 1985-90: U.S. National Transportation Safety Board, *General Aviation Activity and Avionics Survey* (Washington, DC: Annual issues), table 3.3.
 1995-97: *Ibid.*, *General Aviation and Air Taxi Activity and Avionics Survey* (Washington, DC: Annual issues), table 3.3.

Highway:*Passenger car and motorcycle:*

1980-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.
 1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.

Continued next page

TABLE 1-32M: U.S. Vehicle-Kilometers (Millions)—Continued**Motorcycle:**

- 1980: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1985* (Washington, DC: 1986), table VM-201A.
- 1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.
- Other 2-axle 4-tire vehicle:*
- 1980-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.
- 1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.
- Single-unit 2-axle 6-tires or more truck, combination truck, and bus:*
- 1980-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.
- 1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/index.htm>.

Transit:

- 1980-2002: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: 2004), table 18, 103, and similar tables in earlier editions.

Rail:

- Class I rail freight train- and car-miles:*
- 1960-2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 33 and p. 34.
- Inter-city/Amtrak train-miles:*
- 1980-2001: Amtrak, *Amtrak Annual Report, Statistical Appendix* (Washington, DC: Annual issues).
- 2002-03: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 77.
- Inter-city/Amtrak car-miles:*
- 1980-2000: Amtrak, Amtrak Corporate Reporting, Route Profitability System, personal communication, 2001.
- 2001-03: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 77.

TABLE 1-33M: Roadway Vehicle-Kilometers Traveled (VKT) and VKT per Lane-Kilometer by Functional Class

	1980	1985	1990	1995	2000	2001	2002	2003
Urban VKT, total (millions)	1,376,416	1,680,313	2,052,693	2,397,173	(R) 2,677,583	2,697,870	2,780,296	2,905,683
Interstate	259,494	347,921	448,848	549,636	(R) 633,221	643,561	657,607	696,255
Other arterials ^a	779,227	930,635	1,125,306	1,311,889	(R) 1,449,040	1,470,499	1,508,530	1,567,398
Collector	133,645	144,162	171,068	204,272	(R) 217,860	221,964	228,324	247,438
Local	204,050	257,595	307,470	331,375	(R) 377,462	361,847	385,835	394,592
Rural VKT, total (millions)	1,081,527	1,175,993	1,398,324	1,501,983	(R) 1,743,164	1,778,459	1,815,598	1,746,758
Interstate	217,397	248,414	322,147	359,498	(R) 431,594	440,999	450,555	434,434
Other arterials ^a	422,894	455,127	532,477	593,196	(R) 676,888	687,101	698,141	670,446
Collector ^b	304,919	332,602	386,983	380,043	(R) 430,067	436,071	442,581	424,323
Local	136,318	139,850	156,716	169,245	(R) 204,615	214,287	224,320	217,554
Urban VKT per lane-kilometer, total (thousands)	987	1,089	1,229	1,304	1,398	1,372	1,386	1,378
Interstate	5,355	6,072	7,215	7,699	(R) 8,567	8,643	8,756	8,748
Other arterials ^a	2,335	2,504	2,818	2,943	(R) 3,176	3,214	3,259	3,237
Collector	921	888	1,020	1,104	1,155	1,171	1,196	1,193
Local	235	271	295	291	(R) 315	291	302	295
Rural VKT per lane-kilometer, total (thousands)	166	182	219	238	276	283	289	281
Interstate	1,660	1,883	2,371	2,725	(R) 3,207	3,275	3,348	3,332
Other arterials ^a	834	892	1,029	1,118	(R) 1,252	1,267	1,283	1,255
Collector ^b	213	227	264	268	304	308	314	306
Local	31	32	37	40	48	51	53	52

KEY: R = revised.^a For urban: the sum of other freeways and expressways, other principal arterials, and minor arterials.

For rural: the sum of other principal arterials and minor arterials.

^b Collector is the sum of major and minor collectors (rural only).**NOTES**

See table 1-6 for estimated highway lane-kilometers by functional class.

1.609344 kilometers = 1 mile.

Continued next page

**TABLE 1-33M: Roadway Vehicle-Kilometers Traveled (VKT) and VKT per Lane-Kilometer by Functional Class—
continued****SOURCES**

1980-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-202.

1995-2003: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table VM-2 and VM-2A.

Lane-kilometers:

1980-95: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, unpublished data, 1997, table HM-260.

2000-03: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table HM-60.

TABLE 1-35M: Average Length of Haul, Domestic Freight and Passenger Modes (Kilometers)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002
Freight											
Air carrier	1,534	1,518	1,632	1,741	1,693	1,862	2,235	1,867	1,580	1,566	U
Truck ^a	438	417	423	460	584	589	629	669	761	781	U
Class I rail	742	810	829	871	991	1,070	1,168	1,357	1,357	1,382	1,373
Coastwise (water)	2,408	2,416	2,429	2,192	3,082	3,174	2,581	2,659	2,013	1,976	1,961
Lakewise (water)	840	795	814	853	863	843	890	827	814	819	851
Internal (water)	454	478	531	576	652	700	756	795	775	766	777
Intraport (water)	U	U	U	26	27	24	21	26	25	24	24
Crude (oil pipeline)	523	515	483	1,019	1,402	1,250	1,307	1,283	U	U	U
Petroleum products (oil pipeline)	433	539	575	830	666	629	623	647	U	U	U
Passenger											
Air carrier, domestic, scheduled	938	988	1,091	1,123	1,184	1,220	1,292	1,273	1,340	(R) 1,368	1,355
Bus, intercity	127	151	171	182	201	195	227	225	230	U	U
Commuter rail	33	34	36	37	37	38	35	39	37	37	37
Amtrak ^b	N	N	N	380	348	372	439	431	393	381	U

KEY: N = data do not exist; R = revised; U = data are not available.

^a Total Class I and Class II motor carriers of freight (less-than-truckload, specialized carrier for truckload, and others).

^b Amtrak began operations in 1971. Data are reported for fiscal years.

NOTES

Average length of haul for freight is calculated by dividing ton-miles in the previous table by estimates of tonnage from the various data sources. The calculation of average length of haul for passenger trips varies by mode: for air carrier it is calculated by dividing revenue passenger-miles by revenue passenger enplanements; for commuter rail, intercity bus, and Amtrak it is calculated by dividing passenger-miles by number of passengers. These numbers were then converted to kilometers.

1.609344 kilometers = 1 mile.

SOURCES

Freight:

Air carrier, truck:

Eno Transportation Foundation, Inc., *Transportation In America, 2002* (Washington, DC: 2002), p. 65.

Class I rail:

Association of American Railroads, *Railroad Facts* (Washington, DC: 2003), p. 36.

Continued next page

TABLE 1-35M: Average Length of Haul, Domestic Freight and Passenger Modes (Kilometers)—continued

<i>Water:</i>	
U.S. Army Corps of Engineers, <i>Waterborne Commerce of the United States, Part 5</i> (New Orleans, LA: Annual issues), section 1, table 1-4 .	
<i>Oil pipeline:</i>	
1960-70: Transportation Policy Associates, Washington, DC, personal communication.	
1975-95: Eno Transportation Foundation, Inc., <i>Transportation in America, 2002</i> (Washington, DC: 2002), p. 65.	
Passenger:	
<i>Air carrier:</i>	
U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, <i>Air Carrier Traffic Statistics</i> (Washington, DC: Annual issues), p. 3, line 34.	
<i>Intercity bus and commuter rail:</i>	
Eno Transportation Foundation, Inc., <i>Transportation in America, 2002</i> (Washington, DC: 2002), p. 64.	
<i>Commuter rail:</i>	
1960-2000: Eno Transportation Foundation, Inc., <i>Transportation in America, 2002</i> (Washington, DC: 2002), p. 64.	
2001-02: U.S. Department of Transportation, Federal Transit Administration, <i>National Transit Database</i> (Washington, DC: Annual issues), table 19 and similar tables in earlier editions.	
<i>Amtrak:</i>	
1975-85: Amtrak, corporate communication, Jan. 26, 1999.	
1990-2001: Amtrak, <i>Amtrak Annual Report</i> (Washington, DC: 2003), Statistical Appendix.	

TABLE 1-37M: U.S. Passenger-Kilometers (Millions)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air, total	53,750	92,740	189,166	237,217	352,556	466,929	577,550	667,376	855,091	808,544	775,943	810,046
Air carrier, certificated, domestic, all services	50,049	85,659	174,520	218,871	328,898	447,134	556,629	649,995	830,629	(R) 782,956	775,943	810,046
General aviation ^a	3,701	7,081	14,645	18,347	23,657	19,795	20,921	17,381	24,462	25,589	U	U
Highway, total ^b	2,047,212	2,502,912	3,286,284	3,870,399	4,270,411	4,848,878	5,731,210	6,225,055	7,065,142	(R) 7,473,462	7,618,351	7,601,027
Passenger car ^{bc}	1,842,173	2,244,718	2,817,796	3,144,925	3,237,982	3,370,965	3,671,543	3,680,388	4,094,907	(R) 4,114,257	4,190,836	4,223,093
Motorcycle ^{bc}	g	g	5,274	9,965	19,725	19,009	19,995	17,344	18,533	(R) 18,926	18,757	19,496
Other 2-axle 4-tire vehicle ^c	h	h	363,090	584,622	838,104	1,107,376	1,608,947	2,021,571	2,361,976	(R) 2,701,852	2,767,669	2,784,515
Truck, single-unit 2-axle 6-tire or more	158,602	207,234	43,583	55,693	64,073	73,130	83,527	100,914	113,459	(R) 137,581	144,112	124,824
Truck, combination	46,436	50,960	56,543	75,195	110,527	125,630	151,827	185,800	217,294	(R) 259,376	263,287	222,608
Bus ^d	N	N	N	N	N	152,767	195,371	219,038	258,974	(R) 241,469	233,690	226,491
Transit, total ^e	(i) 6,754	(i) 6,643	(i) 7,390	(i) 7,263	64,139	63,699	66,213	64,065	76,711	78,971	(P) 77,770	U
Motor bus ^d	N	N	N	N	35,068	34,055	33,766	30,285	34,184	35,441	(P) 35,150	U
Light rail	N	N	N	N	613	563	919	1,384	2,182	2,313	(P) 2,305	U
Heavy rail	N	N	N	N	16,991	16,781	18,467	16,993	22,280	22,817	(P) 21,988	U
Trolley bus	N	N	N	N	352	492	311	301	309	301	(P) 303	U
Commuter rail	6,754	6,643	7,390	7,263	10,486	10,515	11,397	13,267	15,131	15,366	(P) 15,295	U
Demand responsive ^d	N	N	N	N	N	586	694	977	1,350	1,376	(P) 1,373	U
Ferry boat	N	N	N	N	j	j	460	418	531	523	(P) 535	U
Other	N	N	N	N	628	707	200	439	744	834	(P) 821	U
Rail												
Intercity / Amtrak ^f	27,462	21,340	9,944	6,326	7,247	7,765	9,748	8,924	8,848	8,946	8,800	U

KEY: N = data do not exist; P = preliminary; R = revised.

^a All operations other than those operating under 14 CFR 121 and 14 CFR 135.

^b U.S. Department of Transportation, Federal Highway Administration (FHWA), provides data separately for passenger car and motorcycle in its annual Highway Statistics series. However, the 1995 summary report provides updated data for passenger car and motorcycle combined. Passenger car figures in this table were computed by U.S. Department of Transportation, Bureau of Transportation Statistics by subtracting the most current motorcycle figures from the aggregate passenger car and motorcycle figures.

^c In July 1997, FHWA published revised passenger-kilometers data for the highway modes for a number of years. The major change reflected the reassignment of some vehicles from the passenger car category to the other 2-axle 4-tire vehicle category. Passenger-kilometers for passenger car, motorcycle, and other 2-axle 4-tire vehicles were derived by multiplying vehicle-kilometers for these vehicles by average vehicle occupancy rates, provided by the Nationwide Personal Transportation Survey, 1977, 1983, and 1995.

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TABLE 1-37M: U.S. Passenger-Kilometers (Millions)—continued

- d Motor bus and demand responsive figures are also included in the bus figure for highway.
- e Prior to 1985, excludes demand responsive and most rural and smaller systems funded via Sections 18 and 16(b)2, Federal Transit Act. The series is not continuous between 1980 and 1985. Transit rail modes are measured in car-kilometers. Car-kilometers measure individual vehicle-kilometers in a train. A 10-car train traveling 1 kilometer would equal 1 train-kilometer and 10 car-kilometers.
- f Amtrak began operations in 1971. Does not include contract commuter passengers.
- g Included in passenger car.
- h Included in other single-unit 2-axle 6-tire or more truck.
- i Includes commuter rail figures only.
- j Ferryboat included in other.

NOTES

Air carrier passenger-kilometers are computed by summing the products of the aircraft-kilometers flown on each interairport segment multiplied by the number of passengers carried on that segment. Highway passenger-kilometers from 1960 to 1994 are calculated by multiplying vehicle-kilometers of travel as cited by FHWA by the average number of occupants for each vehicle type. Average vehicle occupancy rates are based on various sources, such as the Nationwide Personal Transportation Survey, conducted by the Federal Highway Administration, and the Truck Inventory and Use Survey, conducted by the Bureau of the Census. Transit passenger-kilometers are the cumulative sum of the distances ridden by each passenger. Rail passenger-kilometers represent the movement of 1 passenger for 1 kilometer.

1.609344 kilometers = 1 mile.

SOURCES

- Air:**
Air carrier, domestic, all services:
 1960: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: 1970), part III, table 2.
 1965-70: Ibid., *Handbook of Airline Statistics, 1973* (Washington, DC: 1974), part III, table 2.
 1975-80: Ibid., *Air Carrier Traffic Statistics* (Washington, DC: 1976, 1981), p. 4 (December 1976) and p. 2 (December 1981)
 1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), page 3, line 1.
General aviation:
 1960-2001: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), pp. 45-46.
- Highway:**
Passenger car and motorcycle:
 1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.
 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>.
 Motorcycle:
 1970-80: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1985* (Washington, DC: 1986), table VM-201A.
 1985-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>.
Other 2-axle 4-tire vehicle:
 1970-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.
 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>.

TABLE 1-37M: U.S. Passenger-Kilometers (Millions)—Continued

Single-unit 2-axle 6-tires or more truck, combination truck, and bus:
 1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.
 1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site <http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>.

Transit:
Ferryboat:
 2000-01: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: 2003), table 100 and similar tables in earlier editions.
All other data:
 1960-2001: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: 2002), table 6 and similar tables in earlier editions.

Rail, Intercity / Amtrak:
 1960-80: Association of American Railroads, *Railroad Facts* (Washington, DC: Annual issues).
 1985: Amtrak, *Amtrak FY95 Annual Report Statistical Appendix* (Washington, DC: 1996), p. 4.
 1990-2001: *Ibid.*, *Amtrak Annual Report Statistical Appendix* (Washington, DC: Annual issues).

TABLE 1-46M: U.S. Tonne-Kilometers of Freight (Millions)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL U.S. tonne-kilometers of freight (millions)	U 2,706,838	3,221,739	3,335,607	4,363,158	4,306,056	4,665,599	5,326,030	5,515,836	5,485,912	U	U	U
Air carrier, domestic, all services ^a	807	1,975	3,955	5,066	6,611	7,528	13,233	18,279	21,874	19,400	20,267	21,789
Intercity truck ^b	416,092	524,130	601,508	662,827	810,284	890,583	1,073,079	1,344,634	1,568,010 (P)	1,534,431	U	U
Class I rail ^c	835,555	1,018,882	1,116,600	1,101,187	1,341,653	1,280,372	1,509,566	1,906,268	2,140,261	2,183,347	2,200,194	2,265,056
Domestic water transportation ^d	U 715,099	870,428	826,321	1,345,855	1,303,711	1,216,951	1,179,260	942,849	907,644	893,620	U	U
Coastwise	U 441,708	525,275	461,126	921,460	892,009	699,522	642,891	414,445	400,848	384,948	U	U
Lakewise	U 110,838	115,946	100,033	90,149	70,347	88,956	87,166	84,502	74,245	78,332	U	U
Internal	U 160,161	227,487	263,378	331,914	339,747	426,886	447,232	441,727	430,489	428,371	U	U
Intraport	U 2,392	1,721	1,785	2,331	1,609	1,587	1,971	2,176	2,063	1,940	U	U
Oil pipeline ^b	334,334	446,751	629,248	740,206	858,756	823,862	852,770	877,589	842,842	841,090	855,836	U

KEY: P = preliminary; U = data are not available.

^a Includes freight, express, and mail revenue tonne-kilometers as reported on U.S. DOT Form 41.

^b Intercity truck and oil pipeline estimates are reported in billions. The U.S. Department of Transportation, Bureau of Transportation Statistics converted these estimates to millions.

^c Revenue tonne-kilometers.

^d Excludes intraterritorial traffic, for which tonne-kilometers were not compiled.

^e Reflects startup between 1975 and 1980 of Alaska pipeline and consequent water transportation of crude petroleum from Alaskan ports to mainland United States for refining.

NOTES

Numbers may not add to totals due to roundings.
1.459972 tonne-kilometers = 1 ton mile.

SOURCES

Air carrier, domestic, all services:

1960-65: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: 1970).

1970-80: *Ibid.*, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues), p. 2, line 3.

1985-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues), p. 3, line 3.

Intercity truck:

1960-2001: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002), p. 42.

TABLE 1-46M: U.S. Tonne-Kilometers of Freight (Millions)—continued**Class I rail:**

1960-2003: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 27.

Domestic water transportation:

1965-2002: U.S. Army Corps of Engineers, *Waterborne Commerce of the U.S.* (New Orleans, LA: Annual issues), part 5, section 1, table 1-4, and similar tables in earlier editions.

Oil pipeline:

1960-70: Eno Transportation Foundation, Inc., *Transportation in America, 1998* (Washington, DC: 1998), p. 44.

1975: Association of Oil Pipe Lines, *Shifts in Petroleum Transportation* (Washington, DC: Annual issues), table 4.

1980-2002: *Ibid.*, *Shifts in Petroleum Transportation* (Washington, DC: Annual issues), table 1.

TABLE 1-50M: U.S. Waterborne Freight (Million metric tonnes)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL freight	997.8	1,154.8	1,389.5	1,537.7	1,813.4	1,622.4	1,963.0	2,032.5	2,072.1	2,116.6	2,122.4	2,107.0	2,199.5	(R) 2,171.2	2,123.1
Foreign	307.8	402.5	527.0	679.2	835.9	702.5	944.9	1,040.9	1,073.6	1,107.3	1,129.8	1,143.8	1,229.0	(R) 1,225.4	1,196.8
Imports	191.7	244.8	307.8	432.3	469.5	374.4	544.3	610.2	664.6	715.1	762.7	780.9	852.5	(R) 863.5	848.1
Exports	116.1	157.8	219.2	246.9	366.4	328.1	400.6	430.6	409.0	392.2	367.1	362.9	376.5	362.0	348.6
Domestic	690.0	752.2	862.5	858.5	977.5	920.0	1,018.1	991.6	998.5	1,009.3	992.6	963.2	970.5	945.7	926.2
Inland	264.0	335.3	428.3	457.2	485.3	485.0	564.8	562.7	564.3	572.0	567.0	566.6	570.1	562.3	551.6
Coastal	189.8	182.8	216.3	210.4	299.0	281.0	270.9	241.9	242.6	238.7	226.5	207.6	205.9	202.9	196.3
Great Lakes	140.7	139.4	142.5	117.3	104.4	83.4	99.9	105.3	104.2	111.3	110.8	103.3	103.7	90.7	92.0
Intraport	94.5	93.3	73.9	71.0	85.4	67.4	78.4	75.4	80.7	81.5	81.7	(R) 80.4	85.8	84.6	81.7
Intraterritory	0.9	1.3	1.5	2.6	3.3	3.1	4.1	6.2	6.6	5.7	6.5	5.3	5.0	5.3	4.6

KEY: R = revised.

NOTES

Beginning in 1996, shipments of fish are excluded from domestic tonnage totals.
 Numbers may not add to totals due to roundings.
 0.9071847 tonne = 1 ton.

SOURCE

1960-2002: U.S. Army Corps of Engineers, Waterborne Commerce of the United States (New Orleans, LA: February 6, 2004), part 5, tables 1-1, 1-3, and 1-6.

TABLE 1-55M: Crude Oil and Petroleum Products Transported in the United States by Mode (billions)

	1975		1980		1985		1990		2000		2001		2002	
	Tonne-kilometers	Percent	Tonne-kilometers	Percent	Tonne-kilometers	Percent	Tonne-kilometers	Percent	Tonne-kilometers	Percent	Tonne-kilometers	Percent	Tonne-kilometers	Percent
Crude oil, total	484.0	100.0	1,099.4	100.0	1,147.8	100.0	917.2	100.0	548.9	100.0	549.8	100.0	560.6	100.0
Pipelines ^a	420.5	86.9	529.4	48.2	488.2	42.5	488.8	53.3	413.8	75.4	404.4	73.6	418.4	74.7
Water carriers	59.3	12.2	(c) 565.6	51.4	655.8	57.2	425.1	46.4	132.9	24.2	143.2	26.0	139.7	24.9
Motor carriers ^b	2.0	0.4	3.6	0.3	2.6	0.2	2.2	0.2	1.8	0.3	1.6	0.3	1.8	0.3
Railroads	2.2	0.5	0.7	0.1	1.2	0.1	1.0	0.1	0.6	0.1	0.6	0.1	0.7	0.1
Refined petroleum products, total	752.2	100.0	718.7	100.0	597.6	100.0	654.9	100.0	726.0	100.0	720.1	100.0	701.7	100.0
Pipelines ^a	319.7	42.5	329.4	45.8	335.6	56.2	364.0	55.6	429.1	59.1	436.7	60.6	437.4	62.3
Water carriers	375.8	50.0	336.4	46.8	206.1	34.5	230.4	35.2	224.0	30.8	213.0	29.6	192.6	27.4
Motor carriers ^b	38.3	5.1	35.5	5.0	39.3	6.6	41.2	6.3	43.9	6.1	43.4	6.0	42.9	6.1
Railroads	18.4	2.4	17.5	2.4	16.5	2.7	19.4	2.9	29.1	4.0	27.0	3.8	28.8	4.1
Combined crude and petroleum products, total	1,236.2	100.0	1,818.1	100.0	1,745.4	100.0	1,572.1	100.0	1,275.0	100.0	1,269.9	100.0	1,262.3	100.0
Pipelines ^a	740.2	59.9	858.8	47.2	823.9	47.2	852.8	54.2	842.8	66.1	841.1	66.2	855.8	67.8
Water carriers	435.1	35.2	(c) 902.0	49.6	862.0	49.4	655.5	41.7	356.8	28.0	356.2	28.1	332.3	26.3
Motor carriers ^b	40.3	3.3	39.1	2.2	41.9	2.4	43.4	2.8	45.7	3.6	45.0	3.5	44.7	3.5
Railroads	20.6	1.7	18.2	1.0	17.7	1.0	20.4	1.3	29.6	2.3	27.6	2.2	14.6	2.3

^a The amount carried by pipeline is based on tonne-kilometers of crude and petroleum products transported through federally regulated pipelines (84%), plus estimated tonne-kilometers of crude and petroleum products transported through nonfederally regulated pipelines (16%).

^b The amount carried by motor carriers is estimated.

^c Reflects the entrance between 1975 and 1980 of the Alaska pipeline, moving crude petroleum for water transportation to U.S. refineries.

NOTES

Numbers may not add to totals due to rounding.

1.459972 tonne-kilometers = 1 ton mile.

SOURCES

1975: Association of Oil Pipe Lines, *Shifts in Petroleum Transportation* (Washington, DC), table 6.

1980-2002: *Ibid.*, (Annual issues), tables 1, 2, and 3.

TABLE 4-3M: Domestic Demand for Refined Petroleum Products by Sector (Petajoules)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL petroleum demand	21,016	24,541	31,156	34,533	36,085	32,625	(R) 35,400	36,455	40,519	40,444	(R) 40,515	41,225
Transportation	10,688	12,524	16,153	18,584	20,055	20,578	(R) 22,992	(R) 24,457	(R) 27,403	(R) 26,963	(R) 27,361	27,586
Industrial	6,067	7,164	8,219	8,595	10,049	8,235	(R) 8,762	(R) 9,023	(R) 9,554	(R) 9,728	(R) 9,759	9,936
Residential and commercial	3,682	4,083	4,547	4,015	3,203	2,661	(R) 2,296	(R) 2,180	(R) 2,355	(R) 2,407	(R) 2,382	2,431
Electric utilities	579	771	2,237	3,340	2,779	1,150	(R) 1,360	(R) 797	(R) 1,207	(R) 1,347	(R) 1,014	1,273
Transportation as percent of total petroleum demand	50.9	51.0	51.8	53.8	55.6	63.1	(R) 64.9	67.1	(R) 67.6	(R) 66.7	(R) 67.5	66.9

KEY: R = revised.**NOTES**

Transportation's share of U.S. petroleum demand in this table differs slightly from table 4-1 because this table takes into account differences within sectors in the use of various grades of petroleum-based fuel that have different joule content per unit volume.

1,055.06 petajoules = 1 quadrillion British thermal unit (Btu).

SOURCES

1960-70: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1997*, DOE/EIA-0384(97) (Washington, DC: July 1998), tables 2.1, 5.12b, and A3.

1975-2003: Ibid., *Monthly Energy Review*, DOE/EIA-0035(2004/05) (Washington, DC: June 2004), tables 1.3, 2.2, 2.3, 2.4, 2.5, 2.6, and similar tables in earlier editions.

TABLE 4-5M: Fuel Consumption by Mode of Transportation

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002
Air											
Certificated carriers ^a											
Jet fuel (million liters)	7,397	14,721	29,742	28,610	32,249	38,289	(R) 46,648	(R) 47,967	56,193	53,062	48,636
General aviation ^b											
Aviation gasoline (million liters)	916	1,105	2,086	1,560	1,968	1,594	1,336	1,086	(R) 1,259	(R) 1,042	1,052
Jet fuel (million liters)	N	212	787	1,715	2,900	2,616	2,510	2,120	(R) 3,679	(R) 3,607	3,726
Highway											
Gasoline, diesel and other fuels (million liters)											
Passenger car and motorcycle	155,849	188,222	256,950	281,078	265,683	271,414	264,067	258,424	277,375	(R) 279,180	284,436
Other 2-axle 4-tire vehicle	N	e	46,610	72,229	90,078	103,580	134,802	172,632	200,395	(R) 202,602	207,595
Single-unit 2-axle 6-tire or more truck	N	52,420	15,021	20,517	26,206	28,008	31,635	34,887	36,200	(R) 36,595	39,010
Combination truck	N	25,203	27,815	34,739	49,350	53,015	61,070	74,865	97,155	(R) 96,573	100,127
Bus	3,131	3,312	3,104	3,986	3,854	3,157	3,388	3,663	4,210	(R) 3,883	3,759
Transit^c											
Electricity (million kWh)	2,908	2,584	2,561	2,646	2,446	4,216	4,837	5,068	5,510	5,610	(P) 5,649
Motor fuel (million liters)											
Diesel	787	939	1,026	1,382	1,632	2,304	2,464	2,568	2,975	2,819	(P) 2,743
Gasoline and other nondiesel fuels ^d	727	469	257	30	42	174	129	230	183	174	(P) 216
Compressed natural gas	N	N	N	N	N	N	N	41	207	251	(P) 307
Rail, Class 1 (in freight service)											
Distillate / diesel fuel (million liters)	13,109	13,597	13,419	13,843	14,778	11,773	11,792	13,173	14,006	14,044	14,120
Amtrak											
Electricity (million kWh)	N	N	N	180	254	295	330	304	350	377	U
Distillate / diesel fuel (million liters)	N	N	N	238	242	246	310	250	288	283	U

Continued next page

TABLE 4-5M: Fuel Consumption by Mode of Transportation—Continued

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002
Water											
Residual fuel oil (million liters)	14,960	11,708	14,286	15,369	33,887	17,375	23,947	22,282	24,264	20,477	18,351
Distillate / diesel fuel oil (million liters)	2,979	2,468	3,100	4,156	5,595	6,431	7,817	8,854	8,560	7,738	7,870
Gasoline (million liters)	N	N	2,264	2,763	3,982	3,986	4,921	4,014	4,256	3,762	4,093
Pipeline											
Natural gas (million cubic meters)	10,412	15,016	21,665	17,489	19,039	15,113	19,794	21,010	19,266 (R)	18,749	20,011

KEY: kWh = kilowatt-hour; N = data do not exist; P = preliminary; R = revised; U = data are not available.

- a Domestic operations only.
 b Includes fuel used in air taxi operations, but not commuter operations. Data for 1996 are estimated using new information on nonrespondents and are therefore not comparable to earlier years. See the accuracy statement in the appendix for more detailed information.
 c Prior to 1984, excludes commuter rail, automated guideway, ferryboat, demand responsive vehicles, and most rural and small systems.
 d Gasoline and all other nondiesel fuels such as liquefied natural gas, methanol, and propane, except compressed natural gas.
 e Included in single-unit 2-axle 6-tire or more truck category.

NOTES

- 3.785412 liters = 1 gallon.
 0.03 cubic meters = 1 cubic foot.

SOURCES

Air:

Certificated air carriers:

1960-2001: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.brs.gov/oaifuel/fue/yearly.html> as of June 23, 2004.

General aviation:

1960-70: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation - 1972 edition* (Washington, DC: 1973), table 9.12.

1975-90: Ibid., *General Aviation and Air Taxi Activity Survey* (Washington, DC: Annual issues), table 5.1, and similar tables in earlier editions.

1995-2001: Ibid., *FAA Aerospace Forecasts Fiscal Years 2004-2015* (Washington, DC: March 2004), table 34 and similar tables in earlier editions.

Highway:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. (Revised data obtained from Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of August 2001).
 1995-2001: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit:

Electricity / motor fuel / compressed natural gas:

1960-2001: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: February 2003), tables 33, 34, 35, and similar tables in earlier editions.

TABLE 4-5M: Fuel Consumption by Mode of Transportation—continued

Rail:	1960-2001: Association of American Railroads, <i>Railroad Facts</i> (Washington, DC: October 2003), p. 40.
Amtrak:	1975-2001: Amtrak, Energy Management Department, personal communication.
Water:	
	<i>Residual and distillate / diesel fuel oil:</i>
	1960-80: American Petroleum Institute, <i>Basic Petroleum Data Book</i> (Washington, DC: Annual issues), tables 10, 10a, 12, and 12a.
	1985-2001: U.S. Department of Energy, Energy Information Administration, <i>Fuel Oil and Kerosene Sales</i> (Washington, DC: Annual issues), tables 2, 4, and similar tables in earlier editions.
	<i>Gasoline:</i>
	1970-2001: U.S. Department of Transportation, Federal Highway Administration, <i>Highway Statistics</i> (Washington, DC: Annual issues), table MF-24 and similar tables in earlier editions.
Pipeline:	
	1960-2001: U.S. Department of Energy, <i>Natural Gas Annual 2002</i> , DOE/EIA-0131(02) (Washington, DC: January 2004), table 15 and similar tables in earlier editions.

TABLE 4-6M: Energy Consumption by Mode of Transportation (Petajoules)

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Air															
Certificated carriers ^a															
Jet fuel	278	554	1,119	1,077	1,213	1,441	(R) 1,755	(R) 1,805	(R) 1,883	(R) 1,932	(R) 1,899	2,051	2,114	1,997	1,830
General aviation ^b															
Aviation gasoline	31	37	70	52	66	53	45	36	37	37	39	44	(R) 42	(R) 35	35
Jet fuel	N	8	30	65	109	98	94	80	87	91	116	138	(R) 138	(R) 136	140
Highway															
Gasoline, diesel and other fuels															
Passenger car and motorcycle	5,430	6,558	8,952	9,793	9,256	9,456	9,200	9,003	9,155	9,244	9,482	9,693	9,664	(R) 9,727	9,910
Other 2-axle 4-tire vehicle	N	e	1,624	2,516	3,138	3,609	4,696	6,014	6,245	6,513	6,655	6,971	6,982	(R) 7,059	7,233
Single-unit 2-axle 6-tire or more truck	N	2,026	581	793	1,013	1,083	1,223	1,349	1,377	1,401	998	1,371	1,399	(R) 1,415	1,508
Combination truck	N	974	1,075	1,343	1,908	2,049	2,361	2,894	2,955	2,971	3,682	3,591	3,756	(R) 3,733	3,871
Bus	121	128	120	154	149	122	131	142	145	150	152	168	163	(R) 150	145
Transit^c															
Electricity	10	9	9	10	9	15	17	18	18	18	18	19	20	20	(P) 20
Motor fuel															
Diesel	30	36	40	53	63	89	95	99	101	105	108	112	115	109	(P) 106
Gasoline and other nondiesel fuels ^d	25	16	9	1	1	6	4	8	8	8	7	6	6	6	(P) 8
Compressed natural gas	N	N	N	N	N	N	N	2	2	3	5	6	8	10	(P) 12
Rail, Class I (in freight service)															
Distillate / diesel fuel	507	526	519	535	571	455	456	509	524	523	524	544	541	543	546
Amtrak															
Electricity	N	N	N	1	1	1	1	1	1	1	1	1	1	1	U
Distillate / diesel fuel	N	N	N	9	9	10	12	10	10	11	11	11	11	11	U

TABLE 4-6M: Energy Consumption by Mode of Transportation (Petajoules)—continued

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002
Water															
Residual fuel oil	624	489	596	641	1,414	725	999	930	900	791	888	922	1,012	854	766
Distillate / diesel fuel oil	115	95	120	161	216	249	302	342	364	377	380	354	331	299	304
Gasoline	N	N	79	96	139	139	171	140	131	130	126	145	148	131	143
Pipeline															
Natural gas	378	544	786	634	690	548	718	762	774	817	691	702	699	(R) 680	726

KEY: N = data do not exist; P = preliminary; R = revised; U = data are not available.

- a Domestic operations only.
 b Includes fuel used in air taxi operations, but not commuter operations.
 c Prior to 1984, excludes commuter rail, automated guideway, ferryboat, demand responsive vehicles, and most rural and smaller systems.
 d Gasoline and all other nondiesel fuels such as liquefied natural gas, methanol, and propane, except compressed natural gas.
 e Included in other single-unit 2-axle 6-tire or more truck category.

NOTES

The following conversion rates were used:

- Jet fuel = 37,626,700 joules/liter
 Aviation gasoline = 33,501,698 joules/liter
 Automotive gasoline = 34,839,537 joules/liter
 Diesel motor fuel = 38,657,950 joules/liter
 Electricity 1kWh = 3,412 Btu, negating electrical system losses. To include approximate electrical system losses, multiply this conversion factor by 3.
- Compressed natural gas = 38,657,950 joules/liter
 Distillate fuel = 38,655,829 joules/liter
 Residual fuel = 41,723,829 joules/liter
 Natural gas = 38,413,974 joules/m³

SOURCES

Air:

Certificated air carriers:
 1960-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oaifuel/fue yearly.html> as of June 23, 2004.

General aviation:

1960-70: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation - 1972 edition* (Washington, DC: 1973), table 9.12.
 1975-90: Ibid., *General Aviation and Air Taxi Activity Survey* (Washington, DC: Annual issues), table 5.1, and similar tables in earlier editions.
 1995-2002: Ibid., *FAA Aerospace Forecasts Fiscal Years 2004-2015* (Washington, DC: March 2004), table 34 and similar tables in earlier editions.

Highway:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. (Revised data obtained from Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of August 2001).
 1995-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Continued next page

TABLE 4-6M: Energy Consumption by Mode of Transportation (Petajoules)—continued

Transit:	
<i>Electricity / motor fuel / compressed natural gas:</i>	
1960-2002: American Public Transit Association, <i>Public Transportation Fact Book</i> (Washington, DC: February 2003), tables 33, 34, 35, and similar tables in earlier editions.	
Rail:	
1960-2002: Association of American Railroads, <i>Railroad Facts</i> (Washington, DC: October 2003), p. 40.	
Amtrak:	
1975-2001: Amtrak, Energy Management Department, personal communication.	
Water:	
<i>Residual and distillate / diesel fuel oil:</i>	
1960-80: American Petroleum Institute, <i>Basic Petroleum Data Book</i> (Washington, DC: Annual issues), tables 10, 10a, 12, and 12a.	
1985-2002: U.S. Department of Energy, Energy Information Administration, <i>Fuel Oil and Kerosene Sales</i> (Washington, DC: Annual issues), tables 2, 4, and similar tables in earlier editions.	
<i>Gasoline:</i>	
1970-2002: U.S. Department of Transportation, Federal Highway Administration, <i>Highway Statistics</i> (Washington, DC: Annual issues), table MF-24 and similar tables in earlier editions.	
Pipeline:	
1960-2002: U.S. Department of Energy, <i>Natural Gas Annual 2002</i> , DOE/EIA-0131(02) (Washington, DC: January 2004), table 15 and similar tables in earlier editions.	

TABLE 4-7M: Domestic Demand for Gasoline (Million liters) by Mode

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
TOTAL demand	230,005	269,471	339,178	389,882	396,854	407,121	430,044	455,209	499,261	506,261	519,585	524,688
Highway	209,820	253,541	324,025	376,094	383,019	391,960	414,614	443,125	487,879	490,900	503,288	507,591
Nonhighway, total	20,185	15,930	15,152	13,788	13,834	15,160	15,430	12,083	11,382	15,361	16,297	17,098
Agriculture	8,675	7,432	7,313	5,924	4,009	4,091	2,579	3,508	2,469	3,034	3,149	3,229
Aviation ^a	5,011	1,898	1,488	1,551	1,563	1,444	1,366	1,389	1,120	1,347	1,293	1,153
Marine	230	365	2,264	2,762	3,983	3,986	4,923	4,014	4,256	3,762	4,093	4,192
Other ^b	6,270	6,235	4,087	3,551	4,280	5,639	6,562	3,172	3,537	7,218	7,762	8,523

^a Does not include aviation jet fuel.

^b Includes state, county, and municipal use, industrial and commercial use, construction use, and miscellaneous.

NOTES

All nonhighway uses of gasoline were estimated by the U.S. Department of Transportation, Federal Highway Administration.

These estimates may not be comparable to data for prior years due to revised estimation procedures.

Numbers may not add to totals due to rounding.

3.785412 liters = 1 gallon.

SOURCES

Highway:

1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995* (Washington, DC: 1996), table MF-221.

1996-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table MF-21.

Nonhighway:

1960-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table MF-24, and unpublished revisions.

TABLE 4-8M: Certificated Air Carrier Fuel Consumption and Travel^a

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number of aircraft	2,135	2,125	2,679	2,495	3,808	4,678	6,083	7,411	8,055	8,497	8,194	U
Average kilometers flown per aircraft (thousands)	784	1,074	1,528	1,500	1,236	1,191	1,250	1,222	1,388	1,291	1,344	U
Aircraft-kilometers (millions)	1,381	1,825	3,328	3,135	4,060	4,902	6,378	7,450	9,115	8,929	(R) 9,039	9,793
Domestic operations	293	457	764	607	645	668	1,223	1,606	2,063	2,037	1,971	2,005
International operations	7,397	14,721	29,742	28,610	32,248	38,289	47,049	48,499	56,194	53,060	48,635	49,054
Fuel consumption (million liters)	2,143	4,845	8,491	7,378	6,613	9,418	15,002	17,076	20,725	19,824	18,893	18,308
Domestic operations	0.19	0.12	0.11	0.11	0.13	0.13	0.14	0.15	0.16	0.17	0.19	0.20
International operations	0.14	0.09	0.09	0.08	0.10	0.07	0.08	0.09	0.10	0.10	0.10	0.11

KEY: R = revised; U = data are unavailable.

^a Aircraft operating under 14 CFR 121 and 14 CFR 135.

NOTES

- 1.609344 kilometers = 1 mile.
- 3.385412 liters = 1 gallon.

SOURCES

Number of aircraft:
 1960-65: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation, 1970 edition* (Washington, DC: 1970), table 5.3.
 1970-75: *Ibid.*, *FAA Statistical Handbook of Aviation, Calendar Year 1979* (Washington, DC: 1979), table 5.1.
 1980-85: *Ibid.*, *FAA Statistical Handbook of Aviation, Calendar Year 1986* (Washington, DC: 1986), table 5.1.
 1990-95: *Ibid.*, *FAA Statistical Handbook of Aviation, Calendar Year 1997* (Washington, DC: unpublished), personal communication, Mar. 19, 1999.

2000-2002: Aerospace Industries Association, *Aerospace Facts and Figures* (Washington DC: Annual Issues), "Active U.S. Air Carrier Fleet."

Aircraft-miles flown:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics 1969* (Washington, DC: 1970), part III, tables 2 and 13.
 1965-70: *Ibid.*, *Handbook of Airline Statistics 1973* (Washington, DC: 1974), part III, tables 2 and 13.
 1975-80: *Ibid.*, *Air Carrier Traffic Statistics* (Washington, DC: December 1976), pp. 4 and 14; and (December 1981), pp. 2 and 3.
 1985-2001: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues, December), pp. 2 and 3, line 27 plus line 50.

TABLE 4-8M: Certificated Air Carrier Fuel Consumption and Travel^a—continued

2002-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues, December), pp. 3 and 4, line 25 plus line 46.

Fuel consumption:

1960-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/programs/oai/fuel/fueyearly.html> as of June 25, 2004.

TABLE 4-9M: Motor Vehicle Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Vehicles registered (thousands) ^a	73,858	90,358	111,242	137,913	161,490	177,133	193,057	205,427	225,821	235,331	234,624	236,760
Vehicle-kilometers traveled (millions)	1,156,735	1,428,795	1,785,928	2,136,668	2,457,943	2,856,306	3,451,016	3,898,951	4,420,747	(R) 4,501,797	(R) 4,595,495	4,652,441
Fuel consumed (million liters)	219,100	269,158	349,503	412,549	435,171	459,174	494,962	544,471	615,334	(R) 618,833	(R) 638,532	642,099
Average kilometers traveled per vehicle (thousands)	15.6	15.8	16.1	15.4	15.3	16.1	17.9	19.0	19.6	(R) 19.1	(R) 19.6	19.7
Average kilometers traveled per liter	5.3	5.3	5.1	5.2	5.6	6.2	7.0	7.2	7.2	7.3	(R) 7.2	7.2
Average fuel consumed per vehicle (liters)	2,968	2,979	3,142	2,990	2,695	2,593	2,563	2,650	2,725	(R) 2,631	(R) 2,722	2,710

KEY: R = revised.^a Includes personal passenger vehicles, buses, and trucks.**NOTES**

See tables 4-11, 4-12, 4-13, 4-14, and 4-15 for individual highway vehicles.

1.609344 kilometers = 1 mile.

3.785412 liter = 1 gallon.

SOURCES1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-11M: Passenger Car and Motorcycle Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Vehicles registered (thousands)												
Passenger cars	61,671	75,258	89,244	106,706	121,601	127,885	133,700	128,387	133,621	137,633	135,921	135,670
Motorcycles	574	1,382	2,824	4,964	5,694	5,444	4,259	3,897	4,346	4,903	5,004	5,370
Vehicle-kilometers traveled (millions)												
Passenger cars	944,685	1,163,556	1,475,768	1,664,062	1,789,591	2,006,852	2,265,956	2,314,237	2,575,412	2,620,546	(R) 2,669,055	2,672,844
Motorcycles	^a	^a	4,828	9,012	16,415	14,645	15,450	15,772	16,848	15,512	(R) 15,372	15,352
Fuel consumed (million liters)												
Passenger cars	155,849	188,222	256,723	280,650	264,911	270,725	263,344	257,681	276,582	278,450	(R) 285,690	282,354
Motorcycles	^a	^a	227	428	772	689	723	742	793	730	723	722
Average kilometers traveled per vehicle (thousands)												
Passenger cars	15.3	15.5	16.5	15.6	14.7	15.7	16.9	18.0	19.3	19.0	19.6	19.7
Motorcycles	^a	^a	1.7	1.8	2.9	2.7	3.6	4.0	3.9	3.2	3.1	2.9
Average kilometers traveled per liter												
Passenger cars	6.1	6.2	5.7	5.9	6.8	7.4	8.6	9.0	9.3	9.4	(R) 9.3	9.5
Motorcycles	^a	^a	21.3	21.1	21.3	21.3	21.4	21.3	21.3	21.3	21.3	21.3
Average fuel consumed per vehicle (liters)												
Passenger cars	2,527	2,501	2,877	2,630	2,179	2,117	1,970	2,007	2,070	2,023	(R) 2,102	2,081
Motorcycles	^a	^a	80	86	136	127	170	190	182	149	145	134

KEY: R = revised.^a Included in passenger car.**NOTES**

See table 4-12 for other 2-axle 4-tire vehicles.

1.609344 kilometers = 1 mile.

3.785412 liters = 1 gallon.

Average kilometers traveled per vehicle, average kilometers traveled per liter, average fuel consumed per vehicle: derived by calculation.

SOURCES**Passenger car:***Number registered:*1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Continued next page

TABLE 4-11M: Passenger Car and Motorcycle Fuel Consumption and Travel—continued*All other categories:*

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. For 1970-94, the unrevised motorcycle vehicle-kilometers and fuel consumed are subtracted from the combined passenger car and motorcycle vehicle-kilometers and fuel consumed from VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:*Number registered:*

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

All other categories:

1970-85: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1985*, table VM-201A.

1990-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-13M: Single-Unit 2-Axle 6-Tire or More Truck Fuel Consumption and Travel^a

	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number registered (thousands)	3,681	4,232	4,374	4,593	4,487	5,024	5,926	5,704	5,651	5,667
Vehicle-kilometers (millions)	43,613	55,683	64,052	73,064	83,525	100,914	113,459	116,594 (R)	122,094 (R)	124,824
Fuel consumed (million liters)	15,021	20,517	26,206	28,008	31,635	34,886	36,200	36,595 (R)	39,068 (R)	40,467
Average kilometers traveled per vehicle (thousands)	11.8	13.2	14.6	15.9	18.6	20.1	19.1	20.4	21.6	22.0
Average kilometers traveled per liter	2.9	2.7	2.4	2.6	2.6	2.9	3.1	3.2	3.1	3.1
Average fuel consumed per vehicle (liters)	4,080	4,848	5,992	6,098	7,050	6,944	6,109	6,416 (R)	6,914 (R)	7,141

KEY: R = revised.

^a Beginning in 1998, the Federal Highway Administration (FHWA) used the Census Bureau's 1997 *Vehicle Inventory and Use Survey* (VIUS) for its baseline estimate of single-unit 2-axle 6-tire or more trucks. Prior to 1998, the FHWA used the Census Bureau's 1992 *Transportation Inventory and Use Survey* (TIUS) for its baseline estimates. Therefore, post-1997 data may not be comparable to 1997 and earlier years.

NOTES

In 1995, the U.S. Department of Transportation, Federal Highway Administration revised its vehicle categories beginning with 1993 data to include passenger cars, other 2-axle 4-tire vehicles, single-unit 2-axle 6-tire or more trucks, and combination trucks. Single-unit 2-axle 6-tire or more trucks are on a single frame with at least 2 axles and 6 tires. Pre-1993 data have been reassigned to the most appropriate category.

- 1.609344 kilometers = 1 mile.
- 3.785412 liters = 1 gallon.

SOURCES

1970-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-14M: Combination Truck Fuel Consumption and Travel^a

	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number registered (thousands)	787	905	1,131	1,417	1,403	1,709	1,696	2,097	2,154	2,277	2,245
Vehicle-kilometers traveled (millions)	51,016	56,488	75,156	110,562	125,690	151,761	185,879	217,294	219,811	(R) 223,276	222,608
Fuel consumed (million liters)	25,203	27,815	34,739	49,350	53,015	61,070	74,864	97,155	96,573	(R) 100,236	101,809
Average kilometers traveled per vehicle (thousands)	64.9	62.4	66.5	78.0	89.6	88.8	109.6	103.6	102.0	98.1	99.2
Average kilometers traveled per liter	2.0	2.0	2.2	2.2	2.4	2.5	2.5	2.2	2.3	2.2	2.2
Average fuel consumed per vehicle (liters)	32,044	30,732	30,722	34,831	37,780	35,737	44,148	46,339	44,831	(R) 44,028	45,347

KEY: R = revised.

^a Beginning in 1998, the Federal Highway Administration (FHWA) used the Census Bureau's 1997 *Vehicle Inventory and Use Survey* (VIUS) for its baseline estimate of combination trucks. Prior to 1998, the FHWA used the Census Bureau's 1992 *Transportation Inventory and Use Survey* (TIUS) for its baseline estimates. Therefore, post-1997 data may not be comparable to 1997 and earlier years.

NOTES

- 1.609344 kilometers = 1 mile.
- 3.785412 liters = 1 gallon.

SOURCES

- 1965-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
- 1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-15M: Bus Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number registered (thousands)	272	314	378	462	529	593	627	686	746	750	761	777
Vehicle-kilometers traveled (millions)	6,920	7,564	7,242	9,817	9,817	7,242	9,173	10,300	12,215	11,389	(R) 11,016	10,683
Fuel consumed (million liters)	3,131	3,312	3,104	3,986	3,854	3,157	3,388	3,664	4,210	3,883	(R) 3,784	3,621
Average kilometers traveled per vehicle (thousands)	25.4	24.1	19.2	21.2	18.6	12.2	14.6	15.0	16.4	15.2	14.5	13.8
Average kilometers traveled per liter	2.2	2.3	2.3	2.5	2.5	2.3	2.7	2.8	2.9	2.9	2.9	2.9
Average fuel consumed per vehicle (liters)	11,504	10,539	8,221	8,625	7,287	5,319	5,404	5,345	5,642	5,181	(R) 4,974	4,663

KEY: R = revised.

NOTES

Includes both publicly and privately owned school, transit, and other commercial buses.

1.609344 kilometers = 1 mile.

3.785412 liters = 1 gallon.

SOURCES

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington,

DC: July 1997), table VM-201A.

1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-16M: Transit Industry Electric Power and Primary Energy Consumption^a and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	(P) 2002
Number of vehicles (thousands)	65	62	61	62	75	94	93	116	131	134	135
Vehicle-kilometers traveled (millions)	3,449	3,232	3,030	3,502	3,681	4,492	5,217	5,713	6,567	6,753	6,883
Electric power consumed (million kWh)	2,908	2,584	2,561	2,646	2,446	4,216	4,837	5,068	5,510	5,610	5,649
Primary energy consumed (thousand liters)											
Diesel	787,744	940,296	1,024,332	1,381,903	1,633,027	2,304,324	2,464,417	2,567,592	2,975,428	2,818,856	2,742,663
Gasoline and other nondiesel fuels ^b	726,421	470,148	258,165	28,678	43,154	173,008	128,348	229,888	182,775	173,648	216,238
Compressed natural gas	N	N	N	N	N	N	N	40,655	207,418	250,651	306,811

KEY: kWh = kilowatt hour; N = data do not exist; P = preliminary.

^a Prior to 1985, excludes commuter rail, automated guideway, urban ferryboat, demand responsive vehicles, and most rural and smaller systems.

^b Data for 1995-2002, includes propane, liquid petroleum gas, liquefied natural gas, kerosene, and all other nondiesel fuels except compressed natural gas. 1960 to 1990 data include propane.

NOTE

The heat equivalent factors used in joule conversions are: diesel = 38,657,950 joules/liter; electric = 3,600,000 joules/kWh, negating electrical system losses (to include electrical system losses, multiply this conversion factor by approximately three); gasoline = 34,839,537 joules/liter. 1.609344 kilometers = 1 mile.

3.785412 liters = 1 gallon.

SOURCE

American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: March 2004), tables 18, 24, 33, 34, 35, and similar tables in earlier editions.

TABLE 4-17M: Class I Rail Freight Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Number in use												
Locomotives ^a	29,031	27,780	27,077	27,846	28,094	22,548	18,835	18,812	20,028	19,745	20,506	20,774
Cars ^b	1,965,486	1,800,662	1,784,181	1,723,605	1,710,827	1,421,686	1,212,261	1,218,927	1,380,796	1,314,136	1,299,670	1,278,980
Kilometers traveled (millions)												
Freight train-kilometers ^c	651	677	687	648	690	559	611	738	811	804	804	830
Locomotive unit-kilometers	N	N	N	2,380	2,464	1,976	2,060	2,326	2,419	(R) 2,378	2,323	2,388
Car-kilometers	45,335	47,212	48,103	44,508	47,117	40,105	42,099	48,897	55,667	55,109	55,812	57,220
Average kilometers traveled per vehicle (thousands)												
Locomotives	N	N	N	85.5	87.7	87.6	109.4	123.6	120.8	(R) 120.5	113.3	115.0
Cars	23	26.2	27.0	25.8	27.5	28.2	34.7	40.1	40.3	41.9	42.9	44.7
Average kilometers traveled per liter												
Trains	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06
Cars	3.46	3.47	3.58	3.22	3.19	3.41	3.57	3.71	3.97	3.92	3.95	3.95
Fuel consumed (million liters)	13,109	13,597	13,419	13,843	14,778	11,773	11,792	13,173	14,006	14,044	14,120	14,483
Average fuel consumed per locomotive ^a (thousand liters)	451.5	489.5	495.6	497.1	526.0	522.1	626.0	700.3	699.3	711.3	688.6	697.2

KEY: N = data do not exist; R = revised; U = data are not available.

^a For 1960-80, the total includes a small number of steam and electric units, which are not included in the per locomotive fuel consumption figure.

^b Includes cars owned by Class I railroads, other railroads, car companies, and shippers.

^c Based on the distance run between terminals and / or stations; does not include yard or passenger train-kilometers.

NOTES

1.609344 kilometers = 1 mile.

3.785412 liters = 1 gallon.

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TABLE 4-17M: Class I Rail Freight Fuel Consumption and Travel—continued

SOURCES

All data except for locomotive unit-kilometers:

Association of American Railroads, *Railroad Facts 2004* (Washington, DC: November 2004), pp. 33, 34, 40, 49, and 51.

Locomotive unit-kilometers:

1975-90, 2002: *Ibid.*, *Railroad Ten-Year Trends* (Washington, DC: Annual issues).

1995-2001, 2003: *Ibid.*, *Analysis of Class I Railroads* (Washington, DC: Annual issues).

TABLE 4-19M: U. S. Government Energy Consumption by Agency and Source (Petajoules)

	Petroleum							Total	Electricity	Natural gas	Coal and other ^d	Total
	Motor gasoline	Distillate and residual fuel oil	Jet fuel and aviation gas	Other ^c	Total	Electricity	Natural gas					
FY 1993, total	36.4	197.3	646.9	9.8	890.4	203.6	161.3	60.0	1,315.3			
Agriculture	4.9	0.6	0.1	0.2	5.7	2.2	1.8	0.1	9.8			
Defense	11.3	180.9	636.1	2.4	830.8	121.8	109.3	44.7	1,106.5			
Energy	1.3	2.4	0.4	0.5	4.6	18.5	12.6	10.1	45.8			
GSA	0.1	0.4	0.0	0.0	0.5	9.8	3.0	1.6	14.9			
Health and Human Services	0.2	1.5	0.0	0.3	2.0	2.8	2.7	0.1	7.6			
Interior	1.9	1.3	0.1	1.6	5.0	1.9	0.8	0.2	7.9			
Justice	2.1	0.3	0.7	0.0	3.3	2.5	3.4	0.4	9.6			
NASA	0.3	1.1	1.5	0.0	2.8	7.4	2.5	0.3	13.1			
Postal Service	10.9	3.4	0.0	0.0	14.3	14.3	6.3	0.5	35.6			
Transportation	0.6	1.1	6.0	4.6	12.4	6.3	1.6	0.1	20.5			
Veterans Affairs	0.6	1.7	0.0	0.0	2.3	8.9	14.6	1.4	27.1			
Other ^a	2.3	2.5	1.7	0.0	6.5	7.2	2.6	0.6	17.0			
FY 2002, total	44.8	187.2	437.1	8.0	677.2	199.0	138.0	39.6	1,053.8			
Agriculture	2.4	0.3	0.0	0.2	3.1	1.9	2.0	0.6	7.5			
Defense	14.3	162.1	430.1	4.3	610.9	107.8	82.3	29.5	830.5			
Energy	0.9	1.8	0.0	0.2	3.2	17.6	8.0	3.6	32.4			
GSA	0.1	0.1	0.0	0.0	0.2	10.3	6.4	1.5	18.5			
Health and Human Services	0.6	0.6	0.0	0.2	1.5	3.3	3.9	0.4	9.0			
Interior	2.5	1.4	0.1	2.5	6.5	2.0	1.6	0.1	10.2			
Justice	7.0	1.1	1.8	0.0	9.8	4.5	5.5	0.6	20.5			
NASA	0.2	0.5	0.0	0.0	0.8	5.9	3.2	0.2	10.2			
Postal Service	12.3	5.3	0.0	0.2	17.8	18.7	7.4	0.4	44.3			
Transportation	0.7	5.9	3.8	0.1	10.4	5.3	1.1	0.2	17.0			
Veterans Affairs	0.6	3.5	0.0	0.0	4.2	10.6	12.9	1.6	29.2			
Other ^b	3.0	4.5	1.2	0.1	8.8	11.0	3.9	0.7	24.5			

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TABLE 4-19M: U.S. Government Energy Consumption by Agency and Source (Petajoules)—continued

	Petroleum							Coal and other ^d	Total
	Motor gasoline	Distillate fuel oil	Jet fuel and aviation gas	Other ^c	Total	Electricity	Natural gas		
FY 2003 ^P , total	44.3	176.7	499.6	6.6	727.4	199.7	143.4	38.9	1,109.5
Agriculture	2.4	0.3	0.0	0.2	3.1	2.4	1.8	0.4	7.7
Defense	14.7	153.7	490.9	4.4	663.6	109.3	83.6	27.6	884.0
Energy	0.9	2.3	0.0	0.2	3.5	18.7	7.1	3.8	33.0
GSA	0.1	0.1	0.0	0.0	0.2	10.3	7.2	1.9	19.5
Health and Human Services	0.1	0.8	0.0	0.2	1.2	3.4	3.8	0.4	8.8
Interior	2.5	1.3	0.1	0.8	4.9	1.9	1.5	0.1	8.3
Justice	5.9	0.7	1.7	0.1	8.3	4.9	6.6	0.7	20.6
NASA	0.1	0.5	0.6	0.1	1.3	6.0	3.1	0.2	10.4
Postal Service	12.3	5.5	0.0	0.2	18.0	17.3	7.9	0.6	43.9
Transportation	0.7	7.0	0.6	0.1	8.4	3.4	0.7	0.0	12.7
Veterans Affairs	0.7	1.9	0.0	0.0	2.5	10.6	15.7	2.0	30.9
Other ^b	3.7	2.6	5.5	0.4	12.2	11.7	4.4	1.3	29.6

KEY: FY = fiscal year; GSA = General Services Administration; NASA = National Aeronautics and Space Administration; P = preliminary.

^a Includes U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, U.S. Information Agency, U.S. Department of Housing and Urban Development, Federal Communications Commission, Office of Personnel Management, U.S. Department of State, Federal Emergency Management Agency, U.S. Department of the Treasury, National Archives and Records Administration, Nuclear Regulatory Commission, Railroad Retirement Board, Federal Trade Commission, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, and Environmental Protection Agency.

^b Includes National Archives and Records Administration, U.S. Department of Commerce, U.S. Department of Labor, U.S. Department of State, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, Social Security Administration, International Broadcasting Bureau, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, Office of Personnel Management, U.S. Department of Housing and Urban Development, U.S. Department of the Treasury, Railroad Retirement Board, Tennessee Valley Authority, Federal Emergency Management Agency, Central Intelligence Agency, and National Science Foundation.

^c Includes liquefied petroleum gases.

^d Includes purchased steam, chilled water from district heating and cooling systems, and any other energy type, such as renewable energy.

TABLE 4-19M: U.S. Government Energy Consumption by Agency and Source (Petajoules)—*continued***NOTES**

Numbers may not add to totals due to rounding.

These data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. government energy use for electricity generation and uranium enrichment is excluded. Other energy used by U.S. agencies that produce electricity or enriched uranium is included. The U.S. government's fiscal year runs from October 1 through September 30.

This table uses a conversion factor for electricity of 3,600,000 joules per kilowatt-hour, and a conversion factor for purchased steam of 2,326 kilojoules per kilogram.

SOURCE

U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2003*, table 1.13, Internet site <http://www.eia.doe.gov/emeu/aer/> as of Oct. 6, 2004.

TABLE 4-20M: Energy Intensity of Passenger Modes (Kilojoule per passenger-kilometer)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Air, certificated carrier												
Domestic operations	5,659	6,633	6,677	5,078	3,755	3,308	3,233	2,873	2,584	2,583	2,357	2,279
International operations	6,031	6,748	7,202	5,550	2,845	3,345	2,980	2,736	2,628	2,705	2,570	2,553
Highway ^a												
Passenger car	2,947	2,921	3,174	3,109	2,850	2,797	2,499	2,439	2,353	(R) 2,358	2,360	2,329
Other 2-axle 4-tire vehicle	N	N	4,465	4,308	3,743	3,259	2,918	2,975	2,956	(R) 2,612	2,702	2,667
Motorcycle	b	b	1,639	1,543	1,393	1,243	1,305	1,491	1,490	(R) 1,343	1,291	1,291
Transit motor bus	N	N	N	N	1,798	2,226	2,441	2,724	2,719	2,424	2,894	U
Amtrak	N	N	N	N	1,562	1,419	1,373	1,353	1,205	1,399	U	U

KEY: N = data do not exist; R = revised; U = data are not available.

^a For 1995 and subsequent years, highway passenger-miles were taken directly from *Highway Statistics* rather than derived from vehicle-miles and average occupancy, as is the case for 1960-1990. Passenger-miles were then converted to passenger-kilometers.

^b Included in passenger car.

NOTES

To calculate total joules, multiply fuel consumed (see tables 4-21, 4-22, 4-24, 4-25) by 37,626,700 joules/liter for air carrier, 34,839,537 joules/liter for passenger car, other 2-axle 4-tire vehicle, and motorcycle, and 38,657,950 joules/liter for transit motor bus and Amtrak. 1.609344 kilometers = 1 mile.

SOURCES

Air:

Certificated air carriers:

Passenger-kilometers:

Air Transport Association, Internet site <http://www.airlines.org> as of Aug. 30, 2004.

Fuel consumed:

U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oai/fuel/fue yearly.html> as of Aug. 30, 2004.

Highway:

Passenger car:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Other 2-axle 4-tire vehicle:

1970-90: *Ibid.*, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-20M: Energy Intensity of Passenger Modes (Kilojoule per passenger-kilometer)—Continued*Motorcycle:*

1970-85: Ibid., *Highway Statistics Summary to 1985*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
 1990-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit motor bus:

American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: February 2003), table 70.

Amtrak:

Amtrak, State and Local Affairs Department, personal communication.

TABLE 4-21M: Energy Intensity of Certificated Air Carriers, All Services^a

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Aircraft-kilometers (millions)												
Domestic operations	1,381	1,825	3,328	3,135	4,060	4,902	6,378	7,450	9,115	8,929	(R) 9,039	9,793
International operations	293	457	764	607	645	668	1,223	1,606	2,063	2,037	1,971	2,005
Available seat-kilometers (millions)												
Domestic operations	84,040	152,545	343,048	388,306	556,878	717,487	906,165	971,910	1,170,046	1,118,816	(R) 1,089,443	1,109,112
International operations	21,480	47,529	83,622	99,335	139,220	164,094	274,087	326,954	408,851	378,696	346,984	329,483
Passenger-kilometers (millions)												
Domestic operations	49,177	83,504	167,608	211,996	322,334	435,463	547,549	635,221	830,629	782,956	(R) 776,202	810,046
International operations	13,367	27,019	44,358	50,022	87,489	105,925	189,412	234,881	310,278	287,015	(R) 276,582	269,827
Fuel consumed (million liters)												
Domestic operations	7,397	14,721	29,742	28,610	32,249	38,289	47,050	48,498	56,193	53,062	48,636	49,054
International operations	2,143	4,845	8,491	7,378	6,614	9,418	15,002	17,078	20,724	19,826	18,892	18,308
Seats per aircraft												
Domestic operations	60.9	83.6	103.1	123.9	137.1	146.4	142.1	130.5	128.4	125.3	(R) 120.5	113.3
International operations	73.3	104.0	109.4	163.7	215.7	245.7	224.1	203.6	198.2	185.9	(R) 176.1	164.3
Seat-kilometers per liter												
Domestic operations	11	10	12	14	17	19	19	20	21	21	22	23
International operations	10	10	10	13	21	17	18	19	20	19	18	18
Energy intensity (kilojoule / passenger-kilometer)^b												
Domestic operations	5,659	6,633	6,677	5,078	3,764	3,308	3,233	2,873	2,546	2,550	(R) 2,358	2,279
International operations	6,031	6,748	7,202	5,550	2,845	3,345	2,980	2,735	2,513	2,599	(R) 2,570	2,553
Load factor (percent)												
Domestic operations	58.5	54.7	48.9	54.6	58.0	60.7	60.4	65.4	71.0	69.1	70.3	72.4
International operations	62.2	56.8	53.0	50.4	62.8	64.6	69.1	71.8	75.9	72.8	76.6	76.5

KEY: R = revised.^a U.S. owned carriers only. Operation of foreign-owned carriers in or out of the United States not included.^b Calculation based on unrounded figures not shown here.

TABLE 4-21M: Energy Intensity of Certificated Air Carriers, All Services^a—continued**NOTES**

Aircraft-kilometers includes all four air-carrier groups (majors, nationals, large regionals, and medium regionals), scheduled and charter, passenger, and all-cargo. Fuel consumed includes majors, nationals, and large regionals, scheduled and charter, passenger, and all-cargo.

Passenger-kilometers includes all four air-carrier groups, scheduled and charter, passenger service only.

International operations include operations outside the United States, including those between the United States and foreign countries and the United States and its territories or possessions.

Heat equivalent factor used for joule conversion is 37,626,700 joules/liter.

1.609344 kilometers = 1 mile.

3.785412 liters = 1 gallon.

SOURCES

Aircraft-kilometers, available seat-kilometers, passenger-kilometers, and load factor:

1960-80: Air Transport Association, Internet site <http://www.air-transport.org/public/industry>, as of July 31, 2002.

1985-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington DC: Annual December issues).

Fuel consumed:

1960-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oai/fuel/fue yearly.html> as of July 21, 2004.

Seats per aircraft, seat-kilometers per liter, and energy intensiveness:

Derived by calculation.

TABLE 4-22M: Energy Intensity of Passenger Cars, Other 2-Axle 4-Tire Vehicles, and Motorcycles

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Vehicle-kilometers (millions)												
Passenger car	944,685	1,163,556	1,475,768	1,664,062	1,789,591	2,006,852	2,265,956	2,314,237	2,575,412	(R) 2,620,546	2,669,055	2,672,844
Other 2-axle 4-tire vehicle	N	N	197,949	323,478	468,319	629,254	925,373	1,271,382	1,485,519	(R) 1,517,945	1,554,681	1,606,132
Motorcycle	b	b	4,828	9,012	16,415	14,645	15,450	15,772	16,848	(R) 15,512	15,372	15,352
Passenger-kilometers (millions) ^a												
Passenger car	1,842,699	2,245,035	2,817,961	3,144,658	3,238,000	3,369,966	3,672,523	3,680,570	4,094,907	(R) 4,114,257	4,217,107	4,223,092
Other 2-axle 4-tire vehicle	N	N	363,712	584,192	838,468	1,107,229	1,609,344	2,021,336	2,361,976	(R) 2,701,852	2,695,316	2,784,516
Motorcycle	b	b	4,828	9,656	19,312	19,312	19,312	17,703	18,533	(R) 18,926	19,523	19,497
Fuel consumed (million liters)												
Passenger car	155,849	188,222	256,723	280,650	264,911	270,725	263,344	257,681	276,582	(R) 278,450	285,690	282,354
Other 2-axle 4-tire vehicle	N	N	46,610	72,229	90,078	103,580	134,802	172,634	200,395	(R) 202,602	209,031	213,125
Motorcycle	b	b	227	428	772	689	723	742	793	(R) 730	723	722
Energy intensity (kilojoule / passenger-kilometer) ^c												
Passenger car	2,947	2,921	3,174	3,109	2,850	2,799	2,498	2,439	2,353	(R) 2,358	2,360	2,329
Other 2-axle 4-tire vehicle	N	N	4,465	4,308	3,743	3,259	2,918	2,975	2,956	(R) 2,612	2,702	2,667
Motorcycle	a	a	1,639	1,543	1,393	1,243	1,304	1,460	1,490	(R) 1,343	1,291	1,290

KEY: N = data do not exist; R = revised.

^a Passenger-kilometers are derived by multiplying vehicle-kilometers by an average occupancy rate for that vehicle type based on data provided by the Federal Highway Administration, Nationwide Personal Transportation Survey (1977, 1983, 1995) and Federal Highway Administration and Bureau of Transportation Statistics, National Household Travel Survey (2001). Average vehicle occupancy rates are as follows:

passenger car (1960-2002): 1.95, 1.93, 1.91, 1.89, 1.81, 1.68, 1.62, 1.61, 1.61, 1.60, 1.59, 1.59, 1.59, 1.59, 1.59, 1.57, 1.57;
 other 2-axle 4-tire vehicle (1970-2002): 1.84, 1.81, 1.79, 1.76, 1.74, 1.72, 1.70, 1.68, 1.66, 1.59, 1.59, 1.59, 1.59, 1.59, 1.59, 1.78, 1.78;
 motorcycle (1970-2002): 1.00, 1.07, 1.18, 1.32, 1.25, 1.30, 1.25, 1.21, 1.18, 1.12, 1.11, 1.09, 1.07, 1.13, 1.10, 1.22, 1.22.

^b Included in passenger car.

^c Energy Intensity (kilojoule/passenger-kilometer) is calculated by converting the fuel consumption in liters to the energy equivalent kilojoule units and dividing by the passenger-kilometers. The heat equivalent factor used for kilojoule conversion is 34,839,537 joules/liter.

NOTES:

In 1995, the U.S. Department of Transportation, Federal Highway Administration revised its vehicle type categories for 1993 and later data. These new categories include passenger car, other 2-axle 4-tire vehicle, single-unit 2-axle 6-tire or more truck, and combination truck.

TABLE 4-22M: Energy Intensity of Passenger Cars, Other 2-Axle 4-Tire Vehicles, and Motorcycles—continued

Other 2-axle 4-tire vehicle includes vans, pickup trucks, and sport utility vehicles. In previous years, some minivans and sport utility vehicles were included in the passenger car category. Single-unit 2-axle 6-tire or more trucks are on a single frame with at least 2 axles and 6 tires. Pre-1993 data have been reassigned to the closest available category.

- 1.609344 kilometers = 1 mile.
- 3.785412 liters = 1 gallon.

SOURCES:

Vehicle-kilometers:

Passenger car:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Other 2-axle 4-tire vehicle:

1960-90: *Ibid.*, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:

1970-90: *Ibid.*, *Highway Statistics, Summary to 1985* (Washington, DC: 1986), table VM-201A.

For 1970-90, the unrevised motorcycle vehicle-miles are subtracted from the combined passenger car and motorcycle vehicle-miles from VM-201A. These numbers were then converted to kilometers.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Passenger-kilometers:

1960-95: Vehicle-miles multiplied by vehicle occupancy rates. These numbers were then converted to kilometers.

2000-02: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Fuel consumed:

1960-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

For 1970-90, the unrevised motorcycle fuel consumed is subtracted from the combined passenger car and motorcycle fuel consumed from VM-201A.

1995-2003: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-23M: Average Fuel Efficiency of U.S. Passenger Cars and Light Trucks

	1980	1985	1990	1995	2000	2001	2002	2003	2004
Average U.S. passenger car fuel efficiency (kmp) (calendar year)									
Passenger car ^a	6.8	7.4	8.6	9.0	9.3	9.4	9.4	9.5	U
Other 2-axle 4-tire vehicle	5.2	6.1	6.8	7.4	7.4	7.5	7.4	7.5	U
New vehicle fuel efficiency (kmp) ^b (model year)									
Light-duty vehicle									
Passenger car	10.3	11.7	11.9	12.2	12.1	12.2	12.3	12.5	12.5
Domestic	9.6	11.2	11.4	11.8	12.2	12.2	12.4	12.3	12.5
Imported	12.6	13.4	12.7	12.9	12.0	(R) 12.3	12.2	12.7	12.5
Light truck (<8,500 lbs GVWR) ^c	7.9	8.8	8.8	8.7	9.1	8.9	9.1	9.2	9.1
CAFE standards (kmp) ^b (model year)									
Passenger car	8.5	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Light truck	^d 6.8 / 6.0	8.3	8.5	8.8	8.8	8.8	8.8	8.8	8.8

KEY: CAFE = Corporate Average Fuel Economy; GVWR = gross vehicle weight rating; kmp = kilometers per liter; R = revised.

^a From 1980 to 1990, passenger car fuel efficiency includes motorcycles.

^b Assumes 55% city and 45% highway-miles. The source calculated average miles per gallon for light-duty vehicles by taking the reciprocal of the sales-weighted average of gallons per mile. This is called the harmonic average. These data were then converted to metric units.

^c Beginning with FY 1999, the total light truck fleet ceased to be categorized by either domestic or import fleets.

^d 2 Wheel Drive/4 Wheel Drive. No combined figure available for this year.

NOTES

The fuel efficiency figures for light duty vehicles represent the sales-weighted harmonic average of the combined passenger car and light truck fuel economies.

1.609344 kilometers = 1 mile.

3.785412 liters = 1 gallon.

SOURCES

Average U.S. passenger car fuel efficiency:

1980-90: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A (Revised data obtained from Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of Aug. 2, 2001).

1995-2003: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 4-23M: Average Fuel Efficiency of U.S. Passenger Cars and Light Trucks—Continued

New vehicle fuel efficiency (based on model year production) and CAFE standards:
1980-2004: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Summary of Fuel Economy Performance*
(Washington, DC; 2004), Internet site www.nhtsa.dot.gov/cars/rules/CAFE/docs/Summary-Fuel-Economy-Pref-2004.pdf as of Dec. 14,
2004.

TABLE 4-24M: Energy Intensity of Transit Motor Buses

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001 (P)	2002
Vehicle-kilometers (millions)	2,536	2,459	2,268	2,456	2,699	2,998	3,428	3,515	3,574	3,613	3,500	3,663	3,725	3,825	3,880
Passenger-kilometers (millions)	N	N	N	N	35,084	34,118	33,766	30,285	30,732	31,550	32,766	34,126	34,184	35,441	35,151
Fuel consumed (million liters diesel)	787	939	1,026	1,382	1,632	1,961	2,132	2,134	2,187	2,264	2,296	2,340	2,404	2,222	2,116
Energy intensity (kilojoules / passenger-kilometers)	N	N	N	N	1,798	2,222	2,441	2,724	2,751	2,772	2,710	2,651	2,719	2,424	2,894

KEY: N = data do not exist; P = preliminary.

NOTES

Heat equivalent factor used for joule conversion is 38,657,950 joules/liter.

1.609344 kilometers = 1 mile.

3.785412 liters = 1 gallon.

0.6555814 kilojoule per passenger-kilometer = 1 British thermal unit (Btu) per passenger-mile.

SOURCE

American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: February 2004), tables 38 and 70, and similar tables in earlier editions.

TABLE 4-25M: Energy Intensity of Class I Railroad^a Freight Service

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003
Revenue freight tonne-kilometers (millions)	835,555	1,018,882	1,116,600	1,101,187	1,341,653	1,280,372	1,509,566	1,906,268	2,140,261	2,183,347	2,200,194	2,265,056
Car-kilometers (millions)	45,335	47,212	48,103	44,508	47,117	40,105	42,099	48,897	55,667	55,109	55,812	57,220
Tonnes per car load	40	44	50	55	61	61	60	59	57	58	57	57
Fuel consumed (million liters)	13,109	13,597	13,419	13,843	14,778	11,773	11,792	13,173	14,006	14,044	14,120	14,483
Energy intensity (kilojoule / revenue freight tonne-kilometer)	606	516	465	486	426	355	302	267	253	249	248	247
Energy intensity (kilojoule / car-kilometer)	11,178	11,134	10,784	12,024	12,125	11,348	10,828	10,415	9,726	9,852	9,780	9,785

^a Class I railroads are those that have operating revenues of \$272 million or more.

NOTE

The heat equivalent factor used for joule conversion is 38,655,900 joules/liter.

1.459972 tonne-kilometer = 1 ton-mile.

1.609344 kilometers = 1 mile.

0.9071847 tonnes = 1 ton.

3.785412 liters = 1 gallon.

SOURCE

Association of American Railroads, *Railroad Facts 2004* (Washington, DC: November 2004), pp. 34, 37, 40, and similar tables in earlier editions.

Glossary

14 CFR 121 (Air): Code of Federal Regulations, Title 14, part 121. Prescribes rules governing the operation of domestic, flag, and supplemental air carriers and commercial operators of large aircraft.

14 CFR 135 (Air): Code of Federal Regulations, Title 14, part 135. Prescribes rules governing the operations of commuter air carriers (scheduled) and on-demand air taxi (unscheduled).

ACCIDENT (Aircraft): As defined by the National Transportation Safety Board, an occurrence incidental to flight in which, as a result of the operation of an aircraft, any person (occupant or nonoccupant) receives fatal or serious injury or any aircraft receives substantial damage.

ACCIDENT (Automobile): See Crash (Highway)

ACCIDENT (Gas): 1) An event that involves the release of gas from a pipeline or of liquefied natural gas (LNG) or other gas from an LNG facility resulting in personal injury necessitating inpatient hospitalization or a death; or estimated property damage of \$50,000 or more to the operator or others, or both, including the value of the gas that escaped during the accident; 2) An event that results in an emergency shutdown of an LNG facility; or 3) An event that is significant in the judgment of the operator even though it did not meet the criteria of 1) or 2).

ACCIDENT (Hazardous liquid or gas): Release of hazardous liquid or carbon dioxide while being transported, resulting in any of the following: 1) An explosion or fire not intentionally set by the operator; 2) Loss of 50 or more barrels of hazardous liquid or carbon dioxide; 3) Release to the atmosphere of more than 5 barrels a day of highly volatile liquids; 4) Death of any person; 5) Bodily harm resulting in one or more of the following: a) The loss of consciousness, b) The necessity of carrying person from the scene, c) The necessity for medical treatment, d) Disability that prevents the discharge of normal duties; and 6) Estimated damage to the property of the operators and/or others, exceeding \$50,000.

ACCIDENT (Highway-Rail Grade-Crossing): An impact between on-track railroad equipment and an automobile, bus, truck, motorcycle, bicycle, farm vehicle, or pedestrian or other highway user at a designated crossing site. Sidewalks, pathways, shoulders, and ditches associated with the crossing are considered to be part of the crossing site.

ACCIDENT (Rail): A collision, derailment, fire, explosion, act of God, or other event involving operation of railroad on-track equipment (standing or moving) that results in railroad damage exceeding an established dollar threshold.

ACCIDENT (Recreational Boating): An occurrence involving a vessel or its equipment that results in 1) A death; 2) An injury that requires medical treatment beyond first aid; 3) Damage to a vessel and other property, totaling to more than \$500 or complete loss of a vessel; or 4) The disappearance of the vessel under circumstances that indicate death or injury. Federal regulations (33 CFR 173-4) require the operator of any vessel that is numbered or used for recreational purposes to submit an accident report.

ACCIDENT (Transit): An incident involving a moving vehicle. Includes a vehicle, object, or person (except suicides) or a derailment/left roadway.

ACTIVE AIRCRAFT (General Aviation): All legally registered civil aircraft that flew one or more hours.

AERIAL APPLICATION FLYING (General Aviation): The operation of aircraft for the purposes of dispensing any substances required for agriculture, health, forestry, seeding, firefighting, and insect control purposes.

AERIAL OBSERVATION FLYING (General Aviation): Any use of an aircraft for aerial mapping and photography, surveying, patrolling, fish spotting, search and rescue, hunting, sightseeing, or highway traffic advisory not included under Federal Aviation Regulations (FAR) Part 135.

AIR CARRIER: A person who undertakes directly, by lease, or other arrangement to engage in air transportation. More specifically, the commercial system of air transportation comprising large certificated air carriers, small certificated air carriers, commuter air carriers, on-demand air taxis, supplemental air carriers, and air travel clubs.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility established to provide air traffic control service to aircraft operating on an IFR (instrument flight rule) flight plan within controlled airspace and principally during the en route phase of flight.

AIR TAXI: An aircraft operator who conducts operations for hire or compensation in accordance with 14 CFR 135 (for safety purposes) or FAR Part 135 (for economic regulations/reporting purposes) in an aircraft with 30 or fewer passenger seats and a payload capacity of 7,500 pounds or less. An air taxi operates on an on-demand basis and does not meet the flight scheduled qualifications of a commuter air carrier (see below).

AIRCRAFT REVENUE HOURS: The airborne hours in revenue service, computed from the moment an aircraft leaves the ground until it lands.

AIRCRAFT REVENUE MILES: The miles (computed in airport-to-airport distances) for each interairport hop actually completed in revenue service, whether or not performed in accordance with the scheduled pattern. For this purpose, operation to a flag stop is a hop completed even if a landing is not actually made. In cases where the interairport distances are inapplicable, aircraft-miles flown are determined by multiplying the normal cruising speed for the aircraft type by the airborne hours.

AIRPORT: A landing area regularly used by aircraft for receiving or discharging passengers or cargo.

AIRPORT/AIRWAY TRUST FUND: See Trust Funds.

ALTERNATIVE FUELS: The Energy Policy Act of 1992 defines alternative fuels as methanol, denatured ethanol, and other alcohol; mixtures containing 85 percent or more (but not less than 70 percent as determined by the Secretary of Energy by rule to provide for requirements relating to cold start, safety, or vehicle functions) by

volume of methanol, denatured ethanol, and other alcohols with gasoline or other fuels. Includes compressed natural gas, liquid petroleum gas, hydrogen, coal-derived liquid fuels, fuels other than alcohols derived from biological materials, electricity, or any other fuel the Secretary of Energy determines by rule is substantially not petroleum and would yield substantial energy security and environmental benefits.

AMTRAK: Operated by the National Railroad Passenger Corporation of Washington, D.C., this rail system was created by the Rail Passenger Service Act of 1970 (P.L. 91-518, 84 Stat. 1327) and given the responsibility for the operation of intercity, as distinct from suburban, passenger trains between points designated by the Secretary of Transportation.

ARTERIAL HIGHWAY: A major highway used primarily for through traffic.

ASPHALT: A dark brown to black cement-like material containing bitumens as the predominant constituent. The definition includes crude asphalt and finished products such as cements, fluxes, the asphalt content of emulsions, and petroleum distillates blended with asphalt to make cutback asphalt. Asphalt is obtained by petroleum processing.

AVAILABLE SEAT-MILES (Air Carrier): The aircraft miles flown in each interairport hop multiplied by the number of seats available on that hop for revenue passenger service.

AVERAGE HAUL: The average distance, in miles, one ton is carried. It is computed by dividing ton-miles by tons of freight originated.

AVERAGE PASSENGER TRIP LENGTH (Bus/Rail): Calculated by dividing revenue passenger-miles by the number of revenue passengers.

AVIATION GASOLINE (General Aviation): All special grades of gasoline used in aviation reciprocating engines, as specified by American Society of Testing Materials (ASTM) Specification D910 and Military Specification MIL-G5572.

Includes refinery products within the gasoline range marketed as or blended to constitute aviation gasoline.

BARREL (oil): A unit of volume equal to 42 U.S. gallons.

BLOOD ALCOHOL CONCENTRATION (Highway): A measurement of the percentage of alcohol in the blood by grams per deciliter.

BRITISH THERMAL UNIT: The quantity of heat needed to raise the temperature of 1 pound of water by 1 °F at or near 39.2 °F.

BULK CARRIER (Water): A ship with specialized holds for carrying dry or liquid commodities, such as oil, grain, ore, and coal, in unpackaged bulk form. Bulk carriers may be designed to carry a single bulk product (crude oil tanker), or accommodate several bulk product types (ore/bulk/oil carrier) on the same voyage or on a subsequent voyage after holds are cleaned.

BUS: Large motor vehicle used to carry more than 10 passengers, includes school buses, intercity buses, and transit buses.

BUSINESS TRIP (American Travel Survey): A trip taken for business or business combined with pleasure, or for attending a convention, conference, or seminar.

CAFE STANDARDS: See Corporate Average Fuel Economy Standards.

CAR-MILE (Rail): The movement of a railroad car a distance of 1 mile. An empty or loaded car-mile refers to a mile run by a freight car with or without a load. In the case of intermodal movements, the designation of empty or loaded refers to whether the trailers/containers are moved with or without a waybill.

CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY (Air Carrier): A certificate issued by the Department of Transportation to an air carrier under Section 401 of the Federal Aviation Act authorizing the carrier to engage in air transportation.

CERTIFICATED AIR CARRIER: An air carrier holding a Certificate of Public Convenience and Necessity issued by the U.S. Department of Transportation (DOT) to conduct scheduled services interstate. These carriers may also conduct non-scheduled or charter operations. Certificated air carriers operate large aircraft (30 seats or more or a maximum load of 7,500 pounds or more) in accordance with FAR Part 121. See also Large Certificated Air Carrier.

CERTIFICATED AIRPORTS: Airports that service air carrier operations with aircraft seating more than 30 passengers.

CHAINED DOLLARS: A measure used to express real prices, defined as prices that are adjusted to remove the effect of changes in the purchasing power of the dollar. Real prices usually reflect buying power relative to a reference year. The “chained-dollar” measure is based on the average weights of goods and services in successive pairs of years. It is “chained” because the second year in each pair, with its weights, becomes the first year of the next pair. Prior to 1996, real prices were expressed in constant dollars, a weighted measure of goods and services in a single year. See also Constant Dollars and Current Dollars.

CLASS I RAILROAD: A carrier that has an annual operating revenue of \$250 million or more after applying the railroad revenue deflator formula, which is based on the Railroad Freight Price Index developed by the U.S. Department of Labor, Bureau of Labor Statistics. The formula is the current year's revenues x 1991 average index/current year's average index.

COASTWISE TRAFFIC (Water): Domestic traffic receiving a carriage over the ocean, or the Gulf of Mexico (e.g., between New Orleans and Baltimore, New York and Puerto Rico, San Francisco and Hawaii, Alaska and Hawaii). Traffic between Great Lakes ports and seacoast ports, when having a carriage over the ocean, is also considered coastwise.

COEFFICIENT OF VARIATION: Ratio of the sampling error (or standard error) of a statistic to the value of that statistic. Also referred to as relative standard error.

COLLECTOR (Highway): In rural areas, routes that serve intracounty rather than statewide travel. In urban areas, streets that provide direct access to neighborhoods and arterials.

COLLISION WITH OBJECT (Transit): An incident in which a transit vehicle strikes an obstacle other than a vehicle or person (e.g., building, utility pole). Reports are made if the accident results in a death, injury, or property damage over \$1,000.

COLLISION WITH PEOPLE (Transit): An incident in which a transit vehicle strikes a person. Excludes suicides and suicide attempts. Reports are made if the incident results in death, injury, or property damage over \$1,000.

COLLISION WITH VEHICLE (Transit): An incident in which a transit vehicle strikes or is struck by another vehicle. Reports are made if the incident results in a death, injury, or property damage over \$1,000.

COMBINATION TRUCK: A power unit (truck tractor) and one or more trailing units (a semi-trailer or trailer).

COMMERCIAL BUS: Any bus used to carry passengers at rates specified in tariffs; charges may be computed per passenger (as in regular route service) or per vehicle (as in charter service).

COMMERCIAL SERVICE AIRPORT: Airport receiving scheduled passenger service and having 2,500 or more enplaned passengers per year.

COMMUTER AIR CARRIER: Different definitions are used for safety purposes and for economic regulations and reporting. For safety analysis, commuter carriers are defined as air carriers operating under 14 CFR 135 that carry passengers for hire or compensation on at least five round trips per week on at least one route between two or more points according to published flight schedules, which specify the times, days of the week, and points of service. On March 20, 1997, the size of the aircraft subject to 14 CFR 135 was reduced from 30 to fewer than 10 passenger seats. (Larger aircraft are subject to the more stringent regulations of 14 CFR 121.) Helicopters carrying passengers or cargo for hire, however, are regulated under CFR 135 whatever their size. Although, in practice, most commuter air carriers operate aircraft that are regulated for *safety purposes* under 14 CFR 135 and most aircraft that are regulated under 14 CFR 135 are operated by commuter air carriers, this is not necessarily the case.

For economic regulations and reporting requirements, commuter air carriers are those carriers that operate aircraft of 60 or fewer seats or a maximum payload capacity of 18,000 pounds or less. These carriers hold a certificate issued under section 298C of the Federal Aviation Act of 1958, as amended.

COMMUTER RAIL (Transit): Urban passenger train service for short-distance travel between a central city and adjacent suburb. Does not include rapid rail transit or light rail service.

COMPACT CAR: An automobile industry designation usually consisting of cars with a wheelbase between 100 and 104 inches.

COMPRESSED NATURAL GAS: Natural gas compressed to a volume and density that is practical as a portable fuel supply. It is used as a fuel for natural gas-powered vehicles.

CONSTANT DOLLAR: Dollar value adjusted for changes in the average price level by dividing a current dollar amount by a price index. See also Chained Dollar and Current Dollar.

CORPORATE AVERAGE FUEL ECONOMY STANDARDS (CAFÉ): Originally established by Congress for new automobiles and later for light trucks. Under CAFE, automobile manufacturers are required by law to produce vehicle fleets with a composite sales-weighted fuel economy not lower than the CAFE standards in a given year. For every vehicle that does not meet the standard, a fine is paid for every one-tenth of a mile per gallon that vehicle falls below the standard.

CORPORATE FLYING (General Aviation): Corporate aircraft piloted by a professional crew.

CRASH (Highway): An event that produces injury and/or property damage, involves a motor vehicle in transport, and occurs on a trafficway or while the vehicle is still in motion after running off the trafficway.

CRUDE OIL: A mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface-separating facilities.

CURRENT DOLLAR: Dollar value of a good or service in terms of prices current at the time the good or service is sold. See also Chained Dollar and Current Dollar.

DEADWEIGHT TONNAGE (Water): The carrying capacity of a vessel in long tons (2,240 pounds). It is the difference between the number of tons of water a vessel displaces “light” and the number of tons it displaces when submerged to the “load line.”

DEMAND-RESPONSIVE VEHICLE (Transit): A nonfixed-route, a nonfixed-schedule vehicle that operates in response to calls from passengers or their agents to the transit operator or dispatcher.

DERAILMENT/LEFT ROADWAY (Transit): A noncollision incident in which a transit vehicle leaves the rails or road on which it travels. This also includes rollovers. Reports are made for all occurrences.

DESTINATION OF TRIP (American Travel Survey): The place the survey respondent names as the destination of the trip. If more than one location is visited on the same trip, the farthest point from the origin is considered the destination.

DIESEL FUEL: A complex mixture of hydrocarbons with a boiling range between approximately 350 and 650 °F. Diesel fuel is composed primarily of paraffins and naphthenic compounds that auto-ignite from the heat of compression in a diesel engine. Diesel is used primarily by heavy-duty road vehicles, construction equipment, locomotives, and by marine and stationary engines.

DISTILLATE FUEL OIL: A general classification for one of the petroleum fractions produced in conventional distillation operations. Included are No. 1, No. 2 and No. 4 fuel oils and No. 1, No. 2, and No. 4 diesel fuels. Distillate fuel oil is used primarily for space heating, on- and off-highway diesel engine fuel (including railroad engine fuel and fuel for agricultural machinery), and electric power generation.

DISTRIBUTION MAINS (Gas): A network of pipelines, services, and equipment that carry or control the supply of gas from the point of local supply to, and including, the sales meters.

DOMESTIC FREIGHT (Water): All waterborne commercial movements between points in the United States, Puerto Rico, and the Virgin Islands, excluding traffic with the Panama Canal Zone. Cargo moved for the military in commercial vessels is reported as ordinary commercial cargo; military cargo moved in military vessels is omitted.

DOMESTIC OPERATIONS (Air Carrier): All air carrier operations having destinations within the 50 United States, the District of Columbia, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands.

DOMESTIC PASSENGER (Water): Any person traveling on a public conveyance by water between points in the United States, Puerto Rico, and the Virgin Islands.

DRY CARGO BARGES (Water): Large flat-bottomed, nonself-propelled vessels used to transport dry-bulk materials such as coal and ore.

EMERGENCY PREPAREDNESS TRUST FUND: See Trust Funds.

ENERGY EFFICIENCY: The ratio of energy inputs to the outputs from a process; for example, miles traveled per gallon of fuel (mpg).

ENPLANED PASSENGERS (Air Carrier): See Revenue Passenger Enplanements.

ETHANOL: A clear, colorless, flammable oxygenated hydrocarbon with a boiling point of 78.5 °C. in the anhydrous state. It is used in the United States as a gasoline octane enhancer and oxygenate (10-percent concentration). Ethanol can be used in high concentrations in vehicles optimized for its use. Otherwise known as ethyl alcohol, alcohol, or grain-spirit.

FATAL CRASH (Highway): A police-reported crash involving a motor vehicle in transport on a trafficway in which at least one person dies within 30 days of the crash as a result of that crash.

FATAL INJURY (Air): Any injury that results in death within thirty days of the accident.

FATALITY: For purposes of statistical reporting on transportation safety, a fatality shall be considered a death due to injuries in a transportation crash, accident, or incident that occurs within 30 days of that occurrence.

FATALITY (Rail): 1) Death of any person from an injury within 30 days of the accident/incident (may include nontrain accidents/incidents); or 2) Death of a railroad employee from an occupational illness within 365 days after the occupational illness was diagnosed by a physician.

FATALITY (Recreational Boating): All deaths (other than deaths by natural causes) and missing persons resulting from an occurrence that involves a vessel or its equipment.

FATALITY (Transit): A transit-caused death confirmed within 30 days of a transit incident. Incidents include collisions, derailments, personal casualties, and fires associated with transit agency revenue vehicles, transit facilities on transit property, service vehicles, maintenance areas, and rights of way.

FATALITY (Water): All deaths and missing persons resulting from a vessel casualty.

FEDERAL ENERGY REGULATORY COMMISSION (FERC): The Federal agency with jurisdiction over, among other things, gas pricing, oil pipeline rates, and gas pipeline certification.

FERRY BOAT (Transit): Vessels that carry passengers and/or vehicles over a body of water. Generally steam or diesel-powered, ferry boats may also be hovercraft, hydrofoil, and other high-speed vessels. The vessel is limited in its use to the carriage of deck passengers or vehicles or both, operates on a short run on a frequent schedule between two points over the most direct water routes other than in ocean or coastwise service, and is offered as a public service of a type normally attributed to a bridge or tunnel.

FIELD AND GATHERING GAS PIPELINES: A network of pipelines (mains) transporting natural gas from individual wells to a compressor station, processing point, or main trunk pipeline.

FLAG STOP (Air): A drop-off or pick-up point along a predetermined route that is visited only by request or if a signal to stop is given.

FOSSIL FUELS: Any naturally occurring organic fuel formed in the Earth's crust, such as petroleum, coal, and natural gas.

FREIGHT REVENUE (Rail): Revenue from the transportation of freight and from the exercise of transit, stopoff, diversion, and reconsignment privileges as provided for in tariffs.

FREIGHTERS (Water): General cargo carriers, full containerships, partial containerships, roll-on/rolloff ships, and barge carriers.

FULL-SIZE CAR: As designated by the automobile industry, cars with a wheelbase between 110 and 114 inches.

GAS TRANSMISSION PIPELINES: Pipelines installed for the purpose of transmitting gas from a source or sources of supply to one or more distribution centers, or to one or more large volume customers; or a pipeline installed to interconnect sources of supply. Typically, transmission lines differ from gas mains in that they operate at higher pressures and the distance between connections is greater.

GASOHOL: A blend of finished motor gasoline (leaded or unleaded) and alcohol (generally ethanol but sometimes methanol) limited to 10 percent by volume of alcohol.

GASOLINE: A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives that have been blended to produce a fuel suitable for use in spark ignition engines. Motor gasoline includes both leaded or unleaded grades of finished motor gasoline, blending components, and gasohol. Leaded gasoline is no longer used in highway motor vehicles in the United States.

GENERAL AVIATION: 1) All facets of civil aviation, except facets of those air carriers holding a Certificate of Public Convenience and Necessity. 2) All civil aviation activity except that of air carriers certificated in accordance with Federal Aviation Regulations (FAR) Parts 121, 123, 127, and 135. The types of aircraft used in general aviation range from corporate multiengine jet aircraft piloted by professional crews to amateur-built single-engine piston-driven acrobatic planes to balloons and dirigibles. 3) All civil aviation operations other than scheduled air services and nonscheduled air transport operations for taxis, commuter air carriers, and air travel clubs that do not hold Certificates of Public Convenience and Necessity.

GENERAL ESTIMATES SYSTEM: A data collection system that uses a nationally representative probability sample selected from all police-reported highway crashes. It began operation in 1988.

GROSS DOMESTIC PRODUCT: The total output of goods and services produced by labor and property located in the United States, valued at market prices. As long as the labor and property are located in the United States, the suppliers (workers and owners) may be either U.S. residents or residents of foreign countries.

GROSS VEHICLE WEIGHT RATING (gvwr) (Truck): The maximum rated capacity of a vehicle, including the weight of the base vehicle, all added equipment, driver and passengers, and all cargo.

HARBOR MAINTENANCE TRUST FUND: See Trust Funds.

HAZARDOUS MATERIAL: Any toxic substance or explosive, corrosive, combustible, poisonous, or radioactive material that poses a risk to the public's health, safety, or property-particularly when transported in commerce.

HEAVY RAIL (Transit): An electric railway with the capacity to transport a heavy volume of passenger traffic and characterized by exclusive rights-of-way, multicar trains, high speed, rapid acceleration, sophisticated signaling, and high-platform loading. Also known as “subway,” “elevated (railway),” or “metropolitan railway (metro).”

HIGHWAY-RAIL GRADE CROSSING (Rail): A location where one or more railroad tracks are crossed by a public highway, road, or street or a private roadway at grade, including sidewalks and pathways at or associated with the crossing.

HIGHWAY TRUST FUND: A grant-in-aid type fund administered by the U.S. Department of Transportation, Federal Highway Administration. Most funds for highway improvements are apportioned to States according to formulas that give weight to population, area, and mileage.

HOUSEHOLD TRIP (American Travel Survey): A trip in which one or more members of a household travel together.

HIGHWAY-USER TAX: A charge levied on persons or organizations based on their use of public roads. Funds collected are usually applied toward highway construction, reconstruction, and maintenance.

INCIDENT (Hazmat): Any unintentional release of hazardous material while in transit or storage.

INCIDENT (Train): Any event involving the movement of a train or railcars on track equipment that results in a death, a reportable injury, or illness, but in which railroad property damage does not exceed the reporting threshold.

INCIDENT (Transit): Collisions, derailments, personal casualties, fires, and property damage in excess of \$1,000 associated with transit agency revenue vehicles; all other facilities on the transit property; and service vehicles, maintenance areas, and rights-of-way.

INJURY (Air): See SERIOUS INJURY (air and general aviation).

INJURY (Gas): Described in DOT Forms 7100.1 or 7100.2 as an injury requiring “in-patient hospitalization” (admission and confinement in a hospital beyond treatment administered in an emergency room or out-patient clinic in which confinement does not occur).

INJURY (Hazardous Liquid Pipeline): An injury resulting from a hazardous liquid pipeline accident that results in one or more of the following: 1) Loss of consciousness, 2) A need to be carried from the scene, 3) A need for medical treatment, and/or 4) A disability that prevents the discharge of normal duties or the pursuit of normal duties beyond the day of the accident.

INJURY (Highway): Police-reported highway injuries are classified as follows:

Incapacitating Injury: Any injury, other than a fatal injury, that prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred. Includes severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness at or when taken from the accident scene, and inability to leave the accident scene without assistance. Exclusions include momentary unconsciousness.

Nonincapacitating Evident Injury: Any injury, other than a fatal injury or an incapacitating injury, evident to observers at the scene of the accident. Includes lumps on head, abrasions, bruises, minor lacerations, and others. Excludes limping.

Possible Injury: Any injury reported or claimed that is not evident. Includes momentary unconsciousness, claim of injuries not obvious, limping, complaint of pain, nausea, hysteria, and others.

INJURY (Highway-Rail Grade Crossing): 1) An injury to one or more persons other than railroad employees that requires medical treatment; 2) An injury to one or more employees that requires medical treatment or that results in restriction of work or motion for one or more days, or one or more lost work days, transfer to another job, termination of employment, or loss of consciousness; 3) Any occupational illness affecting one or more railroad employees that is diagnosed by a physician.

INJURY (Rail): 1) Injury to any person other than a railroad employee that requires medical treatment, or 2) Injury to a railroad employee that requires medical treatment or results in restriction of work or motion for one or more workdays, one or more lost workdays, termination of employment, transfer to another job, loss of consciousness, or any occupational illness of a railroad employee diagnosed by a physician.

INJURY (Recreational Boating): Injury requiring medical treatment beyond first aid as a result of an occurrence that involves a vessel or its equipment.

INJURY (Transit): Any physical damage or harm to a person requiring medical treatment or any physical damage or harm to a person reported at the time and place of occurrence. For employees, an injury includes incidents resulting in time lost from duty or any definition consistent with a transit agency's current employee injury reporting practice.

INJURY (Water): All personal injuries resulting from a vessel casualty that require medical treatment beyond first aid.

INLAND AND COASTAL CHANNELS: Includes the Atlantic Coast Waterways, the Atlantic Intracoastal Waterway, the New York State Barge Canal System, the Gulf Coast Waterways, the Gulf Intracoastal Waterway, the Mississippi River System (including the Illinois Waterway), Pacific Coast Waterways, the Great Lakes, and all other channels (waterways) of the United States, exclusive of Alaska, that are usable for commercial navigation.

INSTRUCTIONAL FLYING: Flying under the supervision of a flight instructor (excludes proficiency flying).

INTERCITY CLASS BUS I: As defined by the Bureau of Transportation Statistics, an interstate motor carrier of passengers with an average annual gross revenue of at least \$1 million.

INTERCITY TRUCK: Truck that carries freight beyond local areas and commercial zones.

INTERMEDIATE -SIZE CAR: As designated by the automobile industry, a car with a wheelbase between 105 and 109 inches.

INTERNAL TRAFFIC (Water): Vessel movements (origin and destination) that take place solely on inland waterways located within the boundaries of the contiguous 48 states or within the state of Alaska. The term "internal traffic" also applies to carriage on both inland waterways and the water of the Great Lakes; carriage between offshore areas and inland waterways; and carriage occurring within the Delaware Bay, Chesapeake Bay, Puget Sound, and the San Francisco Bay, which are considered internal bodies of water rather than arms of the ocean.

INTERSTATE HIGHWAY: Limited access, divided highway of at least four lanes designated by the Federal Highway Administration as part of the Interstate System.

INTRAPORT (Water): Movement of freight within the confines of a port whether the port has one or several channels included in the port definition. Does not include car-ferries and general ferries moving within a port.

INTRATERRITORY TRAFFIC (Water): Traffic between ports in Puerto Rico and the U.S. Virgin Islands, which are considered a single unit.

JET FUEL: The term includes kerosene-type jet fuel and naphtha-type jet fuel. Kerosene-type jet fuel is used primarily for commercial turbojet and turboprop aircraft engines. Naphtha-type jet fuel is used primarily for military turbojet and turboprop aircraft engines.

LAKELIKE OR GREAT LAKES TRAFFIC: Waterborne traffic between U.S. ports on the Great Lakes system. The Great Lakes system is treated as a separate waterways system rather than as a part of the inland system.

LARGE CERTIFICATED AIR CARRIERS: An air carrier holding a certificate issued under section 401 of the Federal Aviation Act of 1958, as amended, that: 1) Operates aircraft designed to have a maximum passenger capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds, or 2) Conducts operations where one or both terminals of a flight stage are outside the 50 states of the United States, the District of Columbia, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands. Large certificated air carriers are grouped by annual operating revenues: 1) Majors (more than \$1 billion in annual operating revenues), 2) Nationals (between \$100 million and \$1 billion in annual

operating revenues), Large regionals (\$20 million and \$99,999,999 in annual operating revenues), and 4) Medium regionals (less than \$20 million in annual operating revenues).

LARGE REGIONALS (Air): Air carrier groups with annual operating revenues between \$20 million and \$99,999,999.

LARGE CAR: As designated by the automobile industry, a car with a wheelbase greater than 114 inches.

LARGE TRUCK: Trucks over 10,000 pounds gross vehicle weight rating, including single-unit trucks and truck tractors.

LEASE CONDENSATE: A mixture consisting primarily of pentanes and heavier hydrocarbons, which are recovered as a liquid from natural gas in lease or field separation facilities. This category excludes natural gas liquids, such as butane and propane, which are recovered at natural gas processing plants or facilities.

LIGHT-DUTY VEHICLE: A vehicle category that combines light automobiles and trucks.

LIGHT RAIL: A streetcar-type vehicle operated on city streets, semiexclusive rights-of-way, or exclusive rights-of-way. Service may be provided by step-entry vehicles or by level boarding.

LIGHT TRUCK: Trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and sport utility vehicles.

LIQUEFIED NATURAL GAS (LNG): Natural gas, primarily methane, that has been liquefied by reducing its temperature to -260 °F. at atmospheric pressure.

LIQUEFIED PETROLEUM GAS (LPG): Propane, propylene, normal butane, butylene, isobutane, and isobutylene produced at refineries or natural gas processing plants, including plants that fractionate new natural gas plant liquids.

LOCOMOTIVE: Railroad vehicle equipped with flanged wheels for use on railroad tracks, powered directly by electricity, steam, or fossil fuel, and used to move other railroad rolling equipment.

LOCOMOTIVE-MILE: The movement of a locomotive unit, under its own power, the distance of 1 mile.

MAINS (Gas): A network of pipelines that serves as a common source of supply for more than one gas service line.

MAJORS (Air): Air carrier groups with annual operating revenues exceeding \$1 billion.

MEDIUM REGIONALS (Air): Air carrier groups with annual operating revenues less than \$20 million.

MERCHANDISE TRADE EXPORTS: Merchandise transported out of the United States to foreign countries whether such merchandise is exported from within the U.S. Customs territory, from a U.S. Customs bonded warehouse, or from a U.S. Foreign Trade Zone. (Foreign Trade Zones are areas, operated as public utilities, under the control of U.S. Customs with facilities for handling, storing, manipulating, manufacturing, and exhibiting goods.)

MERCHANDISE TRADE IMPORTS: Commodities of foreign origin as well as goods of domestic origin returned to the United States with no change in condition or after having been processed and/or assembled in other countries. Puerto Rico is a Customs district within the U.S. Customs territory, and its trade with foreign countries is included in U.S. import statistics. U.S. import statistics also include merchandise trade between the U. S. Virgin Islands and foreign countries even though the Islands are not officially a part of the U.S. Customs territory.

METHANOL: A light, volatile alcohol produced commercially by the catalyzed reaction of hydrogen and carbon monoxide. Methanol is blended with gasoline to improve its operational efficiency.

METHYL TERTIARY BUTYL ETHER (MTBE): A colorless, flammable, liquid oxygenated hydrocarbon that contains 18.15 percent oxygen. It is a fuel oxygenate produced by reacting methanol with isobutylene.

MID-SIZE CAR: See Intermediate-Size Car.

MINI-COMPACT CAR: An automobile industry designation usually consisting of cars with a wheelbase of less than 95 inches.

MINOR ARTERIALS (Highway): Streets and highways linking cities and larger towns in rural areas, in distributing trips to small geographic areas in urban areas (not penetrating identifiable neighborhoods).

MOTOR BUS (Transit): A rubber-tired, self-propelled, manually steered bus with fuel supply onboard the vehicle. Motor bus types include: intercity, school, and transit.

MOTORCYCLE: A two- or three-wheeled motor vehicle designed to transport one or two people, including motor scooters, minibikes, and mopeds.

NATIONALS (Air): Air carrier groups with annual operating revenues between \$100 million and \$1 billion.

NATURAL GAS: A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in porous geologic formations beneath the Earth's surface, often in association with petroleum. The principal constituent is methane.

NATURAL GAS PLANT LIQUIDS: Liquids recovered from natural gas in processing plants or field facilities, or extracted by fractionators. They include ethane, propane, normal butane, isobutane, pentanes plus, and other products, such as finished motor gasoline, finished aviation gasoline, special naphthas, kerosene, and distillate fuel oil produced at natural gas processing plants.

NEAR MIDAIR COLLISION (Air): An incident in which the possibility of a collision occurred as a result of aircraft flying with less than 500 feet of separation, or a report received from a pilot or flight crew member stating that a collision hazard existed between two or more aircraft.

NONOCCUPANT (Automobile): Any person who is not an occupant of a motor vehicle in transport (e.g., bystanders, pedestrians, pedalcyclists, or an occupant of a parked motor vehicle).

NONRESPONSE ERROR: Error that results from some members of the sample or census not providing information. Nonresponse bias results from a systematic difference between those who do and those who do not respond to the measurement instrument.

NONSAMPLING ERROR: All sources of bias or inaccuracy in a study other than sampling error. Examples of nonsampling errors include processing, recording, or dataentry errors; nonresponse error; and response error.

NONSCHEDULED SERVICE (Air): Revenue flights not operated as regular scheduled service, such as charter flights, and all nonrevenue flights incident to such flight.

NONSELF-PROPELLED VESSEL (Water): A vessel without the means for self-propulsion. Includes dry cargo and tanker barges.

NONTRAIN INCIDENT: An event that results in a reportable casualty, but does not involve the movement of ontrack equipment, and does not cause reportable damage above the threshold established for train accidents.

NONTRESPASSERS (Rail): A person lawfully on any part of railroad property used in railroad operations, or a person adjacent to railroad premises when injured as the result of railroad operations.

NONVESSEL-CASUALTY-RELATED DEATH: A death that occurs onboard a commercial vessel but not as a result of a vessel casualty, such as a collision, fire, or explosion.

OCCUPANT: Any person in or on a motor vehicle in transport. Includes the driver, passengers, and persons riding on the exterior of a motor vehicle (e.g., a skateboard rider holding onto a moving vehicle). Excludes occupants of parked cars unless they are double parked or motionless on the roadway.

OCCUPATIONAL FATALITY: Death resulting from a job-related injury.

OPERATING EXPENSES (Air): Expenses incurred in the performance of air transportation, based on overall operating revenues and expenses. Does not include nonoperating income and expenses, nonrecurring items, or income taxes.

OPERATING EXPENSES (Rail): Expenses of furnishing transportation services, including maintenance and depreciation of the plant used in the service.

OPERATING EXPENSES (Transit): The total of all expenses associated with operation of an individual mode by a given operator. Includes distributions of "joint expenses" to individual modes and excludes "reconciling items," such as interest expenses and depreciation. Should not be confused with "vehicle operating expenses."

OPERATING EXPENSES (Truck): Includes expenditures for equipment maintenance, supervision, wages, fuel, equipment rental, terminal operations, insurance, safety, and administrative and general functions.

OPERATING REVENUES (Air): Revenues from the performance of air transportation and related incidental services. Includes 1) Transportation revenues from the carriage of all classes of traffic in scheduled and nonscheduled services, and 2) Non-transportation revenues consisting of federal subsidies (where applicable) and services related to air transportation.

OTHER FREEWAYS AND EXPRESSWAYS (Highway): All urban principal arterials with limited access but not part of the Interstate system.

OTHER PRINCIPAL ARTERIAL (Highway): Major streets or highways, many of multilane or freeway design, serving high-volume traffic corridor movements that connect major generators of travel.

OTHER RAIL REVENUE: This includes revenues from miscellaneous operations (i.e., dining-and-bar-car services), income from lease of road and equipment, miscellaneous rental income, income from nonoperating property, profit from separately operated properties, dividend income, interest income, income from sinking and other reserve funds, release or premium on funded debt, contributions from other companies, and other miscellaneous income.

OTHER REVENUE VEHICLES (Transit): Other revenue-generating modes of transit service, such as cable cars, personal rapid transit systems, monorail vehicles, inclined railway cars, etc., not covered otherwise.

OTHER 2-AXLE 4-TIRE VEHICLES (Truck): Includes vans, pickup trucks, and sport utility vehicles.

OTHER WORK (General Aviation): Construction work (not Federal Aviation Regulations, Part 135), helicopter hoist, parachuting, aerial advertising, and towing gliders.

OXYGENATES: Any substance that when added to motor gasoline increases the amount of oxygen in that gasoline blend. Includes oxygen-bearing compounds such as ethanol, methanol, and methyl tertiary butyl ether. Oxygenated fuel tends to give a more complete combustion of carbon into carbon dioxide (rather than monoxide), thereby reducing air pollution from exhaust emissions.

PASSENGER CAR: A motor vehicle designed primarily for carrying passengers on ordinary roads, includes convertibles, sedans, and station wagons.

PASSENGER-MILE: 1) Air: One passenger transported 1 mile; passenger-miles for one interairport flight are calculated by multiplying aircraft miles flown by the number of passengers carried on the flight. The total passenger-miles for all flights is the sum of passenger-miles for all interairport flights. 2) Auto: One passenger traveling 1 mile; e.g., one car transporting two passengers 4 miles results in eight passenger-miles. 3) Transit: The total number of miles traveled by transit passengers; e.g., one bus transporting five passengers 3 miles results in 15 passenger-miles.

PASSENGER REVENUE: 1) Rail: Revenue from the sale of tickets. 2) Air: Revenues from the transport of passengers by air. 3) Transit: Fares, transfer, zone, and park-and-ride parking charges paid by transit passengers. Prior to 1984, fare revenues collected by contractors operating transit services are not included.

PASSENGER VESSELS: A vessel designed for the commercial transport of passengers.

PEDALCYCLIST: A person on a vehicle that is powered solely by pedals.

PEDESTRIAN: Any person not in or on a motor vehicle or other vehicle. Excludes people in buildings or sitting at a sidewalk cafe. The National Highway Traffic Safety Administration also uses an "other pedestrian" category to refer to pedestrians using conveyances and people in buildings. Examples of pedestrian conveyances include skateboards, nonmotorized wheelchairs, roller-skates, sleds, and transport devices used as equipment.

PERSON-MILES (American Travel Survey): An estimate of the aggregate distances traveled by all persons on a given trip based on the estimated transportation-network-miles traveled on that trip.

PERSON TRIP (American Travel Survey): A trip taken by an individual. For example, if three persons from the same household travel together, the trip is counted as one household trip and three person trips.

PERSONAL BUSINESS TRIP (American Travel Survey): A trip taken for a school-related activity or for personal or family business, including weddings and funerals.

PERSONAL-USE VEHICLE TRIP (American Travel Survey): A trip in which the principle means of transportation is a car, pickup truck, or van; other truck; rental car, truck, or van; recreational vehicle or motor home; or motorcycle or moped.

PLEASURE TRIP (American Travel Survey): A trip taken to visit friends or relatives or for leisure.

PERSONAL CASUALTY (Transit): 1) An incident in which a person is hurt while getting on or off a transit vehicle (e.g., falls or door incidents), but not as a result of a collision, derailment/left roadway, or fire. 2) An incident in which a person is hurt while using a lift to get on or off a transit vehicle, but not as a result of a collision, derailment/left roadway, or fire. 3) An incident in which a person is injured on a transit vehicle, but not as a result of a collision, derailment/left roadway, or fire. 4) An incident in which a person is hurt while using a transit facility. This includes anyone on transit property (e.g., patrons, transit employees, trespassers), but does not include incidents resulting from illness or criminal activity.

PERSONAL WATERCRAFT: Craft less than 13 feet in length designed to be operated by a person or persons sitting, standing, or kneeling on the craft rather than within the confines of a hull.

PETROLEUM (Oil): A generic term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oils, petroleum products, natural gas plant liquids, and nonhydrocarbon compounds blended into finished petroleum products.

PROPERTY DAMAGE (Transit): The dollar amount required to repair or replace transit property (including stations, right of way, bus stops, and maintenance facilities) damaged during an incident.

PUBLIC ROAD: Any road under the jurisdiction of and maintained by a public authority (federal, state, county, town, or township, local government, or instrumentality thereof) and open to public travel.

RAIL MOTOR CARS: Self-propelled passenger rail cars that are driven by electric motors energized from an electrified roadway or by a generator driven by a diesel or gas turbine engine.

RAPID RAIL TRANSIT: Transit service using rail cars driven by electricity usually drawn from a third rail, configured for passenger traffic, and usually operated on exclusive rights-of-way. It generally uses longer trains and has longer station spacing than light rail.

REFORMULATED GASOLINE: Gasoline whose composition has been changed to meet performance specifications regarding ozone-forming tendencies and release of toxic substances into the air from both evaporation and tailpipe emissions. Reformulated gasoline includes oxygenates and, compared with gasoline sold in 1990, has a lower content of olefins, aromatics, volatile components, and heavy hydrocarbons.

RESIDUAL FUEL OIL: The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations and that conform to American Society for Testing and Materials (ASTM) Specifications D396 and 976. Includes, among others, Navy Special oil used in steam-powered vessels in government service and No. 6 oil used to power ships. Imports of residual fuel oil include imported crude oil burned as fuel.

RESPONSE ERROR: Error that results from the tendency of people to answer a question falsely, deliberate misrepresentation, unconscious falsification, or misunderstanding of what is required.

REVENUE: Remuneration received by carriers for transportation activities.

REVENUE PASSENGER: 1) Air: Person receiving air transportation from an air carrier for which remuneration is received by the carrier. Air carrier employees or others, except ministers of religion, elderly individuals, and handicapped individuals, receiving reduced rate charges (less than the applicable tariff) are considered nonrevenue passengers. Infants, for whom a token fare is charged, are not counted as passengers. 2) Transit: Single-vehicle transit rides by initial-board (first-ride) transit passengers only. Excludes all transfer rides and all nonrevenue rides. 3) Rail: Number of one-way trips made by persons holding tickets.

REVENUE PASSENGER ENPLANEMENTS (Air): The total number of passengers boarding aircraft. Includes both originating and connecting passengers.

REVENUE PASSENGER LOAD FACTOR (Air): Revenue passenger-miles as a percent of available seat-miles in revenue passenger services. The term is used to represent the proportion of aircraft seating capacity that is actually sold and utilized.

REVENUE PASSENGER-MILE: One revenue passenger transported 1 mile.

REVENUE PASSENGER TON-MILE (Air): One ton of revenue passenger weight (including all baggage) transported 1 mile. The passenger weight standard for both domestic and international operations is 200 pounds.

REVENUE TON-MILE: One short ton of freight transported 1 mile.

REVENUE VEHICLE-MILES (Transit): One vehicle (bus, trolley bus, streetcar) traveling 1 mile while revenue passengers are on board generates one revenue vehicle-mile. Revenue vehicle-miles reported represent the total mileage traveled by vehicles in scheduled or unscheduled revenue-producing services.

ROAD OIL: Any heavy petroleum oil, including residual asphaltic oil, that is used as a dust palliative and surface treatment on roads and highways. It is generally produced in 6 grades from 0, the most liquid, to 5, the most viscous.

ROLL ON/ROLL OFF VESSEL: Ships that are designed to carry wheeled containers or other wheeled cargo and use the roll on/roll off method for loading and unloading.

ROUND-TRIP DISTANCE (American Travel Survey): The estimated transportation network-miles traveled at the time of the trip from the household residence to the destination and back.

RURAL HIGHWAY: Any highway, road, or street that is not an urban highway.

RURAL MILEAGE (Highway): Roads outside city, municipal district, or urban boundaries.

SAMPLING ERROR: The estimated inaccuracy of the results of a study when a population sample, rather than a census, is used to explain the behavior of the total population. (Also referred to as margin of error and standard error.)

SCHEDULED SERVICE (Air): Transport service operated pursuant to published flight schedules.

SCHOOL BUS: A passenger motor vehicle that is designed or used to carry more than 10 passengers, in addition to the driver, and, as determined by the Secretary of Transportation, is likely to be significantly used for the purpose of transporting pre-primary, primary, or secondary school students between home and school.

SCHOOL-BUS-RELATED CRASH: Any crash in which a vehicle, regardless of body design, used as a school bus is directly or indirectly involved, such as a crash involving school children alighting from a vehicle.

SCOW (Water): Any flat-bottomed, nonself-propelled, rectangular vessel with sloping ends. Large scows are used to transport sand, gravel, or refuse.

SELF-PROPELLED VESSEL: A vessel that has its own means of propulsion. Includes tankers, containerships, dry bulk cargo ships, and general cargo vessels.

SERIOUS INJURY (Air Carrier/General Aviation): An injury that requires hospitalization for more than 48 hours, commencing within 7 days from the date when the injury was received; results in a bone fracture (except simple fractures of fingers, toes, or nose); involves lacerations that cause severe hemorrhages, nerve, muscle, or tendon damage; involves injury to any internal organ; or involves second- or third-degree burns or any burns affecting more than 5 percent of the body surface.

SMALL CERTIFICATED AIR CARRIER: An air carrier holding a certificate issued under section 401 of the Federal Aviation Act of 1958, as amended, that operates aircraft designed to have a maximum seating capacity of 60 seats or fewer or a maximum payload of 18,000 pounds or less.

STATE AND LOCAL HIGHWAY EXPENDITURES: Disbursements for capital outlay, maintenance and traffic surfaces, administration and research, highway law enforcement and safety, and interest on debt.

STREETCARS: Relatively lightweight passenger rail cars operating singly or in short trains, or fixed rails in right-of-way that are not always separated from other traffic for much of the way. Streetcars do not necessarily have the right-of-way at grade crossings with other traffic.

SUBCOMPACT CAR: As designated by the automobile industry, a car with a wheelbase between 95 and 99 inches.

SUPPLEMENTAL AIR CARRIER: An air carrier authorized to perform passenger and cargo charter services.

TANKER: An oceangoing ship designed to haul liquid bulk cargo in world trade.

TON-MILE (Truck): The movement of 1 ton of cargo the distance of 1 mile. Ton-miles are calculated by multiplying the weight in tons of each shipment transported by the miles hauled.

TON-MILE (Water): The movement of 1 ton of cargo the distance of 1 statute mile. Domestic ton-miles are calculated by multiplying tons moved by the number of statute miles moved on the water (e.g., 50 short tons moving 200 miles on a waterway would yield 10,000 ton-miles for that waterway). Ton-miles are not computed for ports. For coastwise traffic, the shortest route that safe navigation permits between the port of origin and destination is used to calculate ton-miles.

TRAFFICWAY (Highway): Any right-of-way open to the public as a matter of right or custom for moving persons or property from one place to another, including the entire width between property lines or other boundaries.

TRAIN LINE MILEAGE: The aggregate length of all line-haul railroads. It does not include the mileage of yard tracks or sidings, nor does it reflect the fact that a mile of railroad may include two or more parallel tracks. Jointly-used track is counted only once.

TRAIN-MILE: A train-mile is the movement of a train, which can consist of many cars, the distance of 1 mile. A train-mile differs from a vehicle-mile, which is the movement of one car (vehicle) the distance of 1 mile. A 10-car (vehicle) train traveling 1 mile is measured as 1 train-mile and 10 vehicle-miles. Caution should be used when comparing train-miles to vehicle-miles.

TRANSIT VEHICLE: Includes light, heavy, and commuter rail; motor bus; trolley bus; van pools; automated guideway; and demand-responsive vehicles.

TRANSSHIPMENTS: Shipments that enter or exit the United States by way of a U.S. Customs port on the northern or southern border, but whose origin or destination was a country other than Canada or Mexico.

TRAVEL PARTY (American Travel Survey): Household and nonhousehold members traveling together on a trip.

TRESPASSER (Rail): Any person whose presence on railroad property used in railroad operations is prohibited, forbidden, or unlawful.

TRIP (American Travel Survey): Roundtrip travel to a destination at least 100 miles from home. The following types of trips are excluded: 1) travel as part of an operating crew on a train, airplane, truck, bus, or ship; 2) regular commuting to work or school; 3) one-way trips to move to a new destination; and 4) trips by members of the Armed Forces while on active duty.

TROLLEY BUS: Rubber-tired electric transit vehicle, manually steered and propelled by a motor drawing current, normally through overhead wires, from a central power source.

TRUST FUNDS: Accounts that are specifically designated by law to carry out specific purposes and programs. Trust Funds are usually financed with earmarked tax collections.

TUG BOAT: A powered vessel designed for the towing or pushing of ships, dumb barges, pushed-towed barges, and rafts, but not for the carriage of goods.

U.S. FLAG CARRIER OR AMERICAN FLAG CARRIER (Air): One of a class of air carriers holding a Certificate of Public Convenience and Necessity issued by the U.S. Department of Transportation and approved by the President, authorizing scheduled operations over specified routes between the United States (and/or its territories) and one or more foreign countries.

UNLEADED GASOLINE: See Gasoline.

UNLINKED PASSENGER TRIPS (Transit): The number of passengers who board public transportation vehicles. A passenger is counted each time he/she boards a vehicle even if on the same journey from origin to destination.

URBAN HIGHWAY: Any road or street within the boundaries of an urban area. An urban area is an area including and adjacent to a municipality or urban place with a population of 5,000 or

more. The boundaries of urban areas are fixed by state highway departments, subject to the approval of the Federal Highway Administration, for purposes of the Federal-Aid highway program.

VANPOOL (Transit): Public-sponsored commuter service operating under prearranged schedules for previously formed groups of riders in 8- to 18-seat vehicles. Drivers are also commuters who receive little or no compensation besides the free ride.

VEHICLE MAINTENANCE (Transit): All activities associated with revenue and nonrevenue (service) vehicle maintenance, including administration, inspection and maintenance, and servicing (cleaning, fueling, etc.) vehicles. In addition, it includes repairs due to vandalism or to revenue vehicle accidents.

VEHICLE-MILES (Highway): Miles of travel by all types of motor vehicles as determined by the states on the basis of actual traffic counts and established estimating procedures.

VEHICLE-MILES (Transit): The total number of miles traveled by transit vehicles. Commuter rail, heavy rail, and light rail report individual car-miles, rather than train-miles for vehicle-miles.

VEHICLE OPERATIONS (Transit): All activities associated with transportation administration, including the control of revenue vehicle movements, scheduling, ticketing and fare collection, system security, and revenue vehicle operation.

VESSEL CASUALTY (Water): An occurrence involving commercial vessels that results in 1) Actual physical damage to property in excess of \$25,000; 2) Material damage affecting the seaworthiness or efficiency of a vessel; 3) Stranding or grounding; 4) Loss of life; or 5) Injury causing any person to remain incapacitated for a period in excess of 72 hours, except injury to harbor workers not resulting in death and not resulting from vessel casualty or vessel equipment casualty.

VESSEL-CASUALTY-RELATED DEATH: Fatality that occurs as a result of an incident that involves a vessel or its equipment, such as a collision, fire, or explosion. Includes drowning deaths.

WATERBORNE TRANSPORTATION: Transport of freight and/or people by commercial vessels under U.S. Coast Guard jurisdiction.

WAYBILL: A document that lists goods and shipping instructions relative to a shipment.

WEEKEND TRIP (American Travel Survey): Travel by persons who stay one or two nights away, including a Friday and/or Saturday night. Travel over three to five nights including a Friday and/or Saturday night stay is defined as a long-weekend trip.

Acronyms and Initialisms

AAA	American Automobile Association	FERC	Federal Energy Regulatory Commission
AADT	Annual Average Daily Traffic	FHWA	Federal Highway Administration
AAMA	American Automobile Manufacturers Association	FRA	Federal Railway Administration
AAR	Association of American Railroads	FTA	Federal Transit Administration
AAS	Air Activity Statistics of Certificated Air Carriers	FTP	Federal Test Procedure
AGA	American Gas Association	FTZ	Foreign Trade Zone
AI	Alcohol Involvement	GAATA	General Aviation and Air Taxi Activity
AIA	Aerospace Industries Association	GAMA	General Aviation Manufacturers Association
ALVW	Adjusted Loaded Vehicle Weight	GES	General Estimates System
AMIO	Alien Migrant Interdiction Operations	GIS	Geographic Information System
AOPL	Association of Oil Pipelines	g/mi	Grams Per Mile
APTA	American Public Transit Association	GVWR	Gross Vehicle Weight Rating
ATS	American Travel Survey	HC	Hydrocarbon
ATV	All-Terrain Vehicle	HPMS	Highway Performance Monitoring System
BAC	Blood Alcohol Concentration	ICC	Interstate Commerce Commission
BEA	Bureau of Economic Analysis	INM	Integrated Noise Model
BMA	Bicycle Manufacturer's Association	IO	Investigative Officer
BTS	Bureau of Transportation Statistics	IRI	International Roughness Index
Btu	British Thermal Unit	LDT	Light-Duty Truck
CFR	U.S. Code of Federal Regulation	LMIS	Lloyd's Maritime Information System
CFS	Commodity Flow Survey	LPG	Liquefied Petroleum Gas
CNG	Compressed Natural Gas	LR	Lloyd's Register
CO	Carbon Monoxide	LVW	Loaded Vehicle Weight
CVS	Certification Vehicle Standard	MARAD	Maritime Administration
dB	Decibels	MCMIS	Motor Carrier Management Information System
DNL	Day Night Sound Level	MDPV	Medium-Duty Passenger Vehicles
dwt	Deadweight Tons	MIC	Motorcycle Industry Council, Inc.
EPA	U.S. Environmental Protection Agency	mmbd	Million Barrels Per Day
EIA	Energy Information Administration	MOBILE	Mobile Source Emissions Factor Model
FAA	Federal Aviation Administration		
FARS	Fatality Analysis Reporting System Database		

mpg	Miles Per Gallon	PMT	Passenger Miles of Travel
MSIS	Marine Safety Information System	PSI	Pollutant Standard Index
MTBE	Methyl Tributyl Ether	PSR	Present Serviceability Rating
MVMA	Motor Vehicle Manufacturers Association	RFG	Reformulated Gasoline
NANIM	Nationwide Airport Noise Impact Model	RO/RO	Roll-On/Roll-Off
NBDA	National Bicycle Dealers Association	RSPA	Research and Special Programs Administration
NDC	Navigation Data Center	RTECS	Residential Transportation Energy Consumption Survey
NHS	National Highway System	RVP	Reid Vapor Pressure
NHTSA	National Highway Traffic Safety Administration	SAMIS	Safety Management Information Statistics
NMAC	Near Mid-Air Collision	SEC	Securities and Exchange Commission
NO_x	Nitrogen Oxides	SHA	State Highway Agencies
NOPS	National Operations Center	SO₂	Sodium Dioxide
NOPUS	National Occupant Protection Use Survey	STB	Surface Transportation Board
NPIAS	National Plan of Integrated Airport Systems	TAF	Terminal Area Forecast
NPTS	Nationwide Personal Transportation Survey	TIUS	Truck Inventory and Use Survey
NTD	National Transit Database	TMG	Traffic Monitoring Guide
NTS	National Transportation Statistics	TRFD	Transportation-Related Final Demand
NTSB	National Transportation Safety Board	TSFD	Transborder Surface Freight Data
OAG	Official Airline Guide	TTI	Texas Transportation Institute
OAI	Office of Airline Information	USACE	U.S. Army Corps of Engineers
OIG	Office of the Inspector General	USCG	U.S. Coast Guard
OPS	Office of Pipeline Safety	USDOC	U.S. Department of Commerce
ORNL	Oak Ridge National Laboratory	USDOD	U.S. Department of Defense
OST	Office of the Secretary of Transportation	USDOT	U.S. Department of Transportation
PAR	Police Accident Report	USSR	Union of Soviet Social Republic
PIRS	Pollution Incident Reporting System		

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National Transportation Statistics 2004

presents statistics on the U.S. transportation system, including its physical components, safety record, economic performance, the human and natural environment, and national security.



Modal Profiles

Air Carrier Profile

Financial	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Operating revenues (thousand dollars) ¹														
Domestic total ^a	2,178,339	7,180,161	26,440,297	57,960,508	65,948,993	70,885,050	76,890,526	82,249,568	86,493,789	90,931,479	98,895,837	86,511,248	(R) 79,220,149	88,179,380
Majors, all services	1,942,635	6,272,775	23,012,073	53,333,552	59,846,676	64,317,169	70,036,709	74,942,391	77,650,810	82,615,015	89,290,585	78,599,844	71,837,353	75,953,691
Nationals, all services	146,481	736,831	3,182,418	4,167,552	5,465,021	5,935,773	5,990,391	6,163,458	8,113,690	7,789,636	9,104,701	7,485,642	(R) 6,738,116	11,161,453
Large regionals, all services	N	N	245,806	459,404	637,296	632,108	863,426	1,143,719	729,289	526,828	500,551	425,762	(R) 644,680	1,064,236
International total	705,938	2,109,497	6,442,144	17,990,355	22,364,429	23,433,483	25,046,820	27,318,034	26,971,289	28,106,973	31,403,421	28,715,591	(R) 27,482,292	27,567,329
Majors, all services	705,938	2,109,497	5,976,221	16,761,376	19,222,842	19,892,111	21,524,274	23,608,853	23,356,233	24,671,152	28,100,884	25,883,361	(R) 24,549,966	24,896,068
Nationals, all services	N	N	465,923	901,352	2,697,137	3,282,606	3,326,467	3,376,014	3,161,212	3,142,217	2,909,590	2,512,290	(R) 2,583,498	2,090,717
Large regionals, all services	N	N	N	327,627	444,450	258,766	196,079	333,166	453,844	293,604	392,947	319,940	(R) 348,828	580,544
Total certificated ^a	2,884,877	9,289,658	32,882,441	75,950,863	88,313,422	94,318,533	101,937,346	109,567,602	113,465,078	119,038,452	130,299,258	115,226,839	(R) 106,702,441	115,746,709
Operating expenses (thousand dollars) ¹														
Domestic total ^a	2,052,094	7,001,668	26,465,999	58,953,086	63,757,937	66,119,699	71,573,073	75,731,215	78,388,515	84,328,320	93,578,562	94,891,737	(R) 86,696,559	90,827,606
Majors, all services	1,907,785	6,256,039	23,150,527	54,209,401	57,824,115	59,721,080	64,793,763	68,307,270	70,114,852	76,506,077	84,208,514	86,611,140	(R) 79,299,562	79,659,763
Nationals, all services	144,309	745,629	3,058,289	4,297,823	5,285,783	5,750,372	5,847,797	6,163,923	7,500,451	7,299,934	8,824,795	7,809,449	(R) 6,725,692	10,166,967
Large regionals, all services	N	N	257,183	445,862	648,039	648,039	931,513	1,260,021	773,212	522,309	545,253	471,148	(R) 671,305	1,000,876
International total	665,660	2,065,605	6,642,095	18,914,480	21,842,021	22,335,257	24,155,203	25,249,593	25,748,752	26,307,097	29,735,718	30,658,472	(R) 28,563,067	27,103,118
Majors, all services	665,660	2,065,605	6,171,366	17,746,006	18,875,302	19,061,258	20,807,517	21,688,642	22,321,441	23,218,938	26,645,342	27,664,641	(R) 25,703,233	24,624,881
Nationals, all services	N	N	470,729	853,361	2,503,462	3,025,707	3,166,097	3,253,249	3,014,282	2,815,341	2,659,021	2,672,662	(R) 2,539,233	1,945,654
Large regionals, all services	N	N	N	315,113	463,257	248,292	181,589	307,702	413,029	272,819	431,355	321,169	(R) 320,601	532,583
Total certificated ^a	2,717,754	9,067,273	33,108,094	77,867,566	85,599,958	88,454,956	95,728,276	100,980,807	104,137,267	110,635,417	123,314,280	125,550,209	(R) 115,259,626	117,930,724
Inventory ^b														
Number of carriers ^{c,2}														
Total domestic and international	55	39	66	59	80	89	90	82	80	82	76	69	72	65
Majors	N	N	14	12	11	11	12	13	13	13	14	15	13	14
Nationals	N	N	18	15	23	27	31	31	27	31	33	27	30	26
Regionals	N	N	34	32	46	51	47	38	40	38	29	27	29	25
Number of aircraft available for service ³														
Total domestic and international	2,135	2,690	2,818	4,727	5,221	5,567	5,961	5,770	6,144	6,254	6,522	6,081	5,819	6,675
Majors	N	N	2,071	3,854	4,085	4,039	4,422	4,352	4,605	4,711	5,118	4,996	4,530	4,948
Nationals	N	N	432	650	819	1,143	1,167	967	1,113	1,319	1,182	952	1,079	1,299
Regionals	N	N	315	223	317	385	372	451	426	224	222	133	210	428
Number of employees ^{c,2}														
Total domestic and international	169,872	304,690	354,264	588,926	585,427	610,363	634,866	656,243	696,408	728,495	732,049	653,488	642,797	609,401
Majors	118,189	214,021	318,973	549,100	526,379	533,313	564,631	597,953	623,389	650,267	672,294	607,857	585,890	534,902
Nationals	12,470	24,913	29,922	32,077	46,670	59,444	56,586	47,662	59,620	68,138	56,056	41,865	52,470	69,350
Regionals	N	N	5,369	7,749	12,378	17,606	13,649	10,628	13,399	10,090	3,699	3,766	4,437	5,149

continued

Air Carrier Profile *continued*

Performance	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Aircraft revenue-miles (thousands)														
Domestic ⁴														
Certificated, all services	858,451	2,067,598	2,523,375	3,963,263	4,379,830	4,629,394	4,811,453	4,910,948	5,034,691	5,332,483	5,664,281	5,548,323	(R) 5,616,309	6,084,854
Major, all services	716,961	1,778,065	2,113,669	3,547,339	3,760,064	3,953,287	4,083,664	4,191,113	4,260,052	4,598,092	4,784,663	4,680,536	4,418,671	4,266,950
Nationals, all services	94,794	247,055	330,528	351,946	519,312	569,641	614,519	594,241	702,913	668,646	813,061	809,367	(R) 939,355	1,249,346
Large regionals, all services	N	N	56,995	60,542	78,573	85,363	96,573	112,682	51,199	47,438	52,941	40,936	(R) 44,128	73,786
International total ⁵														
Certificated, all services	181,605	474,666	400,971	760,338	979,765	997,658	1,043,313	1,113,816	1,192,489	1,225,218	1,281,706	1,265,939	(R) 1,224,662	1,246,109
Major, all services	N	N	330,391	666,231	809,242	822,283	859,483	917,109	1,003,726	1,053,219	1,117,712	1,119,387	1,048,152	1,028,244
Nationals, all services	N	N	66,499	48,812	119,839	141,870	150,147	145,821	145,494	138,135	132,497	124,764	(R) 147,046	173,486
Large regionals, all services	N	N	2,948	60,542	41,067	27,761	22,519	47,138	40,398	29,474	27,890	17,516	(R) 24,698	37,493
Medium regionals, all services, domestic and international	N	N	23,204	9,017	31,500	28,847	27,861	16,660	21,024	22,697	17,223	15,976	(R) 25,164	25,734
Total certificated	1,040,056	2,542,264	2,924,346	4,723,601	5,359,595	5,627,052	5,854,766	6,024,764	6,227,180	6,557,701	7,056,534	6,814,264	(R) 6,840,971	7,330,964
Aircraft revenue-hours														
Domestic ⁴														
Certificated, all services	3,672,900	5,133,161	6,247,795	9,717,375	10,721,374	11,378,134	11,871,886	12,060,253	12,445,483	13,091,273	13,905,472	13,507,906	(R) 13,727,415	15,239,998
Major, all services	2,802,317	4,066,480	4,941,327	8,524,236	8,864,840	9,257,260	9,584,525	9,828,418	9,957,390	10,863,178	11,308,820	10,908,397	(R) 10,297,655	9,869,212
Nationals, all services	606,146	908,935	919,187	1,016,491	1,579,771	1,839,835	1,981,219	1,882,975	2,299,916	2,053,335	2,419,285	2,302,845	(R) 2,469,537	3,331,365
Large regionals, all services	N	N	267,522	167,826	223,951	223,007	260,985	315,506	143,197	126,602	142,900	112,813	(R) 113,446	180,813
International ⁵														
Certificated, all services	608,736	977,325	819,518	1,556,760	1,978,381	2,021,060	2,113,467	2,235,441	2,394,095	2,456,726	2,595,893	2,569,314	(R) 2,495,108	2,560,748
Major, all services	N	N	668,199	1,351,349	1,607,155	1,634,465	1,712,416	1,819,583	1,992,776	2,090,817	2,229,167	2,239,473	(R) 2,099,919	2,066,899
Nationals, all services	N	N	140,329	101,533	251,902	314,066	329,311	309,948	311,540	290,582	299,259	282,776	(R) 330,647	391,875
Large regionals, all services	N	N	7,583	88,641	97,967	59,572	48,619	97,304	83,437	62,658	60,381	37,451	(R) 54,486	84,990
Medium regionals, all services, domestic and international	N	N	123,411	24,059	74,169	70,989	68,278	41,960	51,322	60,827	41,553	50,396	(R) 77,373	78,925
Total certificated	4,281,636	6,110,486	7,190,724	11,298,194	12,699,755	13,399,194	13,985,353	14,295,694	14,839,578	15,547,999	16,501,365	16,077,220	(R) 16,222,523	17,800,746
Revenue passenger-miles (thousands)														
Domestic ⁴														
Certificated, all services	31,098,944	108,441,978	204,367,599	34,872,950	388,398,689	403,887,802	434,651,687	450,612,482	463,262,198	488,356,869	516,128,630	486,506,043	(R) 482,309,630	503,338,954
Majors, all services	29,430,428	99,903,229	182,984,795	327,112,620	352,063,855	368,701,100	395,099,254	410,906,050	421,217,665	451,399,646	472,284,794	440,413,336	425,605,781	424,148,216
Nationals, all services	1,170,779	7,642,071	20,466,712	16,756,818	31,339,182	29,255,179	33,000,546	33,241,082	37,699,063	33,267,469	40,549,113	43,541,665	(R) 49,906,626	65,988,860
Large regionals, all services	N	N	711,868	1,752,615	3,757,414	4,381,267	5,443,071	5,778,338	3,124,802	2,627,816	2,527,254	1,999,953	(R) 2,048,656	3,534,870

continued

Air Carrier Profile *continued*

Performance (continued)	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
International ⁵														
Certificated, all services	8,950,672	39,695,392	63,354,387	126,362,697	149,107,689	154,869,249	161,512,010	169,356,100	172,255,197	180,269,038	192,797,653	178,343,137	(R) 171,859,992	167,662,425
Majors, all services	N	N	54,318,160	118,268,507	133,299,897	137,986,520	145,330,811	153,564,956	157,398,986	168,175,060	181,585,899	169,335,413	163,432,281	156,266,051
Nationals, all services	N	N	8,659,592	6,794,533	13,459,194	16,128,695	14,681,127	13,616,245	13,471,798	9,649,710	8,447,916	7,710,903	(R) 6,803,106	8,589,662
Large regionals, all services	N	N	330,288	1,219,706	1,964,944	676,925	505,337	2,148,486	1,097,330	2,145,931	2,675,654	1,219,133	(R) 1,356,128	2,686,664
Medium regionals, all services, domestic and international	N	N	250,571	330,848	1,621,892	1,627,365	2,103,551	713,425	1,507,751	1,360,275	855,653	628,777	(R) 1,627,448	931,648
Total certificated	40,049,616	148,137,370	267,972,557	472,566,495	537,506,378	558,757,051	596,163,697	619,968,582	635,517,395	668,625,907	708,926,283	664,849,180	(R) 654,169,622	671,001,379
Average passenger revenue / passenger-mile ⁶														
(Domestic, scheduled service)	6.09	6.00	11.49	13.43	13.12	13.48	13.76	13.97	14.08	13.72	14.56	13.25	(R) 12.00	12.22
Average passenger fare ⁶														
(Domestic, scheduled service)	30.01	40.65	84.60	107.86	103.21	106.66	110.37	114.10	114.08	114.99	121.27	111.60	(R) 101.94	102.90
Revenue passenger enplanements (thousands)														
Domestic ⁴														
Certificated, all services	56,352	153,662	275,182	428,767	489,351	506,789	538,394	548,735	566,951	589,170	616,778	574,881	(R) 564,400	596,674
Major, all services	48,678	122,866	223,237	393,927	428,328	441,650	466,743	478,253	486,903	519,760	537,379	496,453	(R) 468,052	453,175
Nationals, all services	5,949	26,726	47,145	32,015	53,361	55,656	62,183	61,316	74,281	65,072	76,092	75,599	(R) 83,035	111,584
Large regionals, all services	N	N	3,748	2,566	6,138	7,136	7,887	8,203	4,352	3,152	2,226	1,688	(R) 1,590	3,527
International ⁵														
Certificated, all services	5,904	16,620	26,514	46,126	51,330	52,864	54,515	56,767	57,759	57,702	60,828	56,650	(R) 56,864	58,327
Major, all services	N	N	23,949	42,207	42,702	44,155	46,302	48,614	49,610	50,604	53,157	50,077	(R) 50,599	49,984
Nationals, all services	N	N	2,343	2,632	6,608	8,114	7,401	6,896	7,038	5,446	5,788	5,662	5,325	6,598
Large regionals, all services	N	N	149	1,246	1,741	556	405	1,231	940	1,404	1,810	833	(R) 669	1,582
Medium regionals, all services, domestic and international	N	N	1,125	300	1,803	2,386	1,988	989	1,586	1,434	1,154	1,211	1,884	1,879
Total certificated	62,256	169,922	302,821	475,193	540,681	559,653	592,909	605,502	624,710	646,872	677,606	631,531	(R) 612,266	655,002
Revenue passenger														
Load factor (%) (scheduled service)														
Domestic ⁴														
Certificated	58.5	48.9	58.0	60.4	64.7	65.4	67.9	69.1	70.0	69.8	71.2	69.1	70.3	72.4
Majors	59.5	49.3	58.1	60.6	65.0	65.7	68.5	69.7	70.4	70.3	71.6	69.3	70.6	72.9
Nationals	41.9	43.6	58.4	56.6	62.6	61.9	61.5	63.2	65.1	64.7	66.5	67.0	68.7	71.3
Large regionals	N	N	47.7	48.7	60.0	56.0	60.4	60.7	58.8	42.4	59.2	54.6	(R) 60.8	71.3
International ⁵														
Certificated	62.2	53.0	62.8	69.1	70.6	71.8	73.3	74.1	72.8	74.4	76.0	72.8	76.6	76.5
Majors	N	N	62.8	69.1	70.8	72.1	73.7	74.4	72.9	74.5	76.1	72.9	76.8	76.8
Nationals	N	N	65.5	73.4	68.2	67.7	67.8	69.6	70.9	73.7	73.4	70.0	67.9	64.7
Large regionals	N	N	73.9	66.5	46.8	44.5	0.0	64.9	46.0	U	58.0	67.0	62.3	70.2
Medium regionals, all services, domestic and international	N	N	46.7	0.0	53.8	59.3	66.7	49.7	58.2	58.3	35.5	60.4	57.8	64.5

continued

Air Carrier Profile *continued*

Performance (continued)	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
U.S. international passenger travel ^{d,7}														
Total passenger-arrivals (thousands)														
Flag of carrier														
United States	1,332	5,531	10,031	19,145	23,291	24,582	25,148	26,744	27,390	27,462	29,837	27,985	26,953	26,557
Foreign	1,234	4,343	10,231	17,269	20,527	22,328	24,704	27,571	28,791	30,324	32,380	28,715	26,912	27,395
Total passenger-departures (thousands)														
Flag of carrier														
United States	1,200	4,949	9,369	17,628	21,355	22,231	22,901	24,302	24,513	25,457	27,431	25,483	23,610	24,070
Foreign	1,136	4,147	9,886	16,418	18,993	20,795	22,884	25,382	26,350	28,399	30,068	27,111	24,996	25,897
Total revenue ton-miles (thousands) ^e														
Domestic ⁴														
Certificated, all services	3,732,949	13,876,802	24,964,907	43,651,162	50,631,589	52,910,081	56,326,750	58,658,887	60,199,459	63,032,722	66,595,204	61,731,557	(R) 62,051,854	65,258,164
Majors, all services	3,332,483	12,589,057	21,427,534	39,107,033	44,952,734	47,015,642	50,096,661	52,254,323	53,424,349	56,696,427	59,095,406	54,798,905	54,168,780	54,135,774
Nationals, all services	121,157	850,477	3,336,057	3,561,283	4,510,285	4,996,345	231,398	5,317,576	6,012,665	5,705,158	6,799,198	6,192,307	(R) 6,297,409	7,861,350
Large regionals, all services	N	N	180,042	945,929	1,002,552	718,659	863,449	971,942	508,172	507,053	588,975	623,649	(R) 812,852	1,525,565
International ⁵														
Certificated, all services	1,291,336	6,308,701	9,689,067	19,975,915	24,879,791	26,295,684	28,177,721	30,944,299	31,481,513	32,810,136	35,161,431	32,736,774	(R) 33,883,040	34,287,888
Majors, all services	N	N	7,377,733	17,803,825	20,681,991	21,517,789	22,880,295	24,971,379	25,794,344	27,949,876	30,683,564	28,394,238	27,861,326	26,999,503
Nationals, all services	N	N	2,261,534	1,229,849	3,201,089	4,116,380	4,603,920	4,657,365	4,376,654	4,257,520	3,815,162	3,868,702	(R) 5,344,254	6,385,151
Large regionals, all services	N	N	44,438	835,701	862,184	513,476	396,142	1,240,303	1,269,602	566,689	565,198	433,174	(R) 618,332	751,452
Medium regionals, all services, domestic and international	N	N	28,178	143,457	300,545	327,474	432,606	190,298	265,186	160,135	209,132	151,434	(R) 297,252	284,407
Total certificated	5,024,285	20,185,503	34,682,153	63,770,534	75,511,380	79,205,765	84,504,471	89,603,186	91,650,972	95,842,858	101,756,635	94,468,332	(R) 95,934,895	99,546,053
Revenue ton-miles of freight (thousands)														
Domestic ⁴														
Certificated, all services	552,756	2,708,900	4,528,316	9,063,864	11,802,778	12,520,057	12,860,845	13,601,412	13,839,605	14,201,933	14,982,615	13,069,461	(R) 13,881,707	14,924,269
Majors, all services	321,176	U	3,129,087	6,395,767	9,746,354	10,145,537	10,586,741	11,163,518	11,302,583	11,556,463	11,866,926	10,750,087	11,608,200	11,720,953
Nationals, all services	3,850	U	1,289,510	1,885,600	1,387,322	2,070,570	1,931,201	1,993,498	2,239,140	2,378,206	2,744,086	1,837,861	(R) 1,306,920	1,262,464
Large regionals, all services	N	N	108,864	770,670	626,842	280,512	318,542	398,153	195,791	249,706	337,068	423,739	(R) 608,325	1,172,078
International ⁵														
Certificated, all services	268,156	1,566,105	3,353,371	7,339,660	9,970,189	10,854,620	12,031,634	14,008,685	14,262,373	14,782,231	15,880,424	14,902,664	(R) 16,697,508	17,521,647
Majors, all services	N	N	1,945,660	5,976,973	7,351,998	7,719,138	8,347,214	9,614,881	10,054,448	11,132,370	12,524,977	11,460,695	11,518,098	11,372,899
Nationals, all services	N	N	1,395,575	550,409	1,855,167	2,549,371	3,140,921	3,295,738	3,035,853	3,291,549	2,970,370	3,097,665	(R) 4,663,944	5,526,186
Large regionals, all services	N	N	11,409	713,733	666,863	445,783	345,609	1,025,455	1,159,869	352,095	296,387	311,412	(R) 483,186	482,786
Medium regionals, all services, domestic and international	N	N	3,124	110,372	138,421	163,766	222,251	118,854	114,294	23,775	123,225	84,745	(R) 194,815	191,243
Total certificated	820,907	3,755,436	7,884,811	16,513,896	21,772,967	23,374,677	24,892,479	27,610,097	28,101,978	28,984,164	30,863,039	27,972,125	(R) 30,579,215	32,445,917

continued

Air Carrier Profile *continued*

Safety ^a	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Air carrier fatalities														
Operating under 14 CFR 121 (airlines)														
Scheduled services	N	N	0	39	239	166	342	3	1	12	92	531	0	22
Nonscheduled services	N	N	1	0	0	2	38	5	0	0	0	0	0	0
Operating under 14 CFR 135														
Scheduled services (commuters)	N	N	37	6	25	9	14	46	0	12	5	13	0	2
Nonscheduled services (on-demand air taxis)	N	N	105	51	63	52	63	39	45	38	71	60	(R) 35	45
Total	499	146	143	96	327	229	457	93	46	62	168	604	(R) 35	69
Air carrier accidents														
Operating under 14 CFR 121 (airlines)														
Scheduled services	N	N	15	22	19	34	32	44	43	46	50	(R) 42	34	52
Nonscheduled services	N	N	4	2	4	2	5	5	7	5	6	4	7	2
Operating under 14 CFR 135														
Scheduled services (commuters)	N	N	38	15	10	12	11	16	8	13	12	7	8	2
Nonscheduled services (on-demand air taxis)	N	N	171	107	85	75	90	82	77	73	80	72	(R) 59	77
Total	90	55	228	146	118	123	138	147	135	137	148	125	(R) 108	133
Fatal air carrier accidents														
Operating under 14 CFR 121 (airlines)														
Scheduled services	N	N	0	6	4	2	3	3	1	2	3	6	0	2
Nonscheduled services	N	N	1	0	0	1	2	1	0	0	0	0	0	0
Operating under 14 CFR 135														
Scheduled services (commuters)	N	N	8	3	3	2	1	5	0	5	1	2	0	1
Nonscheduled services (on-demand air taxis)	N	N	46	29	26	24	29	15	17	12	22	18	(R) 18	19
Total	17	8	55	38	33	29	35	24	18	19	26	26	(R) 18	22

KEY: N = data do not exist; R = revised; U = data are not available.

^a Some totals include data not in the table; thus totals may not equal sum of table data.

^b Includes scheduled and nonscheduled (charter) operators. By Sec. 2 of the Airline Deregulation Act of 1978 "charter air carrier" and "charter air transportation" replaced supplemental air carriers and supplemental air transportation, which were formerly Sec. 101(36) and (37) of the Act. The 24 pre-deregulation supplemental carriers now have scheduled service authority.

^c Total includes only those carriers who have reported employment statistics to BTS' Office of Airline Information.

^d Passenger travel totals do not include Canada because the source does not record departures and arrivals to and from Canada.

^e Total Revenue Ton-Miles includes passenger, freight, express, and mail.

NOTES

Domestic encompasses operations within and between the 50 states of the United States, the District of Columbia, Puerto Rico, and the Virgin Islands. It also encompasses Canadian and Mexican transborder operations (U.S. airlines only). All other operations are considered international.

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ 1960-1970: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969 and 1973* (Washington, DC), pp. 69 and 71. 1980: Civil Aeronautics Board, *Air Carrier Financial Statistics*, December 1981 (Washington, DC), pp. 3/28, 42, and 44. 1990-2003: U.S. Department of Transportation, Bureau of Transportation Statistics (pre-1995, U.S. Department of Transportation, Research and Special Programs Administration), *Air Carrier Financial Statistics* (Washington, DC: Annual December issue), pp. 3, 35, 36, 71, and 72 and similar pages in earlier editions.

² 1960: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, <http://www.bts.gov/oa/employees/employcov.html> as of Oct. 14, 2003. 1970-2003: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, http://www.bts.gov/programs/airline_information/number_of_employees/certificated_carriers/ as of Aug. 20, 2004.

³ *Ibid.*, personal communication, Oct. 17, 2003 and Sept. 10, 2004.

⁴ 1960-1970: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969 and 1973* (Washington, DC), Part III, tables 2, 4, 7, and 13. 1980: Civil Aeronautics Board, *Air Carrier Financial Statistics*, December 1981 (Washington, DC), pp. 2, 5, 46, and 86. 1990-2003: U.S. Department of Transportation, Bureau of Transportation Statistics (pre-1995, U.S. Department of Transportation, Research and Special Programs Administration), *Air Carrier Traffic Statistics* (Washington, DC: Annual December issue), pp. 2, 3, 10, 16, 23, and similar pages in earlier editions.

⁵ 1960-1970: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969 and 1973* (Washington, DC), Part III, tables 2, 4, 7, and 13. 1980: Civil Aeronautics Board, *Air Carrier Financial Statistics*, December 1981 (Washington, DC), pp. 3, 6, 85, and 115. 1990-2003: U.S. Department of Transportation, Bureau of Transportation Statistics (pre-1995, U.S. Department of Transportation, Research and Special Programs Administration), *Air Carrier Traffic Statistics* (Washington, DC: Annual December issue), pp. 2, 4, 11, 17, 24, 27, and similar pages in earlier editions.

⁶ Passenger Revenue: 1960-1970: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969 and 1973* (Washington, DC). 1980: Civil Aeronautics Board, *Air Carrier Financial Statistics*, December 1981 (Washington, DC). 1990-2003: U.S. Department of Transportation, Bureau of Transportation Statistics (pre-1995, U.S. Department of Transportation, Research and Special Programs Administration), *Air Carrier Financial Statistics* (Washington, DC: Annual December issue), p. 1 and similar pages in earlier editions. Revenue Passenger Miles / Revenue Passenger Enplanements: 1960-1970: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969 and 1973* (Washington, DC), Part III. 1980: Civil Aeronautics Board, *Air Carrier Financial Statistics*, December 1981 (Washington, DC). 1990-2003: U.S. Department of Transportation, Bureau of Transportation Statistics (pre-1995, U.S. Department of Transportation, Research and Special Programs Administration), *Air Carrier Traffic Statistics* (Washington, DC: Annual December issue), p. 3 and similar pages in earlier editions.

⁷ 1960-70: U.S. Department of Justice, Immigration and Naturalization Service, *Report of Passenger Travel Between the U.S. and Foreign Countries*, 1960, 1970 (Washington, DC). 1980-2003: U.S. Department of Transportation, Research and Special Programs Administration, *U.S. International Air Travel Statistics* (Washington, DC: Annual issues), tables 1Ia and 1Id.

⁸ National Transportation Safety Board, Internet site <http://www.ntsb.gov/aviation/stats.htm> as of June 2004 and personal communication.

General Aviation Profile

FINANCIAL ¹	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002
Expenditures, total (\$ millions)	895	2,035	8,053	9,907	9,332	10,379	11,605	13,797	16,372	17,553	21,909	26,499	U
Aircraft	202	339	2,853	3,398	3,910	4,260	5,298	7,174	9,573	11,262	14,291	18,524	U
Operating costs	693	1,696	5,200	6,509	5,422	6,119	6,307	6,623	6,799	6,291	7,618	7,975	U
INVENTORY ²													
Number of active aircraft by primary use, total	76,549	131,743	211,045	196,800	172,400	188,100	(R) 187,312	(R) 192,414	(R) 204,710	219,464	217,533	211,446	211,244
Corporate	N	6,835	14,860	10,100	9,400	9,800	(R) 9,286	10,411	11,250	10,804	11,003	10,544	10,810
Business	N	26,900	49,391	33,100	26,500	26,200	(R) 28,236	27,716	32,611	24,543	25,169	25,525	24,153
Instructional	N	10,727	14,862	18,600	15,000	14,800	(R) 14,261	14,663	11,375	16,081	14,883	14,254	13,203
Personal	N	65,398	96,222	112,600	102,500	109,300	(R) 109,619	115,630	124,347	147,085	148,192	144,031	145,996
Aerial application	N	5,455	7,294	6,200	4,300	5,100	(R) 5,361	4,858	4,550	4,254	4,294	3,779	3,971
Aerial observation	N	N	N	4,900	5,100	4,700	(R) 3,225	3,311	3,242	3,240	5,093	5,039	4,535
External load	N	N	N	N	100	200	(R) 424	186	313	190	234	202	151
Other work ^a	N	2,054	2,813	1,400	1,200	1,100	(R) 1,118	(R) 679	1,116	2,363	1,787	1,528	1,733
Air taxi / air tours ^b	N	N	N	5,800	3,800	4,100	(R) 3,963	4,948	5,190	4,569	4,019	4,004	4,157
Sightseeing ^c	N	N	N	N	1,300	900	(R) 889	677	679	832	881	918	641
Other ^d	N	8,249	17,045	4,100	4,200	6,300	(R) 6,718	5,250	6,010	1,200	1,952	1,573	1,895
Public use	N	N	N	N	N	N	(R) 4,206	4,130	4,029	4,138	^j N	^j N	^j N
PERFORMANCE													
Number of flight hours by actual use, total ² (thousands)	13,121	26,030	36,430	30,763	24,092	(R) 26,612	(R) 26,909	27,713	28,100	(R) 31,231	(R) 29,960	(R) 27,017	27,040
Corporate	N	N	5,332	2,913	2,486	(R) 3,069	(R) 2,898	2,878	3,213	(R) 3,535	(R) 3,341	(R) 2,657	3,275
Business	5,699	7,204	8,434	4,417	3,012	(R) 3,335	(R) 3,259	3,006	3,523	(R) 3,602	(R) 3,588	(R) 3,579	3,287
Instructional	1,828	6,791	5,748	7,244	4,156	(R) 4,410	(R) 4,759	4,956	3,961	(R) 5,795	(R) 5,050	(R) 4,307	4,182
Personal	3,172	6,896	8,894	9,276	8,248	(R) 9,659	(R) 9,037	9,644	9,781	(R) 11,072	(R) 11,477	(R) 11,266	11,025
Aerial application	N	N	2,044	1,872	1,364	(R) 1,526	(R) 1,713	1,562	1,306	(R) 1,408	(R) 1,318	(R) 1,038	1,182
Aerial observation	N	N	N	1,745	1,746	(R) 1,391	(R) 1,057	1,261	812	(R) 1,244	(R) 1,545	(R) 1,442	1,366
External load	N	N	N	N	135	(R) 128	(R) 191	112	153	(R) 123	(R) 161	(R) 131	97
Other work ^a	N	N	1,053	572	241	(R) 280	(R) 265	139	286	(R) 605	(R) 496	(R) 256	369
Air taxi / air tours ^b	N	N	N	2,249	1,545	1,527	(R) 1,834	(R) 2,122	2,583	(R) 1,985	(R) 2,122	(R) 1,587	1,495
Sightseeing ^c	N	N	N	N	309	(R) 179	(R) 195	127	169	(R) 218	(R) 197	(R) 183	134
Other ^d	2,422	5,139	4,925	475	622	(R) 1,107	(R) 656	819	940	(R) 535	(R) 665	(R) 664	628
Public use ^e	N	N	N	N	N	N	(R) 1,047	1,096	1,373	(R) 1,109	^j N	^j N	^j N
Vehicle-miles(millions) ^{f,4}	1,769	3,207	5,204	4,548	3,358	3,795	3,524	3,877	U	U	U	U	U
Passenger-miles (millions) ^{f,1}	2,300	9,100	14,700	13,000	9,800	10,800	12,000	12,500	13,100	14,100	15,200	15,900	U

Fuel consumed, total (million gallons) ^{f, 5}	242	759	1,286	1,016	731	847	896	934	1,126	1,313	(R) 1,305	(R) 1,228	1,262
Aviation gasoline	242	551	520	353	266	287	289	292	311	345	(R) 333	(R) 275	278
Jet fuel	N	208	766	663	464	560	608	642	815	967	(R) 972	(R) 953	984
SAFETY													
Fatalities, total ^{g, 6}	787	1,310	1,239	767	730	735	636	631	624	619	593	565	581
Corporate	N	28	66	21	6	15	20	3	0	30	13	12	0
Business	N	148	126	80	64	73	44	45	42	55	43	50	40
Instructional	N	93	73	62	47	44	40	38	38	38	64	40	42
Personal	N	726	808	492	472	488	413	432	432	383	386	376	407
Aerial application	N	41	32	17	17	15	10	17	6	14	19	14	14
Other	N	174	134	95	138	112	119	106	112	105	87	73	81
Accidents, total ⁷	4,793	4,712	3,590	2,241	2,022	2,056	1,908	1,845	1,904	1,906	1,837	1,726	1,713
Fatal	429	641	618	443	403	413	361	350	364	340	344	325	345
Accident rate (per 100,000 flight hours) ^{h, i}	36.5	18.1	9.9	7.3	8.4	(R) 7.7	(R) 7.1	6.7	6.8	(R) 6.1	(R) 6.1	(R) 6.4	6.3
Fatal	3.3	2.5	1.7	1.4	1.7	1.6	(R) 1.3	1.3	1.3	1.1	1.1	(R) 1.2	1.3

KEY: N = data do not exist; R = revised; U = data are not available.

^a In 1960, 1970, 1980, classified as "Industrial."

^b Includes air tours done under 14 CFR 135: air taxi operators and commercial operators.

^c Includes sightseeing done under 14 CFR 91: general operating and flight rules.

^d Significant decrease in "Other" can be attributed to a redefining of the category to only include "Aerial Other" and "Medical Use."

^e Federal, state or local government-owned or leased aircraft used for the purpose of fulfilling a government position.

^f Includes air taxi operations. Nautical miles in source multiplied by 1.151 to convert from nautical miles.

^g Sum of fatalities does not necessarily equal total. Differences are due to methodology used to count collisions involving aircraft in different categories.

^h Suicide/sabotage cases are included in accidents and fatalities data but are excluded from accident rates.

ⁱ Accident rates are calculated by BTS using the formula: Accident Rates (per 100,000 flight hours) = Accidents or Fatalities/Flight Hours (thousands)*100.

^j Beginning in 2000, "Public Use" was included in "Other Work".

NOTES

Numbers may not add to totals due to rounding.

Total fatalities in this profile may not match those in table 2-14, due to when the total fatalities data were received and the data breakdown by type of flying. NTSB constantly updates and reclassifies accident and fatality data.

1994-95 data for active aircraft by use, and flight hours, have been revised to reflect changes in adjustment for nonresponse bias with 1996 telephone survey factors. 1996 vehicle-miles and fuel consumption data are estimated using new information on nonrespondents and are not comparable to earlier years.

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ Eno Transportation Foundation, Inc., *Transportation in America*, Annual Issues (Washington, DC), pp. 40 and 45, and similar tables in earlier editions.

² U.S. Department of Transportation, Federal Aviation Administration, *General Aviation and Air Taxi Activity and Avionics Survey* (Washington, DC: 1990-2002 issues), table 1.1.

³ *Ibid.*, table 1.6 and similar tables in earlier editions.

⁴ *Ibid.*, table 3.3 and similar tables in earlier editions.

⁵ 1960-1990: U.S. Department of Transportation, Federal Aviation Administration, *General Aviation and Air Taxi Activity and Avionics Survey* (Washington, DC: 1990-2000 issues), table 5.1. 1994-2002: Ibid., *FAA Aerospace Forecasts, Fiscal Years 2004-2015* (Washington, DC: March 2004), table 32 and similar tables in earlier editions.

⁶ 1960-1970: National Transportation Safety Board, RE-50, personal communication. 1980-2002: Ibid., *Annual Review of Aircraft Accident Data, U.S. General Aviation, Calendar Year 1998* (Washington, DC: July 2000), charts 27, 39, 40, 41, 42 and 43, and personal communications on Sept. 10, 2002, Dec. 22, 2003, and April 30, 2004.

⁷ National Transportation Safety Board, RE-50, personal communication. *Annual Review of Aircraft Accident Data, U.S. General Aviation, Calendar Year 1998* (Washington, DC: July 2000), available at Internet site <http://www.ntsb.gov/aviation/> as of July 22, 2004, table 10.

Highway Profile

FINANCIAL	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002
Government receipts, total (\$ millions) ¹	11,193	21,763	39,834	75,444	91,312	96,347	102,771	107,421	111,581	121,650	131,115	132,324	134,765
Federal, total	2,771	6,160	9,949	14,576	17,854	19,851	23,196	21,648	24,509	26,008	30,819	27,670	28,527
Highway trust fund ^d	2,531	5,464	7,615	13,380	16,582	18,835	22,036	20,500	23,396	25,085	29,445	26,365	26,808
Other	240	696	2,334	1,196	1,272	1,016	1,160	1,148	1,113	923	1,374	1,305	1,719
State and local, total	8,422	15,603	29,885	60,868	73,458	76,496	79,575	85,773	87,072	95,642	100,296	104,654	106,238
State and D.C.	6,055	11,737	19,666	40,026	47,699	50,064	52,808	58,087	58,806	63,274	66,434	68,873	68,430
Local	2,367	3,866	10,219	20,842	25,759	26,432	26,767	27,686	28,266	32,368	33,862	35,781	37,808
Government expenditures, total (\$ millions) ¹	10,757	20,829	41,763	75,408	90,192	93,478	98,082	101,953	107,975	116,011	122,697	129,900	135,919
Federal, total	197	425	874	664	1,306	1,402	1,598	1,315	1,375	1,428	1,680	1,913	1,761
Highway trust fund ^d	27	83	315	358	965	1,092	1,384	1,103	1,170	1,249	1,304	1,463	1,261
Other ^b	170	342	559	306	341	310	214	212	205	179	376	450	500
State and local, total	10,560	20,404	40,889	74,744	88,886	92,076	96,484	100,638	106,600	114,583	121,017	127,987	134,158
State and D.C.	7,125	14,100	25,936	45,609	55,569	56,981	59,709	61,534	65,507	71,415	76,997	81,803	85,653
Local	3,435	6,304	14,953	29,135	33,317	35,095	36,775	39,104	41,093	43,168	44,020	46,184	48,505
State highway user tax revenues ^c , total (\$ millions)	5,323	10,284	17,177	35,944	46,437	47,424	49,756	51,381	54,507	56,269	56,454	58,508	58,299
Motor fuel tax ²	3,374	6,433	9,485	19,658	25,860	26,881	27,555	28,477	29,803	30,753	31,981	32,519	33,046
Other motor fuel receipts ^{4, 2}	22	44	92	220	101	108	63	55	58	134	179	298	297
Motor vehicle registration fees ³	1,514	2,873	5,173	10,257	12,388	11,942	13,234	13,631	14,552	14,882	13,704	14,437	13,316
Other motor vehicle fees ^{e, 3}	235	577	1,490	3,353	4,505	4,416	4,689	4,704	5,068	5,350	5,696	5,764	6,077
Motor carrier taxes ³	110	176	323	695	875	770	726	729	861	740	784	753	703
Miscellaneous fees ³	68	181	615	1,761	2,708	3,307	3,489	3,785	4,165	4,410	4,800	4,737	4,860
INVENTORY													
Rural / urban mileage by ownership, total ^f	3,545,693	3,730,082	3,859,837	3,866,926	3,906,595	3,912,226	3,919,652	3,944,601	3,906,304	3,917,245	3,936,241	3,948,335	3,966,494
Rural mileage, total	3,116,125	3,169,412	3,230,936	3,122,282	3,092,810	3,092,520	3,092,887	3,108,493	3,064,650	3,071,181	3,084,000	3,071,332	3,071,768
Under state control	658,896	707,002	750,479	702,486	690,372	690,924	691,156	692,767	660,834	660,682	661,798	663,134	662,855
Under federal control ^f	111,912	187,696	246,130	178,188	173,650	170,568	168,938	167,369	118,369	116,846	116,698	119,270	117,751
Under local control	2,345,317	2,274,714	2,234,327	2,241,608	2,228,788	2,231,029	2,232,793	2,248,357	2,285,447	2,293,653	2,305,504	2,288,928	2,291,162
County roads	1,742,404	1,732,981	1,542,984	1,616,634	1,624,982	1,626,927	1,627,639	1,642,468	1,647,025	1,649,291	1,656,906	1,637,616	1,628,510
Town, township and municipal roads ^b	538,651	510,174	458,231	437,460	423,908	424,529	426,170	426,433	426,340	590,206	592,623	595,197	606,398
Other local roads ^b	64,262	31,559	233,112	187,514	179,898	179,573	178,984	179,456	212,082	54,156	55,975	56,115	56,254
Urban mileage, total	429,568	560,670	628,901	744,644	813,785	819,706	826,765	836,108	841,654	846,064	852,241	877,003	894,726
Under state control	50,158	74,103	97,287	95,778	109,947	111,766	111,924	112,226	110,017	109,956	110,195	109,136	110,434
Under federal control ^f	N	N	1,495	1,024	1,484	1,509	1,470	1,464	1,485	1,503	1,484	2,234	2,819
Under local control	N	N	530,119	647,842	702,354	706,431	713,371	722,418	730,152	734,605	740,562	765,633	781,473
County roads	N	N	71,357	95,929	115,388	117,518	117,181	117,487	117,016	117,105	116,918	144,065	144,615
Town and township roads ^h	N	N	37,583	42,752	74,630	60,561	60,926	74,402	75,195	605,255	611,473	608,859	624,163
Other local roads ^h	379,410	486,567	421,179	509,161	512,336	528,352	535,264	530,529	537,941	12,245	12,171	12,709	12,695
Rural / urban mileage by functional system, total ^f	3,545,693	3,730,082	3,859,837	3,866,926	3,906,595	3,912,226	3,919,652	3,945,872	3,906,290	3,917,240	3,936,229	3,948,335	3,966,485
Rural mileage, total	3,116,125	3,169,412	3,230,936	3,122,282	3,092,810	3,092,520	3,092,887	3,109,132	3,064,648	3,071,181	3,083,988	3,071,331	3,071,761
Interstate	N	N	31,905	33,547	32,457	32,580	32,820	32,817	32,813	32,974	33,048	33,061	32,992
Other principal arterial	N	N	82,569	83,802	97,175	97,948	98,131	98,257	98,852	98,856	98,911	99,185	98,853
Minor arterial	N	N	149,057	144,774	138,120	137,151	137,359	137,497	137,308	137,463	137,574	137,587	137,568
Major collector	N	N	439,000	436,352	431,115	431,712	432,117	432,714	432,408	432,954	433,121	433,284	430,946
Minor collector	N	N	299,613	293,922	282,011	274,081	273,198	272,362	272,140	271,690	271,815	271,377	270,700
Local	N	N	2,228,792	2,129,885	2,111,932	2,119,048	2,119,262	2,135,485	2,091,127	2,097,244	2,109,519	2,096,837	2,100,702
Urban mileage, total	429,568	560,670	628,901	744,644	813,785	819,706	826,765	836,740	841,642	846,059	852,241	877,004	894,724
Interstate	N	N	9,215	11,527	13,126	13,164	13,217	13,247	13,312	13,343	13,379	13,406	13,491
Other freeways and expressways	N	N	6,774	7,668	8,994	8,970	9,027	9,063	9,127	9,125	9,140	9,126	9,323
Other principal arterial	N	N	44,155	51,968	53,110	52,796	52,983	53,223	53,132	53,206	53,312	53,056	53,439
Minor arterial	N	N	66,377	74,659	87,857	88,510	89,020	89,185	89,496	89,399	89,789	89,962	90,411
Collector	N	N	68,387	78,254	86,089	87,331	87,790	88,049	88,071	88,008	88,200	88,713	89,247
Local	N	N	433,993	520,568	564,609	568,935	574,728	583,973	588,504	592,978	598,421	622,741	638,813

U.S. roads and streets by surface⁶

Paved mileage, total	1,230,469	1,658,421	2,072,692	2,254,822	2,342,179	2,378,268	2,380,650	2,409,935	2,420,344	2,451,426	2,504,494	2,523,468	2,577,693
Rural	919,082	1,188,080	1,490,050	1,550,283	1,561,649	1,591,334	1,582,166	1,605,804	1,612,251	1,641,877	1,684,922	1,678,782	1,714,714
Urban	311,387	470,341	582,642	704,539	780,530	786,934	798,484	804,131	808,093	809,549	819,572	844,686	862,979
Percent paved	34.7%	44.5%	53.7%	58.3%	60.0%	60.8%	60.5%	60.9%	61.3%	62.4%	63.4%	63.7%	64.8%
Unpaved mileage, total	2,315,224	2,071,661	1,787,145	1,612,104	1,564,416	1,533,958	1,553,537	1,548,349	1,528,549	1,478,977	1,445,548	1,438,727	1,402,995
Rural	2,197,043	1,981,332	1,740,886	1,571,999	1,531,161	1,501,186	1,518,310	1,510,330	1,490,488	1,436,969	1,406,508	1,400,134	1,364,900
Urban	118,181	90,329	46,259	40,105	33,255	32,772	35,227	38,019	38,061	42,008	39,040	38,593	38,095
Percent unpaved	65.3%	55.5%	46.3%	41.7%	40.0%	39.2%	39.5%	39.1%	38.7%	37.6%	36.6%	36.3%	35.2%
Number of employees													
State and local govt. streets and highways ⁷	532,000	607,000	559,000	569,000	544,000	543,000	U	531,000	530,000	543,000	546,000	552,000	545,000
Highway, street and bridge construction ⁸	U	U	U	U	(R) 274,000	(R) 278,000	(R) 288,000	(R) 294,000	(R) 308,000	(R) 336,000	(R) 340,000	(R) 346,000	346,000

PERFORMANCE

Vehicle-miles of travel by functional system (millions), total ⁹	718,762	1,109,724	1,527,295	2,144,362	2,357,588	2,422,696	2,484,080	2,552,233	2,628,148	2,690,241	(R) 2,746,925	2,781,462	2,855,756
Rural mileage, total	400,463	539,472	672,030	868,878	908,341	933,289	960,194	999,277	1,032,528	1,062,623	(R) 1,083,152	1,105,083	1,278,160
Interstate	10,514	79,516	135,084	200,173	215,568	223,382	232,565	240,255	251,520	260,166	(R) 268,180	274,024	279,962
Other principal arterial	N	N	132,958	175,133	207,569	215,567	221,403	228,716	237,704	244,045	(R) 248,725	253,056	257,587
Minor arterial	N	N	129,816	155,733	149,760	153,028	157,444	163,341	165,780	169,275	(R) 171,874	173,889	176,218
Major collector	N	N	150,186	190,512	182,000	186,212	190,923	201,790	203,580	206,831	(R) 209,659	211,312	213,503
Minor collector	N	N	39,282	49,948	48,529	49,936	50,107	52,310	54,288	57,622	(R) 57,572	59,650	61,504
Local	N	N	84,704	97,379	104,915	105,164	107,752	112,865	119,656	124,684	(R) 127,142	133,152	139,386
Urban mileage, total	318,299	570,252	855,265	1,275,484	1,449,247	1,489,407	1,523,886	1,552,956	1,595,620	1,627,618	(R) 1,663,773	1,676,379	1,727,596
Interstate	13,365	81,532	161,242	278,901	330,577	341,515	351,579	361,433	374,622	383,259	(R) 393,465	399,890	408,618
Other freeways and expressways	N	N	79,690	127,465	147,534	151,509	157,502	159,572	165,632	171,515	(R) 177,222	182,758	189,634
Other principal arterial	N	N	229,469	335,543	364,200	370,365	377,776	385,123	388,071	392,688	(R) 398,772	401,037	408,336
Minor arterial	N	N	175,030	236,225	286,165	293,228	299,345	301,932	309,293	313,950	(R) 324,398	329,931	339,387
Collector	N	N	83,043	106,297	120,088	126,883	129,310	130,146	131,905	131,603	(R) 135,372	137,922	141,874
Local	N	N	126,791	191,053	200,683	205,907	208,374	214,750	226,097	234,603	(R) 234,544	224,841	239,747
Highway demand for petroleum, total (thousand barrels)	1,488,095	2,361,310	2,882,143	3,289,554	3,530,071	3,602,159	3,669,491	3,765,003	3,889,758	4,042,708	4,062,573	4,071,470	4,180,428
Motor fuel ¹⁰	1,378,095	2,198,310	2,737,143	3,113,214	3,353,320	3,424,616	3,492,285	3,580,620	3,699,500	3,843,128	3,870,337	3,882,069	3,993,576
Asphalt and road oil ¹¹	110,000	163,000	145,000	176,340	176,751	177,543	177,206	184,383	190,258	199,580	192,236	189,401	186,852

SAFETY ¹²													
Fatalities	36,399	52,627	51,091	44,599	40,716	41,817	42,065	42,013	41,501	41,717	41,945	(R) 42,196	42,815
Injured persons	N	N	N	3,231,000	3,266,000	3,465,000	3,483,000	3,348,000	3,192,000	3,236,000	3,189,000	3,033,000	2,926,000
Crashes	N	N	N	6,471,000	6,496,000	6,699,000	6,770,000	6,624,000	6,335,000	6,279,000	6,394,000	6,323,000	6,316,000

KEY: N = data do not exist; R = revised; U = data are not available.

⁶ The Federal Highway Trust Fund was created with the enactment of the Highway Revenue Act of 1956. The total receipts shown for 1995 are overstated by approximately \$1.59 billion due to a fiscal year (FY) 1994 error by the Treasury Department in reconciling estimated deposits to the actual tax revenue. The correction was made after the close of FY1994 and is shown in FY1995 receipts.

⁹ Figures obtained by addition/subtraction and may not appear directly in data source.

¹⁰ Gross amounts collected by state governments from highway users. Does not include tolls. Not all revenues allocated to highway expenditures.

^d Includes distributors and dealers licenses, inspection fees, fines and penalties, and miscellaneous receipts.

^e Includes drivers licenses, title fees, special title taxes, fines and penalties; estimated service charges and local collections.

^f Includes carrier gross receipt taxes; mileage, ton-mile and passenger-mile taxes; special license fees and franchise taxes; and certificate or permit fees.

^g Mileage in federal parks, forests, and reservations that are not a part of the state and local highway system.

^h Prior to 1999, mileage for municipal roads was included with the "other local roads" jurisdiction. Mileage for municipal roads was included in "Town, Township and Municipal Road" jurisdiction after 1999.

ⁱ Data for 1994-2002, is based on the North American Industry Classification System (NAICS). Prior to 1994, data is based on the Standard Industrial Classification System (SIC).

^j Highway category classifications changed several times before 1980. Actual 1960 data categories were: Main Rural Roads, Local Rural Roads and Urban Streets; 1970 data categories were: Rural Interstate, Rural Other Arterial, Other Rural, Urban Interstate and Other Urban.

NOTES

Motor vehicle injury and crash data in this profile come from the National Highway Traffic Safety Administration's General Estimates System (GES). The data from GES, which began operation in 1988, are obtained from a nationally representative probability sample selected from all police-reported crashes, and the GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes which were not reported to the police or which did not result in at least property damage. Earlier editions of NTS, particularly the 1993 Historical Compendium, used crash and injury figures estimated by the National Safety Council, which employed a different set of methods to arrive at its figures. Thus, the injury and crash figures in this edition of NTS may not be comparable with those found in earlier editions.

In 1998, FHWA instituted a new method of creating mileage based tables derived from the Highway Performance Monitoring System (HPMS). See Chapter 1 accuracy profiles for more information about the HPMS.

SOURCES

Unless otherwise noted, please refer to chapter tables for sources.

¹ 1960-94: U.S. Department of Transportation, Federal Highway Administration *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table HF-210.

1995-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), tables HF-10A and HF-10.

² 1960-95: Ibid., *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MF-201.

1996-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table MF-1.

³ 1960-95: Ibid., *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-202.

1996-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table MV-2.

⁴ 1960-70: *Highway Statistics, Summary to 1985* (Washington, DC: July 1997), table M-203.

1980-1995: Ibid., *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table HM-210.

1996-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table HM-10.

⁵ 1960-95: Ibid., *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), tables HM-212 and HM-220.

1996-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table HM-20.

⁶ 1960-95: Ibid., *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table HM-212.

1996-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table HM-12.

⁷ U.S. Department of Commerce, *Statistical Abstract of the United States*, various years, State and Local Government Section.

⁸ U.S. Department of Labor, Bureau of Labor Statistics, Internet site <http://www.bls.gov/data/sa.htm> as of April 19, 2004.

⁹ 1960-70: U.S. Department of Transportation, Federal Highway Administration *Highway Statistics, Summary to 1985*, FHWA-PL-97-009 (Washington, DC: April 1987), table VM-201.

1980-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), tables VM-2 and VM-2A.

¹⁰ 1960-90: Ibid., *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A (total fuel consumed in thousands of gallons divided by 42).

1994-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1 (total fuel consumed in thousands of gallons divided by 42).

¹¹ 1960-80: U.S. Department of Energy, Energy Information Administration *State Energy Data Report* (Washington, DC), p. 13.

1990-2002: U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Annual: Volume 1* (Washington, DC: Annual issues), table 2.

¹² 1960-80: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, NRD-30, personal communication.

1990-99, 2002: Ibid., *Traffic Safety Facts 2002* (Washington, DC: Annual issues) tables 1 and 4.

2000-01: Ibid., Fatality Analysis Reporting System (FARS) Query, Jan. 6, 2003.

Automobile Profile

FINANCIAL	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002
Personal auto expenditures, total ^a (\$ millions)	39,886	73,390	209,563	(R) 380,092	(R) 445,146	(R) 465,166	(R) 497,891	(R) 523,128	(R) 532,547	(R) 576,729	(R) 632,052	(R) 636,127	623,569
New and used cars ^{a,1}	16,600	26,700	57,200	119,000	(R) 133,200	(R) 132,600	(R) 136,000	(R) 139,400	(R) 147,300	(R) 158,400	(R) 164,300	(R) 162,600	157,200
Tires, tubes, accessories, and parts ¹	2,500	6,100	17,900	29,900	(R) 36,000	(R) 37,800	(R) 40,300	(R) 41,900	(R) 43,900	(R) 47,000	(R) 49,000	(R) 49,100	49,700
Gasoline and oil ¹	12,000	21,900	86,700	(R) 111,200	(R) 116,200	(R) 120,200	(R) 130,400	(R) 134,400	(R) 122,400	(R) 137,900	(R) 175,700	(R) 173,100	165,800
Tolls ¹	300	700	1,100	2,300	(R) 3,400	(R) 3,700	(R) 4,000	(R) 4,400	(R) 4,400	(R) 4,800	(R) 5,100	(R) 5,300	5,600
Insurance premiums less claims paid ^d	2,000	3,800	9,400	(R) 23,500	(R) 32,800	(R) 34,500	(R) 36,700	(R) 37,800	(R) 40,400	(R) 43,200	(R) 43,000	(R) 44,600	46,500
Repair, greasing, washing, parking, storage, rental, and leasing ¹	5,500	12,300	34,000	84,900	(R) 112,500	(R) 125,500	(R) 138,700	(R) 152,900	(R) 161,100	(R) 172,600	(R) 183,500	(R) 189,100	187,100
Auto registration fees ²	867	1,668	2,893	6,054	7,423	7,043	7,698	8,163	8,630	8,625	7,607	8,278	7,415
Driver's license fees ²	119	222	370	638	823	823	893	865	917	904	745	849	954
Taxi expenditures (\$ millions) ¹	600	1,200	1,900	2,600	(R) 2,800	(R) 3,000	(R) 3,200	(R) 3,300	(R) 3,500	(R) 3,300	(R) 3,100	(R) 3,200	3,300
INVENTORY													
Number of vehicle registrations													
Passenger car and motorcycle ³	62,245,422	92,067,655	127,294,783	137,959,958	131,640,024	132,283,966	133,599,578	133,575,077	135,717,988	136,584,477	137,967,488	142,536,523	140,924,833
Other 2-axle 4-tire vehicle ³	e	14,210,591	27,875,934	48,274,555	62,903,589	65,738,322	68,933,798	70,224,082	71,330,205	75,356,376	79,084,979	84,187,636	85,011,305
Motorcycle ⁴	574,032	2,824,098	5,693,940	4,259,462	3,756,555	3,897,191	3,871,237	3,826,373	3,879,450	4,152,433	4,346,068	4,903,056	5,004,156
Motor vehicle licensed drivers ⁵	87,252,563	111,542,787	145,295,036	167,015,250	175,403,465	176,628,482	179,539,340	182,709,204	184,860,969	187,170,420	190,625,023	191,275,719	194,295,633
Number of employees ⁶													
Taxicabs	120,700	106,400	52,500	32,400	30,800	30,700	30,500	30,600	31,200	31,600	31,900	31,800	30,800
Automotive dealers and service stations	1,267,200	1,617,400	1,688,500	2,063,100	2,116,200	2,189,600	2,266,700	2,310,800	2,332,300	2,368,100	2,409,600	2,424,800	2,432,200
Motor vehicles, parts, and supplies	N	N	434,300	456,000	471,400	492,100	502,800	513,000	516,600	523,700	516,800	502,100	498,000
Auto repair, services, and parking	N	N	570,900	913,700	968,300	1,020,100	1,080,000	1,119,600	1,145,200	1,196,400	1,234,200	1,257,200	1,263,200
PERFORMANCE													
Vehicle-miles (millions) ⁷													
Passenger car and motorcycle, total ^a	587,012	919,679	1,121,810	1,417,823	1,416,329	1,448,091	1,478,767	1,512,637	1,559,860	1,579,684	1,610,756	(R) 1,637,971	1,668,193
Rural highway, total	313,623	424,088	450,659	547,910	518,421	527,932	540,021	555,227	579,258	589,213	597,898	(R) 609,060	613,861
Rural interstate	N	62,342	89,488	117,519	114,002	115,991	120,324	121,095	128,447	131,956	135,630	(R) 137,087	139,707
Rural other arterial	233,452	182,213	180,857	211,066	207,540	212,063	217,574	221,732	230,435	232,779	236,423	(R) 237,986	239,562
Other rural roads	80,171	179,533	180,314	219,325	196,879	199,878	202,122	212,400	220,376	224,478	225,845	(R) 233,987	234,592
Urban highway, total ^b	273,389	495,591	671,151	869,912	897,909	920,159	938,746	957,410	980,602	990,471	1,012,858	(R) 1,028,911	1,054,332
Urban interstate	N	69,369	124,480	184,783	199,588	205,489	211,818	215,525	222,066	225,822	232,202	(R) 238,529	244,837
Other urban	N	426,222	546,671	685,129	698,321	714,670	726,928	741,885	758,536	764,649	780,656	(R) 790,382	809,495
Other 2-axle 4-tire vehicle, total	e	123,286	290,935	574,571	764,634	790,029	815,936	850,739	868,275	901,022	923,059	(R) 943,207	966,184
Rural highway, total	e	73,591	149,560	227,831	285,325	295,472	306,891	327,316	334,806	351,658	360,355	(R) 374,736	384,498
Rural interstate	e	6,766	19,952	46,298	60,849	63,329	65,779	69,030	72,343	76,190	79,088	(R) 82,356	84,936
Rural other arterial	e	29,808	56,137	87,474	113,595	118,305	122,211	129,890	132,043	138,475	141,257	(R) 146,525	150,715
Other rural roads	e	37,017	73,471	94,059	110,881	113,838	118,901	128,396	130,420	136,993	140,010	(R) 145,855	148,847
Urban highway, total ^f	e	49,695	141,375	346,739	479,308	494,557	509,045	523,423	533,469	549,364	562,704	(R) 568,471	581,686
Urban interstate	e	6,252	23,067	71,500	105,317	109,807	112,908	116,680	121,700	124,399	128,291	(R) 127,989	129,986
Other urban	e	43,443	118,308	275,239	373,991	384,750	396,136	406,743	411,769	424,965	434,413	(R) 440,482	451,700
Vehicle-miles, total (millions) ³	587,012	1,042,965	1,412,745	1,992,394	2,180,963	2,238,120	2,294,703	2,363,376	2,428,135	2,480,706	2,533,815	(R) 2,581,178	2,634,377
Passenger cars ^d	(f) 587,012	(f) 919,679	(f) 1,121,810	(f) 1,417,823	(f) 1,416,329	1,438,294	1,468,854	1,502,556	1,549,577	1,569,100	1,600,287	(R) 1,628,332	1,658,640
Other 2-axle 4-tire vehicle	e	123,286	290,935	574,571	764,634	790,029	815,936	850,739	868,275	901,022	923,059	(R) 943,207	966,184
Motorcycle	g	g	g	g	(E) 10,240	9,797	9,913	10,081	10,283	10,584	10,469	(R) 9,639	9,553
Passenger-miles, total (millions) ^{c,3}	1,145,000	1,979,787	2,545,020	3,037,244	3,612,100	3,553,810	3,643,719	3,752,829	3,855,696	3,939,137	4,023,637	(R) 4,247,094	4,335,470
Passenger cars	(a,f) 1,145,000	(a,f) 1,754,174	(a,f) 2,024,246	(f) 2,140,913	(f) 2,600,050	2,286,887	2,335,478	2,389,065	2,463,828	2,494,870	2,544,457	(R) 2,556,481	2,604,065
Other 2-axle 4-tire vehicle	e	225,613	520,774	896,331	1,012,050	1,256,146	1,297,337	1,352,675	1,380,557	1,432,625	1,467,664	(R) 1,678,853	1,719,750

Motorcycle	g	g	g	g	(E) 11,264	10,777	10,904	11,089	11,311	11,642	11,516	(R) 11,760	11,655
Average miles traveled per vehicle ³													
Passenger car	(f) 9,518	(f) 9,989	(f) 8,813	(f) 10,277	(f) 10,759	11,203	11,323	11,581	11,754	11,848	11,976	(R) 11,831	12,203
Other 2-axle 4-tire vehicle	e	8,676	10,437	11,902	12,156	12,018	11,837	12,115	12,173	11,957	11,672	(R) 11,204	11,365
Motorcycle	g	g	g	g	(E) 2,726	2,514	2,561	2,635	2,651	2,549	2,409	(R) 1,966	1,909
Fuel consumed (million gallons) ³													
Passenger cars	(f) 41,171	(f) 67,879	(f) 70,186	(f) 69,759	(f) 68,079	68,072	68,897	69,892	71,695	73,283	73,065	(R) 73,559	74,949
Other 2-axle 4-tire vehicle	e	12,313	23,796	35,611	44,112	45,605	47,133	49,388	50,462	52,859	52,939	(R) 53,522	54,841
Motorcycle	g	g	g	g	(E) 205	196	198	202	206	212	209	(R) 193	191
Average fuel consumption per vehicle (gallons) ³													
Passenger cars	(f) 668	(f) 737	(f) 551	(f) 506	(f) 517	530	531	539	544	553	547	(R) 534	551
Other 2-axle 4-tire vehicle	e	866	854	738	701	694	684	703	707	701	669	(R) 636	645
Motorcycle	g	g	g	g	55	50	51	53	53	51	48	(R) 39	38
Average miles traveled per gallon of fuel consumed ³													
Passenger cars	(f) 14	(f) 14	(f) 16.0	(f) 20.3	(f) 21	21.1	21.3	21.5	21.6	21.4	21.9	22.1	22.1
Other 2-axle 4-tire vehicle	e	10.0	12.2	16.1	17.3	17.3	17.3	17.2	17.2	17.0	17.4	17.6	17.6
Motorcycle	g	g	g	g	(E) 50	50	50	50	50	50	50	50	50

SAFETY⁸

Number of occupants and nonoccupant fatalities

Passenger car	N	N	27,449	24,092	21,997	22,423	22,505	22,199	21,194	20,862	20,699	(R) 20,320	20,416
Motorcycle	790	2,280	5,144	3,244	2,320	2,227	2,161	2,116	2,294	2,483	2,897	(R) 3,197	3,244
Bicycle ^d	490	760	965	859	802	833	765	814	760	754	693	(R) 732	662
Pedestrian ^d	7,210	8,950	8,070	6,482	5,489	5,584	5,449	5,321	5,228	4,939	4,763	(R) 4,901	4,808

Occupant fatality rates

Per 100 million vehicle-miles

Passenger car	4.7	3.8	2.5	1.7	1.5	1.5	1.5	1.5	1.4	1.3	1.3	1.3	1.3
Motorcycle	N	76.5	50.4	33.9	22.7	22.7	21.8	21.0	22.3	23.5	27.7	(R) 33.2	34.0

Per 10,000 registered vehicles

Passenger car	5.1	3.9	2.6	2.0	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.6	1.6
Motorcycle	13.8	8.1	9.0	7.6	6.2	5.7	5.6	5.5	5.9	6.0	6.7	6.5	6.5

Vehicle involvement rate (fatal crashes)

Per 100 million vehicle-miles

Passenger car	N	5.6	3.5	2.4	2.1	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7
Motorcycle	N	22.9	50.9	34.3	22.8	23.1	21.9	21.4	22.7	23.9	28.4	(R) 33.9	35.0

Per 10,000 registered vehicles

Passenger car	N	5.6	3.7	2.8	2.5	2.5	2.5	2.4	2.3	2.2	2.2	2.1	2.1
Motorcycle	N	8.2	9.1	7.7	6.2	5.8	5.6	5.6	6.0	6.1	6.8	(R) 6.7	6.7

KEY: E = estimate; N = data do not exist; R = revised; U = data are not available.

NOTES

^a Figures obtained by addition / subtraction and may not appear directly in data source.

^b Urban consists of travel on all roads and streets in urban places of 5,000 or greater population.

^c In July 1997, the USDOT, Federal Highway Administration published revised passenger-miles data for the highway modes for many years. The major change reflected the reassignment of some vehicles from the passenger car category to the other 2-axle 4-tire vehicle category.

^d Involvement only with motor vehicle.

^e Included in single-unit 2-axle 6-tire or more truck category.

^f Includes motorcycle data.

^g Included in passenger cars.

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts Tables*, table 2.5.5 available at <http://www.bea.doc.gov/bea/dn/nipaweb/AllTables.asp> as of April 2004.

² 1960-95: U.S. Department of Transportation, Federal Highway Administration (FHWA), *Highway Statistics Summary to 1995*, FHWA-97-009 (Washington, DC: July 1997), table MV-202.

1996-2002: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table MV-2 (revised tables used when applicable).

³ 1960-94: *Ibid.*, *Highway Statistics Summary to 1995*, FHWA-97-009 (Washington, DC: July 1997), table VM-201A, table revised in June 1999.

1995-2002: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1 (revised tables used when applicable).

⁴ 1960-94: *Ibid.*, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.

1995-2002: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1 (revised tables used when applicable).

⁵ 1960-95: *Ibid.*, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table DL-201.

1996-2002: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table DL-22 (revised tables used when applicable).

⁶ 1960-2002: U.S. Department of Labor, Bureau of Labor Statistics, *BLS Database*, Internet site <http://www.bls.gov/data/sa.htm> as of April 2004; codes "414120 Taxicabs," "605500 Automotive Dealers and Service Stations," "525010 Motor Vehicle Parts, and Supplies" and "807500 Auto Repair, Services, and Parking."

⁷ 1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201.

1995-2002: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1 (revised tables used when applicable).

⁸ 1960-2002: U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA), *Traffic Safety Facts 2002*, DOT HS 809 484, (Washington, DC: January 2004), tables 3, 4, 7, and 10.

Truck Profile

FINANCIAL	1960	1970	1980
Operating revenues, total ^{a.1} (based on SIC) (\$ millions)	N	N	N
Local trucking	N	N	N
Trucking, except local	N	N	N
Local trucking with storage	N	N	N
Courier services, except by air	N	N	N
Operating expenses, total ^{a.1} (based on SIC) (\$ millions)	N	N	N
Local trucking	N	N	N
Trucking, except local	N	N	N
Local trucking with storage	N	N	N
Courier services, except by air	N	N	N
Operating revenues, total ^{b.2} (based on NAICS) (\$ millions)	N	N	N
Truck transportation	N	N	N
Couriers messengers	N	N	N
Truck highway-user taxes, total ^{c.3} (\$ millions)	2,830	5,632	9,888
State	1,709	3,429	6,731
Federal	1,121	2,203	3,157
INVENTORY			
Number of truck registrations, total ⁴	11,914,249	4,586,487	5,790,653
Single-unit truck	N	3,681,405	4,373,784
Combination truck	N	905,082	1,416,869
Number of employees			
Trucking and courier services, except air	N	998,500	1,182,000
Truck drivers and sales workers ^{d.6}	1,477,000	1,565,000	1,931,000
Number of trucking and courier establishments ^{a.7}	N	64,756	69,796
PERFORMANCE			
Vehicle-miles, total rural and urban ⁸ (millions)	127,404	62,215	108,491
Rural highway, total	84,508	39,244	68,776
Rural interstate	N	10,069	25,111
Rural other arterial	N	17,625	24,789
Other rural roads	N	11,550	18,876
Urban highway, total ^f	42,896	22,971	39,715
Urban interstate	N	5,634	13,135
Other urban streets	N	17,337	26,580
Passenger-miles, total ^f (millions)	127,405	62,215	108,491
Single-unit truck ^g	98,551	27,081	39,813
Combination truck	28,854	35,134	68,678
Ton-miles, intercity ⁹ (millions)	285,000	412,000	555,000
Fuel consumed, all trucks ¹⁰ (million gallons)	15,882	11,316	19,960
Single-unit truck	N	3,968	6,923
Combination truck	N	7,348	13,037
Average fuel consumption per vehicle, all trucks ¹⁰ (gallons)	1,333	2,467	3,447
Single-unit truck	N	1,078	1,583
Combination truck	N	8,119	9,201
Average miles traveled per gallon of fuel consumed, all trucks ¹⁰	8.0	5.5	5.4
Single-unit truck	N	6.8	5.8
Combination truck	N	4.8	5.3
Average miles traveled per vehicle, all trucks ¹⁰	10,693	13,565	18,736
Single-unit truck	N	7,356	9,103
Combination truck	N	38,819	48,472
Average length of haul (domestic freight) ¹¹ (miles)	272	263	363
SAFETY¹²			
Occupant fatalities, all trucks	N	N	8,748
Light truck	N	N	7,486
Large truck	N	N	1,262
Occupant fatality rate			
Per 100 million vehicle-miles, all trucks	N	N	2.2

Light truck	N	N	2.5
Large truck	N	N	1.2
Per 10,000 registered vehicles, all trucks	N	N	2.4
Light truck	N	N	2.5
Large truck	N	N	2.2
Vehicle involvement rate (fatal crashes)			
Per 100 million vehicle-miles, all trucks	N	N	4.5
Light truck	N	N	4.3
Large truck	N	N	5.0
Per 10,000 registered vehicles, all trucks	N	N	5.0
Light truck	N	N	4.2
Large truck	N	N	9.3

KEY: N = data do not exist; R = revised; U = data are not available.

^a **Local trucking (SIC 4212)** - Establishments primarily engaged in furnishing trucking or transfer services without storage for freight generally weighing more than 100 pounds.

Trucking, except local (SIC 4213) - Establishments primarily engaged in furnishing "over-the-road" trucking services or trucking services and storage services, including household goods either as common carriers or under special or individual contracts or agreements, for freight generally weighing more than 100 pounds.

Local trucking, without storage (SIC 4214) - Establishments primarily engaged in furnishing both trucking and storage services, including household goods.

Courier services, except by air (SIC 4215) - Establishments primarily engaged in the delivery of individually addressed letters, parcels, and packages (generally under 100 pounds).

^b **Truck transportation (NAICS 484)** - Industries primarily engaged in over-the-road transportation of cargo using motor vehicles, truck-tractors, and trailers.

Couriers and messengers (NAICS 492) - Establishments primarily engaged in providing air, surface, or combined courier delivery services of parcels or primarily engaged in furnishing local messenger and delivery services of small items within a single metropolitan area or urban center.

^c Numbers may not equal totals due to rounding.

^d In 1999, the Occupational Employment Statistics survey began using the Standard Occupational Classification (SOC) system to organize occupational data. Therefore, estimates from 1999 and subsequent years are not directly comparable to previous occupational data.

^e Urban consists of travel on all roads and streets in urban places of 5,000 or greater population.

^f Highway passenger-miles are calculated by multiplying vehicle-miles of travel as cited by the Federal Highway Administration (FHWA) by the average number of occupants for each vehicle type as estimated by the FHWA using the Nationwide Personal Transportation Survey.

^g Includes other 2-axle 4-tire vehicle in 1960.

NOTE

In 1995, FHWA revised its vehicle type categories. These new categories include passenger car, other 2-axle 4-tire vehicle, single-unit 2-axle 6-tire or more truck, and combination truck. Other 2-axle 4-tire vehicles include vans, pickup trucks, and sport/utility vehicles. In previous years, some minivans and sport/utility vehicles were included in the passenger car category. Single-unit 2-axle 6-tire or more trucks are on a single frame with at least 2 axles and 6 tires.

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ U.S. Census Bureau, *Transportation Annual Survey* (Washington, DC: December 1998), table 1.

² Ibid., *Service Annual Survey, 2002* (Washington, DC: February 2004), table 2.2.

³ American Trucking Association, *American Trucking Trends* (Washington, DC: Annual issues).

⁴ 1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2002: Ibid., Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

⁵ 1960-90: U.S. Department of Labor, Bureau of Labor Statistics, *Employment, Hours and Earnings, United States, 1909-1994* (Washington, DC: September 1994), SIC 421.

1994-2002: Ibid., Internet site www.bls.gov as of Apr. 21, 2004, SIC 421.

⁶ Eno Transportation Foundation, Inc., *Transportation in America, 2000* (Washington, DC: 2001), p. 35.

2002: U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics, *Occupational Employment and Wages, 2002* (Washington, DC: November 2003), Internet site <http://www.bls.gov/oes> as of June 15, 2004.

⁷ U.S. Bureau of the Census, *County Business Patterns* (Washington, DC: Annual issues), table 2 (NAICS 484 and 492/SIC 421), and similar tables in earlier editions.

⁸ 1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201.

1995-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

⁹ Eno Transportation Foundation, Inc., *Transportation in America, 2000* (Washington, DC: 2001), p. 12.

¹⁰ 1960: Ibid., *Transportation in America, 2000* (Washington, DC: 2001), p. 35.

1970-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997) table VM-201A.

1995-2002: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

¹¹ Eno Transportation Foundation, Inc., *Transportation in America, 2001* (Washington, DC: 2001), p.65.

¹² U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 2002*, DOT HS 809 484 (Washington, DC: Annual issues), tables 3, 8 and 9, and Fatality Analysis Reporting System (FARS) Query, Apr. 21, 2004.

Bus Profile

FINANCIAL	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002
Expenditures (\$ thousands)													
School bus ¹	486,000	1,219,000	3,833,000	8,031,000	7,847,000	9,889,000	9,082,000	10,353,000	10,326,000	10,340,000	12,104,000	12,624,000	U
Operating revenues (\$ thousands)													
Intercity bus, Class I ²	463,100	721,700	1,397,378	943,268	1,161,479	1,189,235	985,537	1,080,083	1,074,582	1,326,909	1,133,822	1,117,526	1,070,204
Operating expenses (\$ thousands)													
Intercity bus, Class I ²	405,400	639,000	1,318,372	1,026,213	1,289,834	1,253,537	941,014	1,022,680	1,016,208	1,313,900	1,078,386	1,080,186	1,045,515
INVENTORY													
Number of operating companies													
Intercity bus, Class I ²	143	71	61	31	26	24	20	22	20	18	15	15	12
Number of vehicles, all buses ³	272,129	377,562	528,789	626,987	670,423	685,503	694,781	697,548	715,540	728,777	746,125	749,548	760,717
Number of employees ⁴													
Intercity and rural bus	40,500	43,400	37,900	26,100	23,600	23,800	23,800	22,200	24,400	23,800	24,700	25,100	22,890
School bus	N	N	79,900	111,200	125,900	131,100	132,200	136,500	141,000	146,100	146,700	147,700	174,440
PERFORMANCE													
Vehicle-miles, all buses (millions) ⁵	4,346	4,544	6,059	5,726	6,409	6,420	6,538	6,842	7,007	7,662	7,590	(R) 7,077	6,849
Rural highway, total	2,332	2,549	3,035	3,444	3,730	3,854	3,933	4,109	4,251	4,667	4,489	(R) 4,165	3,946
Interstate rural	N	339	533	567	683	711	742	794	834	971	978	(R) 951	941
Other arterial rural	N	944	991	995	1,154	1,171	1,186	1,243	1,282	1,375	1,270	(R) 1,133	1,104
Other rural	N	1,266	1,511	1,882	1,893	1,972	2,005	2,072	2,135	2,321	2,241	(R) 2,081	1,901
Urban highway ⁶ , total	2,014	1,995	3,024	2,283	2,679	2,566	2,605	2,733	2,756	2,995	3,101	(R) 2,912	2,903
Interstate urban	N	277	560	455	627	580	598	647	663	752	791	(R) 775	802
Other urban	N	1,718	2,464	1,828	2,052	1,986	2,007	2,086	2,093	2,243	2,310	(R) 2,137	2,101
Passenger-miles (millions), all buses ⁵	N	N	N	121,398	135,871	136,104	138,613	145,060	148,558	162,445	160,919	(R) 150,042	145,208
Number of revenue passengers (thousands)													
Intercity bus, total ¹	366,000	401,000	370,000	334,000	343,200	366,500	347,900	350,600	357,600	358,900	364,600	356,900	U
Average miles traveled per vehicle, all buses ⁵	15,970	12,035	11,458	9,133	9,560	9,365	9,386	9,809	9,793	10,515	10,173	(R) 9,442	9,003
Fuel consumed (million gallons), all buses ⁵	827	820	1,018	895	964	968	985	1,027	1,040	1,148	1,112	(R) 1,026	993
Average fuel consumption per vehicle (gallons), all buses ⁵	3,039	2,172	1,925	1,427	1,438	1,412	1,414	1,472	1,454	1,576	1,490	(R) 1,369	1,306
Average miles traveled per gallon of fuel consumed, all buses ⁵	5.3	5.5	6.0	6.4	6.6	6.6	6.6	6.7	6.7	6.7	6.8	6.9	6.9
Average revenue per passenger-mile (cents) (intercity) ¹	2.71	3.60	7.26	11.55	11.61	12.19	12.30	12.56	12.75	12.76	12.79	12.91	U
SAFETY													
Number of fatalities ⁶													
School bus-related	N	N	150	115	(R) 107	123	136	131	128	167	147	141	127
School bus occupants	N	N	9	11	(R) 4	13	10	(R) 10	6	10	(R) 21	18	3
Other vehicle													
Occupants	N	N	88	64	64	72	101	(R) 97	91	127	(R) 99	95	98
Nonoccupants	N	N	53	40	(R) 39	38	25	24	31	30	(R) 27	(R) 28	26
Occupant fatalities, all buses ⁶	N	N	46	32	21	33	21	18	38	59	22	34	45
School buses	N	N	14	13	2	12	10	8	6	8	16	16	2
Cross country buses	N	N	23	2	7	6	3	5	13	32	3	3	20
Transit buses	N	N	6	3	6	1	5	3	2	6	1	4	6
Other and unknown	N	N	3	14	6	14	3	2	17	13	2	11	17
Fatalities in vehicular accidents ⁶ , all buses ⁷	N	N	390	340	286	311	367	339	329	374	355	330	343
Occupant fatality rate													
Per 90 million vehicle-miles, all buses ⁶	N	N	0.8	0.6	0.3	0.5	0.3	0.3	0.5	0.8	0.3	0.5	0.7
Per 9,000 registered vehicles, all buses ⁶	N	N	0.9	0.5	0.3	0.5	0.3	0.3	0.5	0.8	0.3	0.5	0.6
Vehicle involvement rate (fatal crashes)													
Per 90 million vehicle-miles, all buses ⁷	N	N	6.4	5.9	4.5	4.8	5.6	5.0	4.7	(R) 4.9	(R) 4.7	(R) 4.7	5.0
Per 9,000 registered vehicles, all buses ⁷	N	N	7.4	5.4	4.3	4.5	5.3	4.9	4.6	(R) 5.1	(R) 4.8	(R) 4.4	4.5

KEY: N = data do not exist; R = revised; U = data are not available.

¹ Urban consists of travel on all roads and streets in urban places of 5,000 or greater population.

² Includes all fatalities that occurred in an accident in which a bus was involved.

NOTE

See transit profile for transit bus data.

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ Eno Transportation Foundation, Inc., *Transportation in America, 19th edition* (Washington, DC: 2002), p. 40, 46, and 48.

² 1960-95: Interstate Commerce Commission, *Annual Report of the ICC* (Washington, DC: Annual issues), Appendix F, tables 1 and 6. 1996-2002: U.S. Department of Transportation, Bureau of Transportation Statistics, *Selected Earnings Data, Class I Motor Carriers of Passengers* (Washington, DC: Annual issues).

³ U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table MV-10.

⁴ 1960-99: U.S. Department of Labor, Bureau of Labor Statistics, *National Employment, Hours and Earnings*, SIC codes 413 and 415, Internet site www.bls.gov as of June 17, 2004. 2000-02: *Ibid.*, NAICS codes 485200 and 485400, Internet site www.bls.gov as of June 17, 2004.

⁵ 1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. 1996-2002: *Ibid.*, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

⁶ 1980-98: *Ibid.*, National Highway Traffic Safety Administration, *Traffic Safety Facts 1998*, DOT HS 808 983 (Washington, DC: October 1999), tables 74 and 93. 1999-2002: *Ibid.*, *Traffic Safety Facts 2002*, DOT HS 809 615 (Washington, DC: December 2003).

⁷ *Ibid.*, Fatality Analysis Reporting System (FARS) Query, Internet site, <http://www-fars.nhtsa.dot.gov> as of June 2004.

Transit Profile

FINANCIAL	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	(P) 2002
Passenger operating revenues ¹ , total (\$ millions)	1,407	1,707	6,510	16,053	17,968	18,241	19,151	19,515	21,062	22,220	24,243	25,288	26,632
Operating revenues, total	1,407	1,707	2,805	6,786	9,027	9,613	10,345	10,854	11,654	11,930	12,963	12,471	13,251
Passenger fares, total	1,335	1,639	2,556	5,891	6,756	6,801	7,416	7,546	7,970	8,282	8,746	8,891	8,649
Motor bus	N	N	N	2,967	3,250	3,287	3,515	3,558	3,991	4,175	4,376	4,357	4,106
Heavy rail	N	N	N	1,741	1,976	2,018	2,322	2,351	2,297	2,323	2,483	2,533	2,493
Light rail	N	N	N	83	135	127	144	139	150	164	181	204	226
Trolley bus	N	N	N	46	55	54	55	57	55	60	60	60	59
Demand responsive	N	N	N	41	171	146	157	170	142	159	172	182	194
Ferryboat ^a	N	N	N	56	41	60	54	51	41	48	60	71	78
Commuter rail	N	N	N	952	1,083	1,078	1,146	1,178	1,255	1,309	1,375	1,439	1,447
Other ^b	N	N	N	26	45	46	24	42	38	46	41	47	46
Other operating revenue	72	68	248	895	2,271	2,812	2,928	3,308	3,685	3,648	4,217	3,580	4,602
Operating assistance ^c , total	N	N	3,705	9,267	8,941	8,628	8,807	8,661	9,408	10,290	11,280	12,817	13,382
State and local	N	N	2,611	8,297	8,026	7,811	8,210	8,014	8,656	9,418	10,286	11,688	12,063
Federal	N	N	1,093	970	916	817	596	647	751	872	994	1,130	1,319
Operating expenses ^d , total (\$ millions)	1,377	1,996	6,711	17,979	21,653	21,540	22,260	23,159	24,318	25,538	28,194	29,279	30,918
Operating expenses, total	N	N	6,247	15,742	17,920	17,849	18,341	18,936	19,739	20,512	22,646	23,517	24,834
Motor bus	N	N	N	8,903	10,144	10,321	10,575	10,944	11,429	11,714	12,966	13,335	14,066
Heavy rail	N	N	N	3,825	3,786	3,523	3,402	3,474	3,530	3,693	3,931	4,180	4,268
Light rail	N	N	N	237	413	376	442	473	500	546	606	682	778
Trolley bus	N	N	N	109	133	139	135	140	147	167	178	172	187
Demand responsive	N	N	N	518	943	1,000	1,187	1,285	1,405	1,419	1,805	1,754	1,949
Ferryboat ^a	N	N	N	171	200	210	183	221	214	238	268	324	354
Commuter rail	N	N	N	1,939	2,228	2,211	2,294	2,278	2,361	2,575	2,685	2,861	3,003
Other ^b	N	N	N	41	73	67	124	122	154	160	206	208	229.4
Depreciation and amortization	N	N	278	1,593	2,769	2,601	2,885	3,106	3,435	3,692	4,076	4,233	4,470
Other reconciling items	N	N	186	644	964	1,091	1,034	1,117	1,145	1,333	1,472	1,529	1,614
Average passenger revenue per passenger-mile ³ , all modes (\$)	N	N	N	0.14	0.17	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Motor bus	N	N	N	0.14	0.17	0.17	0.18	0.18	0.20	0.20	0.21	0.20	0.19
Heavy rail	N	N	N	0.15	0.19	0.19	0.20	0.20	0.19	0.18	0.18	0.18	0.18
Light rail	N	N	N	0.15	0.18	0.15	0.15	0.13	0.13	0.14	0.13	0.14	0.16
Trolley bus	N	N	N	0.24	0.29	0.29	0.30	0.30	0.30	0.32	0.31	0.32	0.32
Demand responsive	N	N	N	0.10	0.30	0.29	0.24	0.23	0.19	0.20	0.21	0.21	0.23
Ferryboat ^a	N	N	N	0.20	0.14	0.23	0.21	0.17	0.14	0.16	0.18	0.22	0.23
Commuter rail	N	N	N	0.14	0.14	0.13	0.14	0.15	0.14	0.15	0.15	0.15	0.15
Other ^b	N	N	N	0.21	0.23	0.17	0.07	0.11	0.09	0.10	0.09	0.09	0.09
Average passenger fare, per unlinked trip ⁴ , all modes (\$)	0.14	0.22	0.30	0.67	0.85	0.87	0.93	0.89	0.91	0.90	0.93	0.92	0.89
Motor bus	N	N	N	0.52	0.62	0.66	0.70	0.70	0.74	0.74	0.77	0.74	0.70
Heavy rail	N	N	N	0.74	0.90	0.99	1.08	0.97	0.96	0.92	0.94	0.93	0.93
Light rail	N	N	N	0.47	0.66	0.50	0.55	0.53	0.54	0.56	0.57	0.61	0.67
Trolley bus	N	N	N	0.36	0.47	0.45	0.47	0.47	0.47	0.50	0.49	0.50	0.46
Demand responsive	N	N	N	0.60	2.04	2.26	2.21	1.83	1.49	1.59	1.64	1.73	1.87
Ferryboat ^a	N	N	N	1.11	0.87	1.31	1.12	0.99	0.80	0.91	1.13	1.32	1.36
Commuter rail	N	N	N	2.90	3.19	3.13	3.24	3.30	3.29	3.31	3.32	3.44	3.49
Other ^b	N	N	N	0.90	1.28	1.57	1.33	0.66	1.02	0.76	0.66	0.75	0.77
INVENTORY													
Number of systems ^{d,5} , total	1,286	1,096	1,055	5,078	5,973	5,973	5,973	5,975	6,000	6,000	6,000	6,000	6,000
Motor bus	1,236	1,075	1,022	2,685	2,250	2,250	2,250	2,250	2,262	2,262	2,262	2,264	2,264
Heavy rail	31	15	11	12	14	14	14	14	14	14	14	14	14
Light rail	-	-	9	17	22	22	22	22	23	24	25	26	27
Trolley bus	19	6	5	5	5	5	5	5	5	5	5	5	5
Demand responsive	N	N	N	3,193	5,214	5,214	5,214	5,214	5,254	5,252	5,252	5,251	5,251
Ferryboat ^a	N	N	16	27	25	25	25	25	28	30	33	42	42
Commuter rail	N	N	18	14	16	16	16	18	18	20	19	21	20
Other ^b	N	N	5	35	69	69	69	70	72	81	81	82	82
Number of vehicles ^d , total	65,292	61,298	75,388	92,961	115,943	115,874	122,362	126,360	123,855	128,516	131,493	134,271	135,282
Motor bus	49,600	49,700	59,411	58,714	68,123	67,107	71,678	72,770	72,142	74,228	75,013	76,075	76,190
Heavy rail	9,010	9,286	9,641	10,419	10,138	10,157	10,201	10,242	10,301	10,306	10,591	10,718	10,718
Light rail	2,856	1,262	1,013	913	1,054	999	1,140	1,229	1,220	1,297	1,577	1,366	1,445
Trolley bus	3,826	1,050	823	832	877	885	871	859	880	859	951	600	600
Demand responsive	N	N	N	16,471	28,279	29,352	30,804	32,509	29,646	31,884	33,080	34,661	34,699
Ferryboat ^a	N	N	N	108	110	110	109	134	113	112	119	125	125
Commuter rail	N	N	4,500	4,415	4,517	4,565	4,665	4,943	4,963	4,883	5,073	5,124	5,300
Other ^b	N	N	N	1,089	2,395	2,699	2,894	3,674	4,590	4,947	5,089	5,602	6,205
Number of employees ^{d,7} , total	156,400	138,040	189,300	262,176	294,087	300,491	314,944	320,759	327,752	337,885	347,841	357,266	360,722
Motor bus	121,300	101,598	N	162,189	174,373	181,973	190,152	196,861	198,644	204,179	211,095	214,674	214,825
Heavy rail	35,100	36,442	N	46,102	51,062	45,644	45,793	45,935	45,163	46,311	47,087	47,865	48,464
Light rail	+	+	N	4,066	5,140	4,935	5,728	5,940	6,024	6,058	6,572	7,021	7,598
Trolley bus	+	+	N	1,925	1,848	1,871	2,084	2,037	2,053	2,140	2,223	2,008	2,027
Demand responsive	N	N	N	22,740	35,450	39,882	44,667	44,029	48,406	51,186	52,021	55,846	56,746
Ferryboat ^a	N	N	N	2,813	2,764	2,697	2,830	3,166	3,894	4,024	2,682	4,731	5,336
Commuter rail	N	N	N	21,443	22,596	22,320	22,604	21,651	22,488	22,896	23,518	23,851	24,391
Other ^b	N	N	N	898	854	1,169	1,086	1,140	1,080	1,091	2,643	1,270	1,335

PERFORMANCE

Vehicle-miles ⁸ , total (millions)	2,143	1,883	2,287	3,242	3,468	3,550	3,650	3,746	3,794	3,972	4,081	4,196	4,277
Motor bus	1,576	1,409	1,677	2,130	2,162	2,184	2,221	2,245	2,175	2,276	2,315	2,377	2,411
Heavy rail	391	407	385	537	532	537	543	558	566	578	595	608	621
Light rail	75	34	18	24	34	35	38	41	44	49	53	54	61
Trolley bus	101	33	13	14	14	14	14	14	14	14	15	13	14
Demand responsive	N	N	N	306	464	507	548	585	671	718	759	789	803
Ferryboat ⁸	N	N	2	2	2	3	3	3	3	3	3	3	3
Commuter rail	N	N	179	213	231	238	242	251	260	266	271	277	284
Other ⁸	N	N	13	16	30	33	43	50	63	69	71	75	80
Unlinked passenger trips ⁹ , total (millions)	N	7,332	8,567	8,799	7,949	7,763	7,948	8,374	8,750	9,168	9,363	9,653	9,623
Motor bus	N	5,034	5,837	5,677	4,871	4,848	4,887	5,013	5,399	5,648	5,678	5,849	5,868
Heavy rail	N	1,881	2,108	2,346	2,169	2,033	2,157	2,430	2,393	2,521	2,632	2,728	2,688
Light rail	N	124	133	175	284	251	261	262	276	292	320	336	337
Trolley bus	N	182	142	126	118	119	117	121	117	120	122	119	116
Demand responsive	N	N	N	68	88	88	93	99	95	100	105	105	103
Ferryboat ⁹	N	N	63	50	47	47	48	51	52	53	53	54	57
Commuter rail	N	N	280	328	339	344	352	357	381	396	413	419	414
Other ⁹	N	N	4	29	33	33	33	41	37	38	40	43	40
Passenger-miles ¹⁰ , total (millions)	N	N	39,854	41,143	39,585	39,808	41,378	42,339	44,128	45,857	47,666	49,070	48,324
Motor bus	N	N	21,790	20,981	18,832	18,818	19,096	19,604	20,360	21,205	21,241	22,022	21,841
Heavy rail	N	N	10,558	11,475	10,668	10,559	11,530	12,056	12,284	12,902	13,844	14,178	13,663
Light rail	N	N	381	571	833	860	957	1,035	1,128	1,206	1,356	1,437	1,432
Trolley bus	N	N	219	193	187	187	184	189	182	186	192	187	188
Demand responsive	N	N	N	431	577	607	656	754	735	813	839	855	853
Ferryboat ¹⁰	N	N	N	286	260	260	256	294	294	310	330	325	333
Commuter rail	N	N	6,516	7,082	7,996	8,244	8,351	8,038	8,704	8,766	9,402	9,548	9,504
Other ¹⁰	N	N	390	124	232	273	348	369	441	469	462	518	510
Average trip length ¹¹ , all modes (miles)	N	N	N	N	5	5	5	5	5	5	5	5	5
Motor bus	N	N	N	N	4	4	4	4	4	4	4	4	4
Heavy rail	N	N	N	N	5	5	5	5	5	5	5	5	5
Light rail	N	N	N	N	4	3	4	4	4	4	4	4	4
Trolley bus	N	N	N	N	2	2	2	2	2	2	2	2	2
Demand responsive	N	N	N	N	7	8	9	10	8	8	8	8	8
Ferryboat ¹¹	N	N	N	N	6	6	5	6	6	6	6	6	6
Commuter rail	N	N	N	N	24	24	24	23	23	22	23	23	23
Vanpool	N	N	N	N	32	35	34	33	36	34	35	33	37
Other ¹¹	N	N	N	N	1	1	1	1	1	1	1	1	1
Average vehicle speed ¹² , all modes (miles per hour)	N	N	N	N	15	15	15	15	15	15	15	15	15
Motor bus	N	N	N	N	13	13	13	13	13	13	13	13	13
Heavy rail	N	N	N	N	21	21	21	21	21	21	21	20	20
Light rail	N	N	N	N	14	14	14	16	16	15	15	15	15
Trolley bus	N	N	N	N	8	8	8	8	8	7	7	7	7
Demand responsive	N	N	N	N	14	15	15	15	17	15	15	15	15
Ferryboat ¹²	N	N	N	N	8	6	7	7	8	8	8	8	8
Commuter rail	N	N	N	N	34	34	33	34	32	33	29	32	32
Vanpool	N	N	N	N	33	35	37	36	37	38	31	39	38
Other ¹²	N	N	N	N	6	6	7	7	7	7	8	8	8
Energy consumption, diesel ¹³ , total (million gallons)	208	271	431	651	678	678	693	717	740	763	786	745	725
Motor bus	N	N	N	563	565	564	578	598	607	618	635	587	559
Heavy rail	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light rail	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trolley bus	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Demand responsive	N	N	N	15	30	29	31	32	38	43	48	55	62
Ferryboat ¹³	N	N	N	20	21	22	22	24	25	29	32	30	31
Commuter rail	N	N	N	53	62	63	62	63	69	73	71	72	73
Other ¹³	N	N	N	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Energy consumption, other ¹⁴ , total (million gallons)	192	69	11	34	65	71	76	83	90	93	103	112	138
Gasoline and other nondiesel fuels ⁹	192	68	11	33	60	61	61	59	53	49	48	46	57
Compressed natural gas	U	U	U	U	5	11	15	24	37	44	55	66	81
Energy consumption, electric power ¹⁵ , total (million kWh)	2,908	2,561	2,446	4,837	5,081	5,068	5,007	4,988	5,073	5,237	5,510	5,610	5,649
Motor bus	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heavy rail	N	N	N	3,284	3,431	3,401	3,332	3,253	3,280	3,385	3,549	3,646	3,683
Light rail	N	N	N	239	282	288	321	361	381	416	463	487	510
Trolley bus	N	N	N	69	103	100	69	78	74	75	77	74	73
Demand responsive	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferryboat ¹⁵	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Commuter rail	N	N	N	1,226	1,244	1,253	1,255	1,270	1,299	1,322	1,370	1,354	1,334
Other ¹⁵	N	N	N	19	21	26	30	26	39	39	51	49	49
SAFETY													
Fatalities, all modes ¹⁶	N	N	N	339	320	274	264	275	286	299	295	267	260
Injured persons, all modes ^{h,17}	N	N	N	54,556	58,193	57,196	55,288	56,132	55,990	55,325	56,697	53,945	21,304
Incidents, all modes ¹⁶	N	N	N	90,163	70,693	62,471	59,392	61,561	60,094	58,703	59,898	58,149	U
Major incidents ^l	N	N	N	N	N	N	N	N	N	N	N	N	2,126

KEY: ~ = included in heavy rail figure; + = included in motor bus figure; kWh = kilowatt hours; N = data do not exist; NA = not applicable; P = preliminary; U = data are not available.

^a Excludes international, rural, rural interstate, island and urban park ferries.

^b Includes cable car, inclined plane, aerial tramway, monorail, vanpool, and automated guideway.

^c Beginning in 1992, local operating assistance and other revenue declined by about \$500 million due to change in accounting procedures at the New York City Transit Authority. Beginning in 1992, total operating expense declined by about \$400 million due to a change in accounting procedures at the New York City Transit Authority.

^d The total figure represents the number of transit agencies. It is not the sum of all modes since many agencies operate more than one mode.

^e Based on employee equivalents of 2,080 hours equals one employee; beginning in 1993, based on number of actual employees.

^f Includes cable car, inclined plane, aerial tramway, monorail, and automated guideway.

^g Liquefied natural gas, liquefied petroleum gas, methanol, propane, and other nondiesel fuels, except compressed natural gas.

^h Beginning in 2002, the Federal Transit Administration changed the reporting threshold for injuries. Before 2002, essentially all injuries had to be reported to the National Transit Database. Beginning in 2002, only those injuries requiring immediate medical attention away from the scene of the incident are required to be reported.

ⁱ In 2002, the Federal Transit Administration defined major incidents as safety and/or security incidents resulting in: a fatality, two or more injuries transported for immediate medical treatment, property damage exceeding \$25,000 (all property), main-line derailments, evacuations due to life safety, grade crossing collisions with injury or \$7,500 damage, or rail transit vehicle collisions resulting in one or more injuries.

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ American Public Transit Association, *Public Transportation Fact Book 2004*, (Washington, DC: 2004), tables 64, 65, 103, and similar tables in earlier years.

² *Ibid.*, tables 58, 61, 103 and similar tables in earlier years.

³ *Ibid.*, tables 8, 64, 65, 103, and similar tables in earlier years.

⁴ *Ibid.*, table 63 and similar tables in earlier years.

⁵ *Ibid.*, table 2 and similar tables for prior years.

⁶ *Ibid.*, tables 24, 103, and similar tables in earlier years.

⁷ *Ibid.*, tables 30, 103, and similar tables in earlier years.

⁸ *Ibid.*, tables 18, 103, and similar tables in earlier years.

⁹ *Ibid.*, tables 5, 103, and similar tables in earlier years.

¹⁰ *Ibid.*, tables 8, 103, and similar tables in earlier years.

¹¹ *Ibid.*, table 7 and similar tables in earlier years.

¹² *Ibid.*, 20 and similar tables in earlier years.

¹³ *Ibid.*, table 34 and similar tables in earlier years.

¹⁴ *Ibid.*, table 35 and similar tables in earlier years.

¹⁵ *Ibid.*, table 33 and similar tables in earlier years.

¹⁶ 1960-2001: U.S. Department of Transportation, Federal Transit Administration, *Transit Safety and Security Statistics and Analysis Annual Report* (previously Safety Management Information Statistics - SAMIS), personal communication on July 28, 2003. 2002: *Ibid.*, National Transit Database, *Safety and Security Newsletter*, Spring 2003, Volume 1, Issue 1, Internet site <http://www.ntdprogram.com> as of June 16, 2004.

¹⁷ 1960-2001: U.S. Department of Transportation, Federal Transit Administration, *Transit Safety and Security Statistics and Analysis Annual Report* (previously Safety Management Information Statistics - SAMIS), personal communication on July 28, 2003. 2002: *Ibid.*, National Transit Database, *Safety and Security Newsletter*, Fall 2003, Volume 1, Issue 2, Internet site <http://www.ntdprogram.com> as of June 16, 2004.

Rail Profile

FINANCIAL	1960	1970 ^e	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001
Class I ^{a,1}												
Operating revenues, total (\$ millions)	9,514	11,992	28,258	28,370	30,809	32,280	32,693	33,118	33,151	33,521	34,102	34,576
Passenger	640	421	446	94	88	89	59	60	61	61	62	62
Freight	8,025	10,922	26,350	27,471	29,931	31,356	31,889	32,322	32,247	32,680	33,083	33,533
Other	849	649	1,462	805	790	835	745	736	843	780	957	981
Operating expenses (\$ millions) ^b	8,775	11,478	26,355	24,652	25,511	27,897	26,331	27,291	27,916	28,011	29,040	29,164
Amtrak ²												
Total revenue (\$ millions)	N	162	429	1,308	1,413	1,490	1,550	1,669	2,244	2,011	2,111	2,109
Total expenses (\$ millions)	N	301	1,103	2,012	2,246	2,257	2,258	2,359	2,548	2,660	2,876	3,288
INVENTORY												
Class I ^{a,1}												
Number of vehicles, total	1,965,486	1,784,181	1,710,827	1,212,261	1,192,412	1,218,927	1,240,573	1,270,419	1,315,667	1,368,836	1,380,796	1,314,136
Class I freight cars	1,658,292	1,423,921	1,168,114	658,902	590,930	583,486	570,865	568,493	575,604	579,140	560,154	499,860
Other nonclass I freight cars	307,194	360,260	542,713	553,359	601,482	635,441	669,708	701,926	740,063	789,696	820,642	814,276
Number of Locomotives	29,031	27,077	28,094	18,835	18,505	18,812	19,269	19,684	20,261	20,256	20,028	19,745
Number of companies	106	71	38	14	12	11	10	9	9	9	8	8
Number of employees	780,494	566,282	458,994	216,424	189,962	188,215	181,809	177,981	178,222	177,557	168,360	162,155
Miles of road owned	207,334	196,479	164,822	119,758	109,332	108,264	105,779	102,128	100,570	99,430	99,250	97,631
Amtrak												
Number of passenger vehicles ³												
Train-cars	N	1,569	2,128	1,863	1,852	1,722	1,730	1,728	1,962	1,992	1,894	2,084
Locomotives	N	185	419	318	338	313	299	332	345	329	378	401
Number of employees ⁴	N	1,500	21,416	24,000	25,049	23,646	23,278	23,555	24,528	25,291	25,624	27,316
System route mileage ⁵	N	N	24,000	24,000	25,000	24,000	25,000	25,000	22,000	23,000	23,000	23,000
PERFORMANCE												
Class I ^a												
Car mileage, freight (thousands) ¹	28,170,000	29,890,000	29,277,000	26,159,000	28,485,000	30,383,000	31,715,000	31,660,000	32,657,000	33,851,000	34,590,000	34,243,000
Train mileage, freight (thousands) ¹	404,464	427,065	428,498	379,582	440,896	458,271	468,792	474,954	474,947	490,442	504,001	499,546
Locomotive mileage, total (thousands) ⁶	N	N	1,531,050	1,280,365	1,404,706	1,444,691	1,465,149	1,423,229	1,439,703	1,503,947	1,502,819	1,477,546
Freight	421,900	1,278,200	1,319,010	1,144,559	1,261,482	1,293,851	1,311,351	1,281,768	1,285,706	1,349,580	1,354,590	1,327,669
Train and yard switching	N	N	212,040	135,806	143,224	150,840	153,798	141,461	153,997	154,367	148,229	149,876
Revenue ton-miles of freight (millions) ¹	572,309	764,809	918,958	1,033,969	1,200,701	1,305,688	1,355,975	1,348,926	1,376,802	1,433,461	1,465,960	1,495,472
Average length of haul, freight (miles) ¹	461	515	616	726	817	843	842	851	835	835	843	859
Fuel consumed in freight service (million gallons) ¹	3,463	3,545	3,904	3,115	3,334	3,480	3,579	3,575	3,583	3,715	3,700	3,710
Average miles traveled per vehicle												
Locomotive	N	N	54,497	67,978	75,910	76,796	76,037	72,304	71,058	74,247	75,036	74,831
Car	14,332	16,753	17,113	21,579	23,889	24,926	25,565	24,921	24,822	24,730	25,051	26,057
Average miles traveled per gallon												
Train	0.12	0.12	0.11	0.12	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.13
Car	8.13	8.43	7.50	8.40	8.54	8.73	8.86	8.86	9.11	9.11	9.35	9.23

Amtrak												
Passenger train car-miles (millions) ⁷	N	213	235	301	304	292	276	288	312	342	371	378
Passenger train-miles (millions) ²	N	26	30	33	34	32	30	32	33	34	35	36
Passenger locomotive-miles (millions) ²	N	N	41	49	51	48	U	U	U	U	U	U
Revenue passengers carried (millions) ²	N	17	21	22	21	21	20	20	21	22	23	24
Revenue passenger-miles (millions) ²	N	3,039	4,503	6,057	5,921	5,545	5,050	5,166	5,304	5,330	5,498	5,559
Average passenger fare (dollars) ²	N	8.3	17.7	38.5	^R 39.10	^R 39.92	^R 43.31	^R 45.26	^R 44.75	^R 46.85	49.61	51.58
Average passenger revenue / passenger-mile (cents) ²	N	4.5	8.2	14.1	13.7	14.6	16.6	17.3	17.5	18.4	23.2	24.9
Average passenger trip length (miles) ²	N	182.6	217.0	273.0	279.3	267.9	256.3	255.7	251.4	247.9	244.4	236.6
Locomotive fuel consumed ⁸												
Diesel (million gallons)	N	N	64	82	75	66	71	75	75	74	U	U
Electric kWh (millions)	N	N	254	330	309	304	293	282	275	283	U	U

SAFETY ^{c,9}												
Number of fatalities, railroads and grade crossings, total	2,345	2,331	1,424	1,300	1,226	1,146	1,039	^R 1,063	^R 1,008	^R 932	^R 937	969
Passengers on trains	34	10	4	3	5	0	12	6	4	14	4	3
Employees on duty	215	179	97	40	31	34	33	37	27	31	24	22
Employees not on duty	N	N	4	0	0	2	0	0	2	0	1	0
Trespassers	637	607	566	700	682	660	620	646	644	570	570	671
Nontrespassers	1,459	1,535	746	554	505	443	365	362	324	304	332	269
Contractor employees	N	N	7	3	3	7	9	11	5	12	3	4
Grade crossing only	1,421	1,440	772	698	615	579	488	461	431	402	425	421
Railroad only ^d	924	785	645	599	611	567	551	602	577	530	512	548

KEY: kWh = kilowatt-hour; N = data do not exist; R = revised; U = data are not available.

^a Excluding Amtrak and all non-Class I railroads, except for Section IV.

^b Operating expenses include equipment, joint facility rents, leased roads and equipment, and all taxes except Federal income.

^c Safety figures from U.S. Department of Transportation, Federal Railroad Administration are for all railroads.

^d Figures may not appear directly in data source.

^e Amtrak data in this column are for 1972, Amtrak's first full year of operation.

NOTE

Amtrak figures are based on Amtrak fiscal year (October 1-September 30).

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ Association of American Railroads, *Railroad Facts*, Annual issues, pp. 3, 10, 27, 33, 34, 36, 40, 49, 51, 77, and similar pages in earlier issues.

² Amtrak, *National Railroad Passenger Corporation Annual Report, Statistical Appendix to Amtrak Annual Report* Annual issues.

³ 1970-1980: Amtrak, *National Railroad Passenger Corporation Annual Report*, 1972, 1980, 1990, and 1993-95. 1990-2000: Ibid., *National Railroad Passenger Corporation Annual Report, Statistical Appendix to Amtrak Annual Report* Annual issues. 2001: Association of American Railroads, *Railroad Facts 2002* (Washington, DC: 2002), p. 77.

⁴ 1970-1990: Amtrak, Public Affairs, personal communication. 1994-1997: Ibid. *National Railroad Passenger Corporation Annual Report*, 1972, 1980, 1990, and 1993-95. 1998-2001: Association of American Railroads *Railroad Facts*, Annual Issues, p. 77 and similar pages in earlier issues.

⁵ 1980-1990: Amtrak, Route Miles by Railroad, Corp. Planning & Development. 1994-2001: Amtrak *National Railroad Passenger Corporation Annual Report, Statistical Appendix to Amtrak Annual Report* Annual issues.

⁶ Association of American Railroads, *Analysis of Class 1 Railroads*, Annual issues.

⁷ 1970-1990: Amtrak, *Train Information System Reports*. 1994-1999: Amtrak Corporate Reporting, Route Profitability System, Washington DC, personal communication, August 2001. 2000-2001: Association of American Railroads *Railroad Facts*, Annual Issues, p. 77 and similar pages in earlier issues.

⁸ Amtrak General Accounting, Pennsylvania, personal communication, June 1999.

⁹ 1960-1980: U.S. Department of Transportation, Federal Railroad Administration, Systems Support Division, RRS-22, personal communication. 1990-1994: Ibid., *Accident / Incident Bulletin*, Annual issues, tables 7 and 9. 1995-2001: Ibid., *Railroad Safety Statistics, Annual Report 2001*, table 1-3.

Water Transport Profile

FINANCIAL	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001
Operating revenues (\$ millions) ¹												
Domestic freight, total	1,722	2,070	7,219	7,940	7,745	7,712	7,283	6,940	6,824	6,795	6,930	6,235
Coastal waterways	747	834	3,155	3,066	2,929	2,774	2,571	2,169	1,952	1,828	1,817	1,784
Inland waterways	461	621	2,395	2,956	2,868	2,964	2,861	2,899	2,904	2,811	2,960	2,894
Great Lakes	227	239	513	615	577	585	572	615	610	549	556	486
Locks, channels	287	376	1,156	1,303	1,371	1,389	1,279	1,257	1,358	1,607	1,597	1,071
International freight ^a	1,765	3,187	8,279	12,181	13,405	14,997	17,281	14,091	15,679	17,699	21,740	21,397
Passenger, total	281	287	310	1,391	1,564	1,716	1,843	1,974	2,029	2,088	4,663	4,187
Domestic passenger, intercity	14	12	27	100	121	129	140	141	146	152	156	144
International passenger ^b	267	275	283	1,291	1,443	^R 2,026	1,703	1,833	1,883	1,936	4,507	4,043
Revenues of U.S. commercial fishing fleet-domestic landings (\$ millions) ²	354	613	2,237	3,522	3,809	3,770	3,487	3,448	3,128	3,467	3,549	3,228
INVENTORY												
Number of domestic inland vessel operators ^{c,3}	228	380	403	565	555	557	554	U	U	U	U	U
Number of employees ⁴												
Ships, boat building, and repairing	141,200	171,800	220,500	187,700	158,200	159,600	158,800	158,300	166,600	167,400	167,900	161,100
Water transportation ^d	N	212,300	211,200	176,600	172,400	174,500	174,100	178,700	181,300	185,500	193,900	192,400
Number of employees ^{e,f} , total ⁵	49,281	35,000	19,218	12,132	11,324	10,303	9,250	8,937	8,956	9,036	U	U
Passenger / combo	8,560	2,178	618	642	642	642	321	321	321	321	U	U
Cargo	28,668	22,257	9,878	7,019	6,056	5,400	4,964	4,831	4,924	4,757	U	U
Tankers	12,053	10,567	8,722	4,471	4,626	4,261	3,965	3,785	3,711	3,958	U	U
Mileage of commercially navigable channels ¹	25,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000
Number of vessels ⁶												
Total nonself-propelled	16,777	19,377	31,662	31,017	30,723	31,360	32,811	33,011	33,509	33,387	33,152	33,042
Dry cargo barges and scows	14,025	15,890	27,426	27,091	26,723	27,342	28,743	29,006	29,526	29,383	29,107	28,888
Tankers	2,429	3,281	4,166	3,913	3,966	3,985	4,036	3,971	3,952	3,973	4,011	4,122
Railroad car floats	323	206	70	13	34	33	32	34	31	31	34	32
Total self-propelled	6,519	6,447	7,126	8,236	8,334	8,281	8,293	8,408	8,523	8,379	8,202	8,546
Dry cargo / passenger	1,796	1,761	2,036	2,678	2,785	2,804	2,782	2,905	2,938	2,910	2,780	2,697
Ferries, railroad car	31	17	67	135	175	172	173	183	213	229	292	579
Tankers	489	421	330	213	195	178	161	147	135	142	135	120
Towboats / tugs	4,203	4,248	4,693	5,210	5,179	5,127	5,177	5,173	5,237	5,098	4,995	5,150
U.S. merchant marine ships (over 1,000 gross tons)												
Total U. S. flag ⁷	2,926	1,579	864	636	543	509	495	477	470	463	454	443
Passenger / cargo	309	171	65	10	13	13	15	14	12	11	11	13
Freighters	2,138	1,076	471	367	308	295	292	288	289	284	286	283
Bulk carriers	57	38	20	26	22	20	15	14	15	14	15	17
Tankers	422	294	308	233	200	181	173	161	154	154	142	130
Privately owned	1,008	U	578	408	354	319	302	285	281	277	U	U
Government owned	1,918	U	286	228	189	190	193	192	189	186	U	U
Number of recreational boats (thousands) ^{9,8}	2,500	7,400	8,905	10,996	11,430	11,735	11,878	12,313	12,566	12,738	12,782	12,876

PERFORMANCE

PERFORMANCE													
Ton-miles (thousands) ^{h,9}													
Domestic water freight, total	N	596,195,000	921,835,800	833,543,800	814,919,200	807,727,700	764,686,500	707,409,900	672,795,300	655,861,500	645,799,300	621,686,200	
Coastwise	N	359,784,000	631,149,200	479,133,600	457,600,700	440,345,100	408,086,100	349,843,000	314,863,900	292,730,000	283,871,600	274,558,800	
Internal	N	155,816,000	227,343,000	292,393,300	297,762,400	306,329,100	296,790,600	294,023,000	294,896,400	304,724,100	302,558,400	294,860,900	
Lakewise	N	79,416,000	61,747,100	60,929,900	58,263,400	59,703,800	58,335,300	62,165,900	61,654,300	57,045,200	57,879,100	50,853,500	
Intraport	N	1,179,000	1,596,400	1,087,000	1,292,700	1,349,600	1,474,500	1,378,100	1,380,700	1,362,200	1,490,200	1,413,000	
Tons of freight hauled (thousands) ⁹													
Domestic, total		760,573	950,727	1,077,483	1,122,299	1,099,011	1,093,035	1,100,679	1,112,527	1,094,112	1,061,787	1,069,798	1,042,472
Coastwise		209,197	238,440	329,609	298,637	277,029	266,612	267,389	263,146	249,633	228,802	226,938	223,606
Internal		291,057	472,123	534,979	622,595	618,409	620,324	622,081	630,558	625,028	624,575	628,445	619,784
Lakewise		155,109	157,059	115,124	110,159	114,777	116,127	114,870	122,734	122,156	113,887	114,352	100,002
Intraport		104,193	81,475	94,184	86,378	82,870	83,104	89,011	89,816	90,077	88,650	94,558	93,222
Intraterritory		1,017	1,630	3,588	4,529	5,926	6,868	7,327	6,273	7,217	5,873	5,505	5,858
Exports, total		127,961	241,629	403,883	441,586	396,246	474,700	450,794	432,313	404,708	399,996	415,042	399,011
Great Lakes ports		23,150	35,932	45,077	32,898	27,108	32,968	31,855	33,209	36,876	40,233	40,131	40,519
Coastal ports		104,810	205,698	358,806	408,688	369,138	441,732	418,940	399,104	367,831	359,763	374,911	358,491
Imports, total		211,316	339,340	517,521	599,970	719,497	672,657	732,592	788,303	840,680	860,775	^R 939,749	945,075
Great Lakes ports		12,851	26,406	15,515	17,558	23,028	18,897	24,503	24,532	25,558	22,196	^R 23,917	22,021
Coastal ports		198,466	312,934	502,006	582,412	696,469	653,760	708,090	763,771	815,122	838,579	^R 915,832	923,054
Average haul, domestic system (miles) ^{h,9}													
Coastwise		1,496	1,509	1,915	1,604	1,652	1,652	1,526	1,330	1,261	1,279	1,251	1,228
Internal		282	330	405	470	482	494	477	466	472	488	481	476
Lakewise		522	506	536	553	508	514	508	507	505	501	506	509
Cargo capacity (short tons) ⁶													
Total nonself-propelled vessels		16,355,657	24,026,024	44,875,116	48,946,785	49,708,960	51,140,530	54,086,973	54,974,961	55,999,952	56,468,065	56,493,289	57,239,090
Dry cargo barges		12,147,006	17,695,275	34,486,851	38,189,490	38,643,518	39,971,443	42,748,644	43,710,093	44,718,691	45,049,209	44,814,696	45,281,492
Tankers		4,208,651	6,330,749	10,388,265	10,757,295	11,065,442	11,169,087	11,338,329	11,264,868	11,281,261	11,418,856	11,678,593	11,957,598
Total self-propelled vessels		15,905,881	19,284,050	23,906,346	^R 19,829,011	16,867,458	15,783,399	14,850,253	14,161,739	12,970,167	13,892,574	13,458,519	12,770,889
Dry cargo / passenger		12,188,956	10,815,977	8,011,587	^R 7,147,054	7,118,193	6,484,707	6,208,011	6,685,719	6,371,425	6,928,684	6,740,153	6,544,807
Tankers		3,716,925	8,468,073	15,894,753	^R 12,681,957	9,749,265	9,298,692	8,642,242	7,476,020	6,598,742	6,963,890	6,718,366	6,226,082
Fuel consumption (thousand barrels), total ¹		122,014	123,591	273,380	232,036	210,650	225,470	213,721	187,729	183,856	208,604	233,227	U
Diesel fuel and distillate		18,730	19,503	35,201	52,310	48,260	47,098	51,848	50,180	50,609	49,157	53,843	U
Residual fuel oil		94,084	89,850	213,131	148,764	141,544	153,125	138,214	114,044	110,480	133,301	152,616	U
Gasoline		9,200	14,238	25,048	30,962	20,846	25,247	23,659	23,505	22,767	26,146	26,768	U

SAFETY

Fatalities in waterborne transport (vessel casualties

only), total ^{i,10}	N	178	206	85	77	52	55	48	67	R51	45	39
Freight ship	N	30	8	0	0	0	1	2	2	0	0	1
Tank ship	N	4	4	5	3	0	0	0	1	0	0	0
Passenger vessel	N	1	5	3	4	4	8	1	3	14	0	3
Tug / towboat	N	22	14	13	1	1	1	3	0	R5	0	4
Offshore supply	N	N	N	2	1	2	2	0	6	0	2	0
Fishing vessel	N	77	60	47	48	23	37	22	33	R23	28	9
Recreational vessel	N	N	N	3	13	22	3	7	7	R5	10	12
MODU ^j	N	N	N	0	0	0	0	4	0	0	0	1
Platform	N	N	N	1	U	U	U	U	U	R0	0	0
Freight barge	N	N	N	0	2	0	0	2	1	0	1	0
Tank barge	N	N	N	0	0	0	0	0	0	1	0	1
Miscellaneous	N	44	56	11	5	0	3	7	14	3	4	0
Injuries in waterborne transport, total ^{i,10}	N	105	180	175	180	152	229	119	130	R136	132	193
Freight ship	N	14	8	10	6	1	7	3	3	2	4	2
Tank ship	N	19	9	13	10	8	1	5	6	R5	3	3
Passenger vessel	N	10	10	51	43	47	142	36	39	R71	50	109
Tug / towboat	N	10	27	19	19	19	16	21	12	R13	10	18
Offshore supply	N	N	N	9	2	10	7	3	5	1	5	13
Fishing vessel	N	13	28	31	55	41	36	25	35	R19	24	15
Recreational vessel	N	N	N	2	17	20	9	6	9	R11	26	15
MODU ^j	N	N	N	13	0	0	0	3	0	2	0	3
Platform	N	N	N	9	U	U	U	U	U	R1	1	0
Freight barge	N	N	N	3	4	0	0	5	1	R0	2	0
Tank barge	N	N	N	3	3	5	2	0	0	R2	0	2
Miscellaneous	N	N	98	12	21	1	9	12	20	9	6	5
Fatalities in recreational boating (vessel casualties only), total ⁸	739	1,418	1,360	865	748	829	709	821	815	734	701	681
Air thrust	N	N	N	N	N	4	1	6	11	2	4	2
Propeller	N	N	N	N	N	475	363	436	462	421	439	326
Inboard	N	119	100	50	36	N	N	N	N	50	48	34
Outboard	N	774	609	454	341	N	N	N	N	326	328	245
Inboard / outboard	N	28	47	53	49	N	N	N	N	35	49	32
Jet	N	N	10	25	58	68	61	83	82	75	70	45
Sail	N	44	43	20	13	4	8	15	5	7	14	19
Manual (oars, paddle)	N	205	272	182	140	148	109	150	151	114	137	144
Other	N	29	14	5	12	8	8	10	0	N	N	N
Propulsion unknown	N	219	265	76	135	122	159	121	104	115	37	145

KEY: N = data do not exist; R = revised; U = data are not available.

^a The international water freight operating revenues data was revised in *Transportation in America 1998* for all years except 1994 and 1996. Therefore, the international water freight data for years 1994 and 1996 may not be comparable to other years.

^b Revenues paid by American travelers to U.S. and foreign flag carriers.

^c Does not include vessel operators whose primary area of operation is fishing, towing, passenger transport, ferrying, or crew boat utility service.

^d Includes commercial port, marina, and other employees; excludes employees of not-for-hire private businesses.

^e Estimate based on established active jobs for licensed and unlicensed personnel aboard oceangoing ships of 1,000 gross-tons and over, privately owned and operated, government-owned ships under bare boat charters, ship managers and General Agency Agreement, supplemented by Military Sealift Command employment totals for ships with Civil Service crews.

^f Data is current as of January 1 of the following year with the exception of 1999 data, which is current as of Apr. 1, 1999. Due to a change in the source's periodicity, the data for 1999 is not comparable to the data from years prior to 1999.

^g The U.S. Coast Guard changed its methodology for counting the number of recreational boats. Figures cited represent number of numbered boats, not estimates as previously noted for 1960 and 1970.

^h Does not include intraterritorial traffic (traffic between ports in Puerto Rico and the Virgin Islands, which are considered a single unit).

ⁱ 1992-2001 data come from the Marine Safety Management Information System. Data for prior years may not be directly comparable. Beginning in 2000, numbers may not add to totals because data is now recorded in a new information system known as MISLE, which does not associate every fatality and injury with a specific vessel.

^j Mobile Offshore Drilling Units.

SOURCES

Unless otherwise noted, refer to chapter tables for sources.

¹ Eno Transportation Foundation Inc., *Transportation in America, 2002* (Washington, DC: 2002), pp. 38, 40, 51, and 58.

² U.S. Department of Commerce, National Marine Fisheries Services, *Fisheries of the United States* (Washington, DC: Annual issues), p. 4 and similar tables in earlier editions.

³ U.S. Department of Transportation, Maritime Administration, MAR-450, personal communication.

⁴ 1960-1990: U.S. Department of Labor, Bureau of Labor Statistics, *Employment, Hours and Earnings, United States, 1909-1994* (Washington, DC: September 1994) and *1988-1996* (Washington, DC: August 1996), SICs 373 and 44. 1994-2001: *Ibid.*, Internet website <http://www.bls.gov> as of May 2003.

⁵ U.S. Department of Transportation, Maritime Administration, *U.S. Merchant Marine Data Sheet* (Washington, DC: Annual issues).

⁶ 1960-1998: U.S. Army Corps of Engineers, *Summary of U.S. Flag Passenger & Cargo Vessels* (New Orleans, LA: Annual issues). 1999-2001: *Ibid.*, *Waterborne Transportation Lines of the United States* (New Orleans, LA: Annual issues) part 1, section 1, table 1 and 2.

⁷ U.S. Department of Transportation, Maritime Administration, *Merchant Fleets of the World* (Washington, DC: Annual issues) and unpublished revisions.

⁸ U.S. Coast Guard, *Boating Statistics* (Washington, DC: Annual issues).

⁹ U.S. Army Corps of Engineers, *Waterborne Commerce of the United States* (New Orleans, LA: Annual issues), part 5, section 1, tables 2, 3, and 4.

¹⁰ 1970-1990: U.S. Coast Guard, Office of Investigations and Analysis, G-MAO-2, personal communication. 1994-2001: *Ibid.*, Data Administration Division (G-MRI-1), personal communication, Feb. 13, 2002 and July 2, 2003.

Oil Pipeline Profile

FINANCIAL	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Operating revenues, total (\$ millions) ¹	895	1,396	7,548	8,506	8,676	9,077	8,637	8,632	8,579	9,067	8,958	9,066	U	U
FERC-regulated	770	1,188	6,340	7,164	7,353	7,751	7,310	7,278	7,212	7,645	7,551	7,649	U	U
Nonregulated	125	208	1,208	1,342	1,323	1,326	1,327	1,354	1,367	1,422	1,407	1,417	U	U
INVENTORY														
Number of FERC-regulated companies ²	87	101	130	150	158	161	160	U	U	184	U	U	U	195
Number of employees, pipeline companies ^{a,3}	23,100	17,600	21,300	18,500	17,100	15,100	14,500	14,200	13,800	13,060	13,230	13,680	12,360	12,840
Miles of pipeline (statute miles) ^b , all lines ⁴	190,944	218,671	218,393	208,752	190,350	181,912	177,535	179,873	178,648	177,463	176,996	U	U	U
Crude lines	141,085	146,275	129,831	118,805	103,277	97,029	92,610	91,523	87,663	86,369	85,480	U	U	U
Product lines	49,859	72,396	88,562	89,947	87,073	84,883	84,925	88,350	90,985	91,094	91,516	U	U	U
PERFORMANCE														
Intercity ton-miles, total (millions) ⁵	229,000	431,000	588,200	584,100	591,400	601,100	619,200	616,500	619,800	623,000	635,500	622,800	U	U
Crude oil	N	N	362,600	334,800	322,600	335,900	338,300	337,400	334,100	336,200	U	U	U	U
Petroleum products	N	N	225,600	249,300	268,800	265,200	280,900	279,100	285,700	286,800	U	U	U	U
Tons transported (millions) ⁵	468.0	790.2	921.0	1,057.4	1,063.6	1,074.3	1,114.1	1,108.0	1,116.3	1,125.2	1,146.8	1,123.4	U	U
Average length of haul (statute miles)													U	U
Crude oil ⁶	325	300	871	812	778	797	779	781	767	766	U	U	U	U
Petroleum products ⁶	269	357	414	387	414	402	413	413	420	418	U	U	U	U
SAFETY⁷														
Fatalities	N	4	4	3	1	3	5	0	2	4	1	0	1	0
Injured persons	N	21	15	7	^c 7	11	13	5	6	20	4	10	0	5
Incidents	N	351	246	180	245	188	194	171	153	168	147	(R) 130	144	127

KEY: FERC = Federal Energy Regulatory Commission; N = data do not exist; U = data are not available.

^a Includes companies whose pipelines carry crude petroleum, petroleum products, and nonpetroleum pipeline liquids.

^b Regulated plus unregulated mileage of crude oil trunk and gathering lines, plus refined oil trunk lines.

^c Does not include the 1,851 injuries that required medical treatment, caused by severe flooding near Houston, Texas, reported for October, 1994.

NOTE

The Interstate Commerce Committee regulated oil pipelines in the 1960s and 1970s

SOURCES

¹ Eno Transportation Foundation, Inc., *Transportation In America 2002* (Washington, DC: 2002), pp. 38 and 39, and similar tables in earlier editions.

²1960-96: Federal Energy Regulatory Commission, personal communication.

1999: Ibid., Internet site www.ferc.fed.us/oil/oil_list.htm as of June 21, 2001.

2003: Ibid., Internet site www.ferc.gov/industries/oil/pipeline-list.asp as of Aug. 18, 2004.

³1960-80: U.S. Department of Labor, Bureau of Labor Statistics, *Employment, Hours and Earnings, United States, 1909-94* (Washington, DC: September 1994), SIC 46.

1990-1994: Ibid., *Hours and Earnings, United States, 1988-1996* (Washington, DC: July 1996), SIC 46.

1995-98: Ibid., Internet site www.bls.gov, SIC 46, as of Apr. 19, 1999.

1999-2001: Ibid., Internet site www.bls.gov/oes, SIC 46, as of June 30, 2003.

2002-03: Ibid., Internet site www.bls.gov/oes, NAICS 486100 and NAICS 486900, as of Aug. 6, 2004.

⁴ Eno Transportation Foundation, Inc., *Transportation In America 2002* (Washington, DC: 2002), pp. 58 and 59, and similar tables in earlier editions.

⁵ 1960-70: Ibid., *Transportation in America, 1998* (Washington, DC: 1998), p. 44 and *Transportation in America, Supplement, 1999* (Washington, DC: 1999).

1980-2001: Ibid., *Transportation in America, 2002* (Washington, DC: 2002), p. 53, and similar tables in earlier editions.

⁶1960-70: Ibid., *Transportation In America 1999* (Washington, DC: 1999), p. 71.

1980-99: Ibid., *Transportation In America 2000* (Washington, DC: 2000), p. 51.

⁷ U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, available at Internet site ops.dot.gov/stats/lq_sum.htm as of Aug. 6, 2004, and earlier tables for 1970 and 1980 data.

Natural Gas Pipeline Profile

FINANCIAL (\$ millions)	1960	1970	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002
Transmission pipeline companies¹													
Total operating revenues	3,190	5,928	41,604	21,756	13,841	12,092	12,050	10,339	9,450	9,555	10,404	10,257	10,096
Total operating expenses ^a	2,698	5,088	39,709	19,484	11,333	9,534	9,603	7,862	6,875	6,897	7,856	7,296	7,369
Operation and maintenance	2,095	4,203	36,480	17,058	8,389	6,680	6,802	5,381	4,260	4,148	5,172	4,198	4,294
Operation expenses	2,031	4,094	36,075	16,429	7,811	6,121	6,314	4,975	3,909	3,823	4,880	3,850	3,971
Maintenance expenses	64	109	405	629	578	558	488	406	351	325	292	347	322
Taxes (federal, state, local) ^f	319	376	1,991	1,245	1,757	1,582	1,643	1,531	1,560	1,645	1,570	1,859	1,773
Federal taxes	223	202	1,327	768	1,172	1,048	1,085	1,076	1,035	1,109	1,029	1,249	1,243
State and local taxes	96	174	664	477	585	534	558	455	525	536	541	610	530
Distribution pipeline companies²													
Total operating revenues	N	N	14,013	18,750	20,911	19,421	30,407	30,864	28,182	28,135	34,696	(R) 39,179	31,210
Total operating expenses ^a	N	N	13,263	17,125	19,025	17,402	27,917	27,445	25,668	24,564	32,103	(R) 36,450	28,266
Operation and maintenance	N	N	11,791	14,544	15,868	14,170	23,301	23,155	21,396	20,226	27,093	(R) 31,486	23,655
Operation expenses	N	N	11,539	14,020	15,279	13,575	22,433	22,388	20,710	18,270	26,271	(R) 30,776	22,902
Maintenance expenses	N	N	252	524	589	596	868	767	687	1,956	821	(R) 710	753
Taxes (federal, state, local) ^f	N	N	1,136	1,625	1,931	1,888	2,668	2,415	2,524	2,355	2,916	(R) 2,908	2,437
Federal taxes	N	N	351	580	703	720	1,041	849	1,250	883	1,033	(R) 1,216	891
State and local taxes	N	N	785	1,045	1,228	1,168	1,627	1,566	1,274	1,472	1,883	(R) 1,692	1,546
Investor-owned, total industry^{c,3}													
Total operating revenues	N	N	85,918	66,027	63,446	58,435	63,600	62,660	57,548	59,142	72,075	(R) 79,276	68,594
Total operating expenses ^a	N	N	81,789	60,137	56,789	50,594	56,695	55,422	51,075	51,331	64,961	(R) 71,011	59,839
Operation and maintenance	N	N	74,508	51,628	45,953	40,041	45,785	44,851	41,360	41,415	54,630	(R) 58,908	48,675
Operation expenses	N	N	73,288	49,718	43,879	37,998	43,742	43,258	39,971	38,752	53,138	(R) 57,184	47,037
Maintenance expenses	N	N	1,220	1,910	2,074	2,043	2,043	1,593	1,390	2,664	1,492	(R) 1,722	1,637
Taxes (federal, state, local) ^f	N	N	4,847	4,957	6,603	5,981	6,362	6,384	5,293	5,605	6,106	(R) 7,201	5,870
Federal taxes	N	N	2,327	2,038	3,112	2,511	2,932	3,066	2,631	2,626	2,690	(R) 3,130	2,624
State and local taxes	N	N	2,520	2,919	3,491	3,470	3,430	3,318	2,662	2,979	3,416	(R) 4,071	3,246
INVENTORY													
Pipeline mileage, total ⁴	630,950	913,267	1,051,774	(R) 1,189,200	(R) 1,288,400	(R) 1,277,600	(R) 1,323,600	(R) 1,331,800	(R) 1,351,200	(R) 1,340,300	(R) 1,369,300	(R) 1,373,500	1,411,381
Transmission	183,700	252,200	266,500	(R) 292,200	(R) 301,500	(R) 296,900	(R) 292,200	(R) 294,000	(R) 300,100	(R) 301,000	(R) 296,600	(R) 287,100	309,503
Distribution	391,400	594,800	701,800	(R) 864,600	(R) 955,600	(R) 949,800	(R) 1,001,800	(R) 1,003,100	(R) 1,022,100	(R) 1,007,500	(R) 1,045,600	(R) 1,066,300	1,079,565
Field and gathering	55,800	66,300	83,500	(R) 32,400	(R) 31,300	(R) 30,900	(R) 29,600	(R) 34,700	(R) 29,000	(R) 31,800	(R) 27,100	(R) 20,100	22,313
Number of employees⁵													
Gas utility industry totals	206,400	211,700	215,400	204,200	187,200	179,000	179,000	154,600	154,200	143,600	135,600	(R) 135,000	140,000
Investor-owned companies^d, total													
Transmission pipeline companies	31,400	32,400	45,200	37,400	31,000	28,000	32,300	27,500	28,400	29,400	26,400	26,000	26,000
Distribution pipeline companies	N	N	52,100	64,700	62,400	61,600	79,700	75,000	71,300	71,400	69,500	(R) 53,000	55,000
Integrated pipeline companies	N	N	53,200	39,900	39,400	36,400	12,700	12,300	12,000	6,200	6,000	5,000	6,000
Combination pipeline companies	N	N	52,200	50,100	42,900	42,900	38,700	30,600	30,700	26,100	23,200	(R) 39,000	36,000
Number of interstate natural gas pipeline companies^{e,6}													
	87	89	91	132	79	92	84	101	97	U	U	U	U
PERFORMANCE (million cubic ft.)⁷													
Marketed production, total	12,771,038	21,920,642	20,179,724	18,593,792	19,709,525	19,506,474	19,812,241	19,866,093	19,961,348	19,804,848	20,197,511	(R) 20,570,295	19,920,789
Delivered to consumers, total	10,382,681	19,018,462	18,216,233	16,818,882	18,898,635	19,660,161	20,005,508	20,781,554	(R) 20,437,798	(R) 20,680,843	(R) 21,539,964	(R) 20,495,108	21,236,462
Consumed, total	11,966,537	21,139,386	19,877,293	18,715,090	20,707,717	21,580,665	21,966,616	22,736,203	(R) 22,245,956	(R) 22,405,151	(R) 23,333,121	(R) 22,238,624	23,017,983
Gas used as a pipeline fuel, total	347,075	722,166	634,622	659,816	685,362	700,335	711,446	751,470	635,477	645,319	642,210	(R) 624,964	667,027
SAFETY⁸													
Fatalities	N	26	15	6	21	18	48	10	(R) 19	(R) 18	37	7	10
Injured persons	N	233	177	69	113	53	114	72	(R) 75	(R) 88	77	51	50
Incidents	N	1,077	1,524	198	222	161	187	175	236	(R) 172	234	(R) 210	184

KEY: N = data do not exist; R = revised; U = data are not available.

^a Does not add due to omission of line from source table for depreciation and other noncash expenses.

^b Figures obtained by addition / subtraction and may not appear directly in data source.

^c Industry total includes integrated and combination company totals in addition to distribution and transmission company totals.

^d Number of employees in investor-owned companies is the sum of employees in distribution, transmission, integrated and combination companies.

^e Beginning in 1991 the number of interstate natural gas pipeline companies is calculated using the Federal Energy Regulatory Commission's FASTR database, which contains a listing by year of pipeline companies that are regulated and, therefore, required to pay tariff duties to the federal government. Data for the years prior to 1991 were collected from the Energy Information Administration's discontinued publication *Statistics of Interstate Natural Gas Pipeline Companies*. Data from the two sources may not be comparable.

NOTES

Numbers may not add to totals due to rounding.

Gas utility industry totals include employees in privately owned companies.

SOURCES

¹ 1960-1970: American Gas Association, *Gas Facts, 1979* (Arlington, VA: 1980), table 134. 1980-2002: Ibid., *Gas Facts, 2003* (Washington, DC: 2004), table 11-2 and similar tables in earlier editions.

² 1980: American Gas Association, *Gas Facts, 1979* (Arlington, VA: 1980), table 134. 1990-2002: Ibid., *Gas Facts, 2003* (Washington, DC: 2004), table 11-1 and similar tables in earlier editions.

³ 1980-2002: American Gas Association, *Gas Facts, 2003* (Washington, DC: 2004), tables 11-1, 11-2, 11-3, and 11-4 and similar tables in earlier editions.

⁴ 1960-1970: American Gas Association, *Gas Facts, 1979* (Arlington, VA: 1980), table 44. 1980-2002: Ibid., *Gas Facts, 2003* (Washington, DC: 2004), tables 5-1, 5-3, and similar tables in earlier editions.

⁵ 1960-1980: American Gas Association, *Gas Facts, 1979* (Arlington, VA: 1980), table 153. 1990-2002: Ibid., *Gas Facts, 2003* (Washington, DC: 2004), table 13-2, and similar tables in earlier editions.

⁶ 1960-1990: U.S. Department of Energy, Energy Information Administration *Statistics of Interstate Natural Gas Pipeline Companies* (Washington, DC: Annual issues), preface. 1991-1998: Federal Energy Regulatory Commission *FERC Automated System for Tariff Retrieval* (FASTR database), Internet website <http://www.ferc.gov/industries/gas/gen-info/fastr/index.asp> as of Feb. 18, 2004.

⁷ 1960-1995: U.S. Department of Energy, Energy Information Administration *Natural Gas Annual, 1998* (Washington, DC: October 1999), table 98. 1996-2002: Ibid., *Natural Gas Annual, 2002*, (Washington, DC: 2004), table 1.

⁸ U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, DPS-35, Internet website <http://ops.dot.gov/stats.htm> as of July 12, 2004.

Source and Accuracy Statements

Data Source and Accuracy Statements

Chapter 1 Extent, Condition, and Performance

TABLE 1-1. System Mileage Within the United States

Highway

The Highway Performance Monitoring System (HPMS) is the source of road mileage data and is considered reliable. (See box 1-1 for detailed information about the HPMS.) The Federal Highway Administration (FHWA) of the U.S. Department of Transportation (USDOT) collects and reviews state-reported HPMS data for completeness, consistency, and adherence to specifications. Some inaccuracy may arise from variations across states in their adherence to federal guidelines in the Traffic Monitoring Guide and the *Highway Performance Monitoring System Field Manual for the Continuing Analytical and Statistical Database*.

Beginning with the 1997 issue of *Highway Statistics*, FHWA instituted a new method for creating mileage-based tables derived from the HPMS. Previously, adjustments to tables developed from sample data were made using area-wide mileage information provided by states. These adjustments are now being made using universe totals from the HPMS dataset. In addition, FHWA has discontinued the process of spreading rounding and other differences across table cells. Thus, users may note minor differences in table-to-table totals. FHWA considers mileage totals from table HM-20, “Public Road Length, Miles by Functional System” to be the controlling totals should a single value be required.

Reliability may be diminished for comparisons with pre-1980 data, which were collected via different methods and special national studies. For instance, pre-1980 mileage data included some nonpublic roadways (95,000 miles in 1979) while post-1980 data reports only public road mileage

(roads or streets governed and maintained by a public authority and open to public travel).

Class I Rail

These data are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). AAR data are based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. The STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 1999, the adjusted threshold for Class I railroads was \$258.5 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive years. Although Class I railroads encompasses only 2 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated.

To obtain railway mileage, AAR subtracts track-age rights from miles of rail traveled on line 57 in the Schedule 700 report. Historical reliability may vary due to changes in the railroad industry, including bankruptcies, mergers, and declassification by the STB. Small data errors may also exist because of independent rounding of this series by AAR.

Amtrak

These statistics originate from the Statistical Appendix to *Amtrak's Annual Report*. Amtrak estimates track mileage based on point-to-point city timetables that railroad companies provide for engineers. The figures are estimates, but are considered reliable.

Box 1-1.

Highway Performance Monitoring System

Sampling Frame Construction

The Highway Performance Monitoring System (HPMS) sample is a stratified simple random sample of highway links (small sections of roadway) selected from state inventory files. The 1997 sample consists of about 120,000 samples. Each state maintains an independent inventory of highway road links for those roads that the state is responsible for (in some cases this can be a low percentage of total road miles within the state). Lower jurisdictions (MPO's, counties, cities, national parks, Indian reservations, etc.) may also maintain inventories of highway links under their jurisdiction. The HPMS sample was originally selected in 1978 based on guidelines provided by the FHWA for sampling highway systems excluding those roads functionally classified as local. The sampling frame for the state systems were the state inventories. The estimates represent the highway systems of each state. The HPMS sample was designed as a fixed sample to minimize data collection costs but adjustments to maintain representativeness are carried out periodically. The HPMS also consists of universe reporting (a complete census) for the Interstate and the National Highway System, and tabular summary reporting of limited information. A small number of data items (about 30) are reported for the complete universe. The universe information contains no sampling error. There are 4 tables reported as part of the summary.

Stratification

The HPMS sample (and universe) is stratified by state, type of area (rural, urban, and individual urbanized areas), highway functional classification, and traffic (annual average daily traffic (AADT) volume groups). Complete information is provided in the HPMS *Field Manual*.

Weighting

The HPMS sample expansion factors are the ratio of universe mileage to sample mileage in each strata.

Data Collection

Data are collected independently by the 50 states, metropolitan planning organizations (MPOs), and lower jurisdictions. Many of the geometric data items rarely change, such as number of lanes. Others change frequently, such as traffic. Typically, the states maintain data inventories that are the repositories of a wide variety of data items. The HPMS data items are extracted from these inventories. For example, each State has a traffic volume counting program. Typically, equipment is installed or placed on the roads to measure traffic. The counts are then converted to annual average daily traffic (AADT) and stored in the state databases. AADT is one of the sample and universe items extracted from the inventories and reported to the HPMS. The FHWA provides guidelines for data collection in the HPMS *Field Manual*, which the states follow to varying extents depending on issues such as staff, resources, state perspective, uses of the data, state/MPO/local needs for data, etc. Traffic data collection, for example, is an expensive and dangerous undertaking, particularly in high volume urban areas.

State departments of transportation report HPMS data annually to the FHWA. There are about 80 data items reported for the sample component. The reporting deadline is June 15. Except for special cases where major problems occur, data items are reported for each sample. There is no provision for nonresponse since a number is available for each section in the state inventories; however, states do leave items blank to indicate that no data collection has taken place for a specific item (e.g., if no system to measure pavement has been implemented in the state, the pavement condition item may be left blank). The HPMS has gone through a major restructuring effort, and major data item reductions, modifications, and other changes will begin to be implemented with the 1999 data reported by June 15, 2000.

Sampling Error

The sample size is estimated based on traffic volume (AADT) within each stratum. Traffic volume is the most variable data item. Sampling error can be estimated directly based on the sample design for each stratum and aggregated by stratified random sample methods to total values. This exercise was done originally in 1980 for some of the most variable data items including vehicle-miles traveled. It has not been repeated since due to the work involved and the limited impact of sampling error as compared to nonsampling error.

Nonsampling Error

This is a major item of concern for the HPMS. For some of the most variable and important data items, such as AADT, guidelines for measurement and data collection have been produced. States have the option of using the guidelines or using their own procedures. Many data items are difficult and costly to collect and are reported as estimates not based on direct measurement. The data are collected and reported by many entities and individuals within the responsible organizations. Most do a reasonably good job, but staff turnover, cost, equipment issues, etc., can create difficulties identifying data problems. As mentioned before, a response is usually provided for each link as included in state inventories. For highway links not the responsibility of states, metropolitan planning organizations and lower jurisdictions using a wide variety of methods may collect the data. This is a major area of concern and efforts are underway within States to standardize data collection. The major effort with the HPMS is to ensure the collection and reporting of reliable annual data. The FHWA field offices in each state conduct annual verification of the data reported. Computer software is provided to build the database and conduct logic edits prior to submittal. The reported data are subjected to intense editing and comparison with previous reporting and a written annual report is provided to each state to document problems found and encourage correction. Data resubmittal is requested in cases where major problems are found. The process involves many people and substantial resources, but it provides extensive quality assurance. Complete information on data items, edits, processing, expansion, sample design, definitions, data reporting, etc., is included in the HPMS *Field Manual*.

Transit

These data are based on information in the U.S. Department of Transportation, Federal Transit Administration (FTA), National Transit Database (NTD). The legislative requirement for the NTD is found in Title 49 U.S.C. 5335(a). Transit agencies receiving funds through the Urbanized Area Formula Program are generally required to report financial and operating data, including vehicle inventories and directly operated mileage. Transit operators that do not report to FTA are those that do not receive Urbanized Area Formula Funding, typically private, small, and rural operators. The data are generally considered accurate because FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret certain data definitions.

Navigable Channels

These statistics originate from a mid-1950s U.S. Army Corps of Engineers (USACE) estimate that there were approximately 25,000 miles of commercially important navigable channels in the United States. That number has been adjusted from time to time, for example, by addition of the 234-mile Tennessee-Tombigbee Waterway in the early 1980s. The 25,000 plus mile number has been universally quoted for decades, but has definitional

and methodological uncertainties. USACE is currently developing a rigorous, Global Information System (GIS)-based approach to facilitate tabulation of the lengths of shallow and deep-draft commercially navigable waterways in the United States; this calculation will be available in several years.

Oil Pipeline

The data are from *Transportation in America*, published by the Eno Transportation Foundation, Inc. (Eno). The numbers reprinted here for 1960, 1965, 1970, and 1975 are Eno estimates from the U.S. Department of Energy (DOE) *Energy Data Report* issues labeled “Crude-oil and Refined Products Mileage in the United States.” Eno estimated the 1980 number based on the assumption that refinement of old, less profitable, and smaller lines exceeded in mileage the construction of new, larger, and more profitable lines. Post-1985 data were calculated using a base figure reported in a 1982 USDOT study entitled *Liquid Pipeline Director* and then combined with data from the Association of Oil Pipe Lines and the Oil Pipeline Research Institute. Lack of additional information raises definitional and methodological uncertainties for the data’s reliability. Moreover, the three different information sources introduce data discontinuities, making time comparisons unreliable.

Gas Pipeline

These statistics originate from annual editions of *Gas Facts*, published by the American Gas Association (AGA). The data reported by the AGA are based on gas utilities participation and reporting to the *Uniform Statistical Report*. Utilities reporting represented 98 percent of gas utility industry sales while the remaining 2 percent was estimated for nonreporting companies based on recent historical experience. Varying percentages of nonreporters from year to year introduce minor reliability problems for time-series comparisons.

TABLE 1-2. Number of Air Carriers, Railroads, Interstate Motor Carriers, Marine Operators, and Pipeline Operators

Air Carriers

The data are from the *Air Carrier Financial Statistics Quarterly*, published by the Office of Airline Information of the U.S. Department of Transportation, Bureau of Transportation Statistics (BTS). The Alphabetical List of Air Carriers by Carrier Group at the beginning of each fourth quarter edition is used to determine the number of major air carriers and other air carriers in operation at the end of each calendar year. The publication draws its data from the T-100 and T-100(f) databases maintained by BTS. These databases include data obtained from a 100-percent census of BTS Form 41 schedule submissions by large certificated air carriers, which are carriers that hold a certificate issued under section 401 of the Federal Aviation Act of 1958 and that (1) operate aircraft designed to have a maximum passenger seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds or (2) that conduct international operations. Carriers are grouped as major, national, large regional, or medium regional based on their annual operating revenues. The thresholds were last adjusted July 1, 1999 and the threshold for major air carriers is currently \$1 billion. The table combines the number of national, large regional, and medium regional air carriers into the other air carrier category.

Railroads

The Association of American Railroads (AAR)'s *Railroad Ten-Year Trends* series is the source for

the number of railroads. The number of Class I railroads is based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. The STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2000, the adjusted threshold for Class I railroads was \$261.9 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive years. Although Class I railroads encompasses only 1 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated.

The Association of American Railroads determines the number of non-Class I railroads through an annual survey sent to every U.S. freight railroad. By following up with nonrespondents, the AAR obtains essentially a census of railroads. Use of the current survey instrument began in 1986.

Interstate Motor Carriers

The Motor Carrier Management Information System (MCMIS), maintained by the U.S. Department of Transportation, Federal Motor Carrier Safety Administration, contains information on the safety of all commercial interstate motor carriers and hazardous material (HM) shippers subject to the Federal Motor Carrier Safety Regulations and the Hazardous Materials Regulations. All carriers operating in interstate or foreign commerce within 90 days of beginning operations must submit a Form MCS-150, Motor Carrier Identification Report. Carriers may also use the form to update their information. The Motor Carrier Safety Improvement Act of 1999 requires that reports be periodically updated, but not more than once every two years. MCMIS is updated as soon as information is provided and verified, and periodic archives are made. Historical data are available from summary information previously prepared, including tables and reports. MCMIS began operations in 1980. Safety data since 1990 are available to the public.

Marine Vessel Operators

The U.S. Army Corps of Engineers (USACE) provides the data for marine vessel operators

through the *Waterborne Transportation Lines of the United States*. Data are collected by the USACE's Navigation Data Center (NDC) by various means, including the U.S. Coast Guard's registry, maritime service directories, and waterway sector publications. However, an annual survey of companies that operate inland waterway vessels is the principle source of data. More than 3,000 surveys are sent to these companies and response rates are typically above 90 percent. However, a USACE official did report that less than 10 percent of the total number of companies operating inland water vessels either did not receive or respond to the annual survey.

Pipeline Operators

The Office of Pipeline Safety (OPS) in the U.S. Department of Transportation's Research and Special Programs Administration collects annual report data from natural gas transmission and distribution operators as required by 49 CFR 191.17 and 191.11, respectively. Annual data must be submitted by March 15 of the following calendar year. No annual report is required for hazardous liquid pipeline operators. However, information is available through the pipeline safety program. Since 1986, the program has been funded by fees assessed to each OPS-regulated pipeline operator based on per-mile of hazardous pipeline operated. Data for each operator and each mile of pipeline are stored in the OPS user-fee database, which is revised annually as updated fees are assessed.

Totals for pipeline operators in this table will differ from those in other tables due to differences in the regulatory authority of USDOT and the Federal Energy Regulatory Commission (FERC). FERC regulates only interstate pipelines, whereas DOT regulates both interstate and intrastate pipelines, except for rural gathering lines and some offshore pipelines, which fall under jurisdiction of the U.S. Coast Guard or the U.S. Department of the Interior's Minerals Management Service. An OPS official stated that FERC regulates about two-thirds the amount of pipeline mileage that USDOT regulates.

TABLE 1-3. Number of U.S. Airports

The Federal Aviation Administration (FAA), Office of Airport Safety and Standards *Administrator's Fact Book* (annual issues) furnished the data shown in this table and includes airports certified

for air carrier operations with aircraft that seat 30 or more passengers. These airports include civil and joint civil-military use airports, heliports, STOLports (short takeoff and landing), and seaplane facilities. The FAA obtained this data via physical inspections and mail solicitations of all federally regulated landing facilities. Since this is a census of all U.S. airports, reliability should be high. Data, however, may be subject to reporting errors typical of administrative recordkeeping.

TABLE 1-4. Public Road and Street Mileage in the United States by Type of Surface

TABLE 1-5. U.S. Public Road and Street Mileage by Functional System

TABLE 1-6. Estimated U.S. Roadway Lane-Miles by Functional Class

The Highway Performance Monitoring System (HPMS) is the source of road mileage data and is considered reliable. (See box 1-1 for detailed information about the HPMS.) The U.S. Department of Transportation, Federal Highway Administration collects and reviews state-reported HPMS data for completeness, consistency, and adherence to specifications. Some inaccuracy may arise from variations across states in their adherence to federal guidelines in the Traffic Monitoring Guide and the *Highway Performance Monitoring System Field Manual for the Continuing Analytical and Statistical Database*.

Beginning with the 1997 issue of *Highway Statistics*, FHWA instituted a new method for creating mileage-based tables derived from the HPMS. Previously, adjustments to tables developed from sample data were made using area-wide mileage information provided by states. These adjustments are now being made using universe totals from the HPMS dataset. In addition, FHWA has discontinued the process of spreading rounding and other differences across table cells. Thus, users may note minor differences in table-to-table totals. FHWA considers mileage totals from table HM-20, "Public Road Length, Miles by Functional System" to be the controlling totals should a single value be required.

Lane-miles are calculated by multiplying the centerline length by the number of through lanes. Because the HPMS requires that the number of lanes be reported for all principal arterials, other National Highway System (NHS) roads, and all standard

samples, lane length can be computed for the Interstate, other principal arterials, and the NHS on a 100-percent basis. For minor arterials, rural major collectors, and urban collectors, lane length is calculated based on standard sample sections using the reported number of through lanes, length of section, and an expansion factor. FHWA uses the expanded sample to check that the centerline length of a state's functional system matches the universe functional system length. If the centerline length and functional system length do not match, FHWA may ask a state to make adjustments.

Reliability may be diminished for comparisons with pre-1980 data, which were collected via different methods and special national studies. For instance, pre-1980 mileage data included some nonpublic roadways (95,000 miles in 1979) while post-1980 data reports only public road mileage (roads or streets governed and maintained by a public authority and open to public travel).

TABLE 1-7. Number of Stations Served by Amtrak and Rail Transit, Fiscal Year

These numbers originate from Amtrak's Statistical Appendix to *Amtrak's Annual Report* and the U.S. Department of Transportation, Federal Transit Administration's National Transit Database.

Amtrak maintains a computer database with a record of every station, locomotive, and car it operates. Those records include for each vehicle the year built, its service status (operating or not on a daily basis), and location. These data should be considered very reliable.

TABLE 1-8. ADA Accessible Rail Transit Stations by Agency

TABLE 1-9. ADA Lift- or Ramp-Equipped Transit Buses

These data are based on information in the U.S. Department of Transportation, Federal Transit Administration (FTA), National Transit Database (NTD). The legislative requirement for the NTD is found in Title 49 U.S.C. 5335(a). Transit agencies receiving funds through the Urbanized Area Formula Program are generally required to report financial and operating data, including certain aspects of station and vehicle accessibility. Transit operators that do not report to FTA are those that do not receive Urbanized Area Formula Funding, typically

private, small, and rural operators. The data are generally considered accurate because FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret certain data definitions.

TABLE 1-10. U.S. Oil and Gas Pipeline Mileage

Oil Pipeline

The data are from *Transportation in America*, published by the Eno Transportation Foundation, Inc. (Eno). The numbers reprinted here for 1960, 1965, 1970, and 1975 are Eno estimates from the U.S. Department of Energy's *Energy Data Report* issues labeled "Crude-oil and Refined Products Mileage in the United States." Eno estimated the 1980 number based on the assumption that refinement of old, less profitable, and smaller lines exceeded in mileage the construction of new, larger, and more-profitable lines. Figures from 1985 and later years are calculated from a base figure that Eno obtained from the 1982 U.S. Department of Transportation study *Liquid Pipeline Director* and then incorporated that figure with data from the Association of Oil Pipe Lines and the Oil Pipeline Research Institute. Lack of additional information raises definitional and methodological uncertainties for the data's reliability. Moreover, the three different information sources introduce data discontinuities making time comparisons less reliable.

Gas Pipeline

These statistics originate from annual editions of *Gas Facts* published by the American Gas Association (AGA). The data reported by AGA are based on gas utilities participation and reporting to the Uniform Statistical Report. Utilities reporting in 1991 represented 98 percent of total gas utility industry sales while the remaining 2 percent was estimated for the nonreporting companies based on recent historical experience. Varying percentages of nonreporters from year to year introduce minor reliability problems for time-series comparisons.

TABLE 1-11. Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyances**TABLE 1-12. Sales or Deliveries of New Aircraft, Vehicles, Vessels, and Other Conveyances****Civilian Aircraft**

The Aerospace Industries Association (AIA) provided this data in their annual issues *Aerospace Facts and Figures*, “Civil Aircraft Shipments.” AIA collects their data from aircraft company reports, the General Aviation Manufacturers Association (GAMA), and the U.S. Department of Commerce’s (DOC) International Trade Administration. DOC data provide total number of shipments and exports, and the difference computed by AIA equals domestic shipments. DOC collects shipments data separately for individual factories or establishments and not at the company level. A potential limitation of this approach is when a factory producing aircraft for shipment also makes aircraft parts. If the establishment has 80 percent of its production in aircraft and 20 percent in parts, all of the output is attributed to aircraft shipments.

Transport

The Aerospace Industries Association (AIA) is the source of these data. AIA obtains quarterly data from Boeing Corp., now the sole U.S. manufacturer of transport aircraft, and publicly available financial disclosure information filed with the U.S. Securities and Exchange Commission (SEC) via Form 10-k. SEC requires a publicly traded company to file an annual report 90 days after the end of the company’s fiscal year to provide an overview of that business.

Helicopters

AIA surveyed and received data from all 10 major helicopter manufacturers on their sales and deliveries.

General Aviation

The general aviation figures are taken from the *General Aviation Statistical Databook* published by the GAMA. General aviation refers usually to the small aircraft industry in the United States. GAMA collects quarterly data from the 10 to 14

manufacturers who nearly equal a census of the general aviation sector.

Passenger Car, Truck, Bus, and Recreational Vehicles

Ward’s *Motor Vehicle Facts and Figures* is the source of these data. Ward’s obtains sales data directly from manufacturers. Readers should note that automobile manufacturers have inflated sales figures in the past, but Ward’s does contact companies to verify numbers that appear too high or low.

Motorcycle

The Motorcycle Industry Council, Inc. (MIC) publishes the *Motorcycle Statistical Annual*, which is the source for these data. MIC derived the estimate for new retail motorcycle sales for each state from the *MIC Retail Sales Report*, and adjusted for total retail sales. Motorcycle company reports provided sales data. Prior to 1985, all-terrain vehicles (ATVs) were included in the motorcycle total. In 1995, the Motorcycle Industry Council revised its data for the years 1985 to present to exclude all terrain vehicles from its totals.

Bicycle

The National Bicycle Dealers Association (NBDA) reported these data, which are based on Bicycle Manufacturers Association (BMA) information through 1996. BMA stopped reporting members’ shipments in 1996. Moreover, BMA represents the largest bicycle manufacturers (Huffy, Roadmaster, and Murray), and thus the data do not reflect specialty bike makers or other manufacturers. The Bike Council estimated 1997 through 2001 figures in the table. According to a Bicycle Council representative, the estimates are a combination of domestic forecasts produced by a panel of industry experts and import data from monthly U.S. census databases.

Transit

The American Public Transit Association provided these figures, which are based on information in the U.S. Department of Transportation, Federal Transit Administration (FTA), National Transit Database. These data are generally considered accurate because the FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies

cannot obtain accurate information or misinterpret data. APTA conservatively adjusts FTA data to include transit operators that do not report to the database (private, very small, and rural operators).

Class I Rail

The data are from Railroad Facts, published annually by the Association of American Railroads (AAR). AAR data are based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2000, the threshold for Class I railroads was \$261.9 million. Although Class I railroads encompasses only 2 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated. Historical reliability may vary due to changes in the railroad industry, including bankruptcies, mergers, and declassification by the STB. Small data errors may also have occurred because of independent rounding in this series by the AAR.

Amtrak

Amtrak maintains a computer database with a record of every locomotive and car it operates. For each vehicle, those records include the year built, its service status (operating or not on a daily basis), and location. These data should be considered very reliable.

Water Transportation

U.S. Department of Transportation, Maritime Administration (MARAD), which classifies vessels as merchant based on size and type, reports these data in annual issues of its *Merchant Fleets of the World*. MARAD compiles these figures from a data service provided by Lloyd's Maritime Information Service. The parent company, Lloyd's Register (LR), collects data from several sources: its 200 offices worldwide, data transfers and agreements with other classification societies, questionnaires to ship owners and shipbuilders, feedback from government agencies, and input from port agents. According to an LR official, consistent data gathering methods have been maintained for more than

30 years but cautioned that inconsistencies may occur in groupings of ship types over time. For example, tank barges are now included in the tanker ship-type grouping rather than the barge grouping.

TABLE 1-13. Active Air Carrier and General Aviation Fleet by Type of Aircraft

Air Carrier, Certificated, All Services

Prior to 1995, data originated from the U.S. Department of Transportation, Federal Aviation Administration (FAA), *FAA Statistical Handbook of Aviation*. Later data are from the Aerospace Industries Association (AIA), *Aerospace Facts and Figures*. However, *Aerospace Facts and Figures* is compiled from the *FAA Statistical Handbook of Aviation*. U.S. air carrier fleet data are based on reports collected by FAA field offices from carriers. The reports include information on the number of aircraft by type used in air carrier service. The FAA points out that this information is not an inventory of the aircraft owned by air carriers, but represents the aircraft reported to the FAA as being used in air carrier fleet service. The reported aircraft are all aircraft carrying passengers or cargo for compensation or hire under 14 CFR 121 and 14 CFR 135.

General Aviation

The 1960-1980 figures originated from the *FAA Statistical Handbook of Aviation*. Later data are from FAA annual issues of the *General Aviation and Air Taxi Activity (GAATA)* Survey report, table 3.1. The FAA collects both aircraft registration data and voluntary information about aircraft operation, equipment, and location. Before 1978, the FAA mandated owners to annually register their aircraft for the Aircraft Registration Master File. This was a complete enumeration of operating aircraft. Registrants were also asked to voluntarily report information on hours flown, avionics equipment, base location, and use. The FAA changed their data collection methodology in 1978. The annual registration requirement became triennial and the General Aviation Activity and Avionics Survey was initiated to sample aircraft operation and equipment data.

The General Aviation Activity and Avionics Survey was renamed the General Aviation and Air

Taxi Activity Survey in 1993 to reflect the fact that the survey includes air taxi aircraft. This survey is conducted annually and encompasses a stratified, systematic design from a random start to generate a sample of all general aviation aircraft in the United States. It is based on the FAA registry as the sampling frame. FAA established three stratification design variables in the survey: 1) the average annual hours flown per aircraft by aircraft type, 2) the aircraft manufacturer/model characteristics, and 3) the state of aircraft registration.

Data Reliability

Because of the change in 1978, the reliability of comparisons over time will be affected. The FAA asserted that the change to a triennial registration deteriorated the Aircraft Registration Master File in two ways. First, the resulting lag in registration updates caused the number of undeliverable questionnaires to steadily increase over the three-year period. Second, inactive aircraft would remain in the registry, inflating the general aviation fleet count. In addition, a new regulation added two categories of aircraft to the general aviation fleet. However, FAA concluded that these changes resulted in no more than a five-percent error in the fleet population estimate.

The reliability of the GAATA survey can be impacted by two factors: sampling and nonsampling error. A measure, called the standard error, is used to indicate the magnitude of sampling error. Standard errors can be converted for comparability by dividing the standard error value by the estimate (derived from sample survey results) and multiplying it by 100. This quantity, referred to as the percent standard error, totaled seven-tenths of a percent in 1997 for the general aviation fleet. A large standard error relative to an estimate indicates lack of precision and, inversely, a small standard error indicates precision.

Nonsampling errors could include problems such as nonresponse, respondent's inability or unwillingness to provide correct information, differences in interpretation of questions, and data-entry mistakes. Readers should note that nonresponse bias might be a component of reliability errors in the data from 1980 to 1990. The FAA conducted telephone surveys of nonrespondents in 1977, 1978, and 1979 and found no significant differences or inconsistencies in respondents' and

nonrespondents' replies. The FAA discontinued the telephone survey of nonrespondents in 1980 to save costs. Nonresponse surveys were resumed in 1990, and the FAA found notable differences and thus adjusted its fleet estimates. The 1991 through 1996 data have been revised to reflect nonresponse bias. In 1997, a sample of 29,954 aircraft was identified and surveyed from an approximate population of 251,571 registered general aviation aircraft. Just over 65 percent of the sample responded to the survey.

Highway, Total (registered vehicles)

The 1960 to 1980 figures are from the U.S. Department of Transportation, Federal Highway Administration (FHWA) document, *Highway Statistics, Summary to 1985*, table MV-201 and related tables. Data quality and consistency will be less reliable for these years because of a diversity of registration practices from state to state. Users should recognize that motor vehicle statistical information is not necessarily comparable across all states or within a state from year to year. For instance, the FHWA reported that separate data on single-unit trucks and combinations was unobtainable from all states in 1990.

After 1980, the FHWA began to use the Highway Performance Monitoring System (HPMS) database, which improved data reliability. FHWA reviews state-reported HPMS data for completeness, consistency, and adherence to these specifications. Some inaccuracy may arise from variations across states in their adherence to federal guidelines in the *Highway Performance Monitoring System Field Manual for the Continuing Analytical and Statistical Database*.

If choosing to compare state data, the FHWA recommends that users carefully select a set of peer states that have characteristics similar to the specific comparison. Improperly selected peer states are likely to yield invalid data comparisons. Characteristics that a user needs to consider in determining compatibility of a peer state include similarities and differences in urban/rural areas, population densities, degrees of urbanization, climate, geography, state laws and practices that influence data definitions, administrative controls of public road systems, state economies, traffic volumes, and degrees of centralization of state functions. The FHWA has

developed a set of variables that users may use to determine appropriate peer states.

Other 2-Axle 4-Tire Vehicle (truck)

Sources for these figures included FHWA's *Highway Statistics, Summary to 1995* (table VM-201A) and annual issues of *Highway Statistics* (table VM-1). FHWA compiles these figures from the U.S. Bureau of the Census' Truck Inventory and Use Survey (TIUS). Since 1963, Census has conducted the TIUS every five years with the last survey completed in 1997. The Census Bureau changed the name of the survey to the Vehicle Inventory and Use Survey (VIUS) in 1997. The VIUS collects data and the physical and operational characteristics of the nation's truck population. In 1997, 131,000 trucks were surveyed from an estimated universe of over 75 million trucks. Chronological reliability may be diminished due to sampling design changes in 1977, 1982, and 1992. In 1977, the sampling universe was first stratified by the number of trucks in a state: large (> 1.5 million trucks), medium (700,000 to 1.5 million), and small (< 700,000); and then by two truck sizes.

Stratification in 1982 was then based on body type rather than vehicle weight. In 1992 and 1997, the sampling universe was first subdivided geographically and then into five strata: 1) pickups, 2) vans, 3) single-unit light, 4) single-unit heavy, and 5) truck tractor. Cases were then selected randomly within each stratum.

Census delivered a mail-out/mail-back survey to the owner identified in the vehicle registration records. Data collection is staggered as state records become available. Owners report data only for the vehicles selected. In the 1992 survey, a method was employed to also collect data on new truck purchases in the latter half of the year to estimate the fleet for the calendar year. This adjustment in the sampling frame had not been done in previous surveys and may diminish chronological reliability. The sample for 1997 was some 22,500 vehicles smaller than for 1992. The 1997 VIUS had two sampling stages. For the first stage, the Census Bureau surveyed about 131,000 trucks registered as of July 1, 1997. The second stage sampled a total of 3,000 truck owners with state mailing addresses different from the state of truck registration.

The accuracy and reliability of the VIUS survey depends jointly on sampling variability and non-

sampling errors. Standard errors arising from sampling variability can be converted for comparability by dividing the standard error value by the estimate and multiplying it by 100. This quantity, referred to as the percent standard error, totaled two-tenths of a percent in 1992 and 1997 for the VIUS sample. A large standard error relative to an estimate indicates lack of precision and, inversely, a small standard error indicates precision. The 1992 TIUS achieved over 90.2 percent reporting and the 1997 response rate equaled 84.5 percent, thus reliability may have decreased in the most recent survey.

Transit

The American Public Transit Association (APTA) provided these data, which are based on the Federal Transit Administration (FTA), National Transit Database. These data are generally accurate because the FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret data. APTA conservatively adjusts FTA data to include transit operators that do not report to the database (private, very small, and rural operators).

Railroad (all categories)

The data are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). AAR data are based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. Thus, data estimates are considered very reliable. The STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2000, the adjusted threshold for Class I railroads was \$ 261.9 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive years. Although Class I railroads encompasses only 2 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated.

AAR determines the number of non-Class I railroads through an annual, comprehensive survey sent to every U.S. freight railroad. By following up with nonrespondents, the AAR obtains essentially

a 100 percent census of all railroads. Use of the current survey instrument began in 1986.

Amtrak

Amtrak maintains a computer database with a record of every locomotive and car it operates. For each vehicle, those records include the year built, service status (operating or not operating on a daily basis), and location. This data should be considered very reliable.

Water Transportation

The source for Inland Nonselved Propelled Vessels, Self-Propelled Vessels, and flag passenger and cargo vessels is the U.S. Army Corps of Engineers (USACE), *Waterborne Transportation Lines of the United States*, annual issues. Data are collected by the USACE's Navigation Data Center (NDC) by various means, including the U.S. Coast Guard's registry, maritime service directories, and waterway sector publications. However, an annual survey of companies that operate inland waterway vessels is the principle source of data. More than 3,000 surveys are sent to these companies, and response rates are typically above 90 percent. However, a USACE official did report that less than 10 percent of the total number of companies operating inland vessels either did not receive or respond to the annual survey.

Oceangoing Steam Motor Ships

Merchant Fleets of the World, published annually by the U.S. Department of Transportation, Maritime Administration (MARAD), is the source of these data. MARAD, which classifies vessels as merchant based on size and type, compiles these figures from a data service provided by Lloyd's Maritime Information Service (LMIS). The parent company, Lloyd's Register (LR), collects data from 200 offices worldwide, from data transfers and agreements with other classification societies, from questionnaires to ship owners and ship builders, from feedback from government agencies, and from input from port agents. According to an LR official, consistent data-gathering methods have been maintained for more than 30 years. The same official did caution that there are sometimes inconsistencies in groupings of ship types over time. For example, propelled tank barges are now included in the tanker ship-type grouping.

Recreational Boats

Boating Statistics, published annually by the U.S. Coast Guard (USCG), is the source. The USCG derives these figures from state and other jurisdictional reporting of the actual count of valid boat numbers issued. In accordance with federal requirements, all 55 U.S. states and territories require motor-powered vessels to be numbered. However, over half the states do not require non-powered vessels to be numbered. Accuracy can also be diminished by noncompliance of boat owners with numbering and registration laws. In 1996, the USCG estimated that approximately eight million recreational boats are not numbered and, thus, are excluded from the reported number of recreational vessels. The USCG did not provide estimates for the number of boats without numbering in their reports after 1996. Some jurisdictions fail to report by publication deadlines, and the USCG provided estimates based on the previous year's estimate.

TABLE 1-14. U.S. Automobile and Truck Fleets by Use

These statistics originate from two sources. The R.L. Polk Co. provides numbers for commercial fleet vehicles from state registrations. Bobit Publishing Co. also obtains fleet vehicle sales data from automobile manufacturers. These two sources cover nearly 100 percent of fleet vehicles in the United States. Thus, the data should be very accurate.

TABLE 1-15. Annual U.S. Motor Vehicle Production and Factory (Wholesale) Sales

TABLE 1-16. Retail New Passenger Car Sales

TABLE 1-17. New and Used Passenger Car Sales and Leases

TABLE 1-18. Retail Sales of New Cars by Sector

The U.S. Department of Commerce, Bureau of Economic Analysis, uses data from Ward's Automotive Reports. The sectoral break down is derived from registration data obtained from R.L. Polk. Ward's obtains sales data directly from manufacturers. Readers should note that automobile manufacturers have inflated sales figures in the past, but Ward's does contact companies to verify numbers that appear too high or low.

TABLES 1-19 and 1-20. Period Sales, Market Shares, and Sales-Weighted Fuel Economies of New Domestic and Imported Automobiles and Light Trucks, Selected Sales Periods

These data originate from Oak Ridge National Laboratory's (ORNL) Light-Duty MPG and Market Shares System database, which relies on information from monthly Ward's Automotive Reports. Comparisons and observations are made on sales and fuel economy trends from one model year to the next. ORNL has adopted several conventions to facilitate these comparisons, such as the use of sales-weighted average to estimate fuel economy and vehicle characteristics. For example, "sales-weighted" miles per gallon refers to a composite or average fuel economy based on the distribution of vehicle sales. ORNL's methodology for sales-weighting can be found in the Appendix of the *Highway Vehicle MPG and Market Shares Report: Model Year 1990* (the latest published report). The method was changed dramatically in 1983, and data reliability prior to that year is questionable. This information is now published annually in ORNL's *Transportation Energy Data Book*.

TABLE 1-21. Number of Trucks by Weight

These data are derived from the Vehicle Inventory and Use Survey (VIUS) conducted in 1997 by the U.S. Bureau of the Census. This survey, formerly known as the Truck Inventory and Use Survey (TIUS), has been conducted every 5 years since 1963. The VIUS collects data and the physical and operational characteristics of the nation's truck population. In 1997, 131,000 trucks were surveyed from an estimated universe of over 75 million trucks. Chronological reliability may be diminished due to sampling design changes in 1977, 1982, and 1992. In 1977, the sampling universe was first stratified by the number of trucks in a state: large (> 1.5 million trucks), medium (700,000 to 1.5 million), and small (< 700,000); and then by two truck sizes.

Stratification in 1982 was then based on body type rather than vehicle weight. In 1992 and 1997, the sampling universe was first subdivided geographically and then into five strata: 1) pickups, 2) vans, 3) single-unit light, 4) single-unit heavy, and 5) truck tractor. Cases were then selected randomly within each stratum.

Census delivered a mail-out/mail-back survey to the owner identified in the vehicle registration records. Data collection is staggered as state records become available. Owners report data only for the vehicles selected. In the 1992 survey, a method was employed to also collect data on new truck purchases in the latter half of the year to estimate the fleet for the calendar year. This adjustment in the sampling frame had not been done in previous surveys and may diminish chronological reliability. The sample for 1997 was some 22,500 vehicles smaller than for 1992. The 1997 VIUS had two sampling stages. For the first stage, the Census Bureau surveyed about 131,000 trucks registered as of July 1, 1997. The second stage sampled a total of 3,000 truck owners with state mailing addresses different from the state of truck registration.

The accuracy and reliability of the VIUS survey depends jointly on sampling variability and non-sampling errors. Standard errors arising from sampling variability can be converted for comparability by dividing the standard error value by the estimate and multiplying it by 100. This quantity, referred to as the percent standard error, totaled two-tenths of a percent in 1992 and 1997 for the VIUS sample. A large standard error relative to an estimate indicates lack of precision and, inversely, a small standard error indicates precision. The 1992 TIUS achieved over 90.2 percent reporting and the 1997 response rate equaled 84.5 percent, thus reliability may have decreased in the most recent survey.

TABLE 1-22. World Motor Vehicle Production, Selected Countries

Motor Vehicle Production, Factory Sales, and New Passenger Car Retail Sales

Ward's Motor Vehicle Facts & Figures is the source of these data. Ward's obtains sales data directly from manufacturers. Readers should note that automobile manufacturers have inflated sales figures in the past, but Ward's does contact companies to verify numbers that appear too high or low.

Used Passenger Car Sales and Leased Passenger Cars

ADT Automotive Used Car Market Report is the source of these data. The *Wall Street Journal* (WSJ) is the original source of 1999 data. According to

an ADT representative, publishing deadlines require ADT to use WSJ numbers until they can be replaced with National Automotive Dealers Association data. ADT Automotive's Market Analysis Department also gathers figures from CNW Marketing/Research and the R.L. Polk Co. CNW estimates used car sales volumes by collecting state title transfer data and determining if a transaction was made between private individuals or between a consumer and a franchised or independent dealer. This estimate is evaluated by comparing total transactions with state automobile sales revenues. Polk, an additional source of data, maintains a state vehicle registration database. For 1998, the ADT representative stated that Polk's data were within 5 percentage points of CNW estimates.

TABLE 1-23. Number and Size of the U.S. Flag Merchant Fleet and Its Share of the World Fleet

The U.S. Department of Transportation, Maritime Administration, which classifies vessels as merchant based on size and type, compiles these figures from a data service provided by Lloyd's Maritime Information Service. The parent company, Lloyd's Register (LR), collects data from several sources: its 200 offices worldwide, data transfers and agreements with other classification societies, questionnaires to ship owners and shipbuilders, feedback from government agencies, and input from port agents. According to an LR official, consistent data gathering methods have been maintained for more than 30 years, but cautioned that inconsistencies may occur in groupings of ship types over time. For example, tank barges are now included in the tanker ship-type grouping rather than the barge grouping.

TABLE 1-24. U.S. Airport Runway Pavement Conditions

These data originate from the U.S. Department of Transportation, Federal Aviation Administration (FAA), National Plan of Integrated Airport Systems (NPIAS). The NPIAS includes all commercial service airports, all reliever airports, and selected general aviation airports. It does not include more than 1,000 publicly owned public use landing areas, privately owned public use airports, and other civil landing areas not open to the general public. NPIAS airports serve 92 percent of general aviation aircraft (based on an estimated fleet of

200,000 aircraft). In 1998, the NPIAS encompassed 3,344 of the 5,357 airports with public access. Runway pavement condition is classified as follows:

Good: All cracks and joints are sealed.

Fair: Mild surface cracking, unsealed joints, and slab edge spalling.

Poor: Large open cracks, surface and edge spalling, vegetation growing through cracks and joints.

On a rotating basis, the FAA arranges annual inspections for about 2,000 of the approximately 4,700 public-use airports. The inspections are based on funding availability and not on statistical criteria, and nearly all runways are inspected every two years. Inspections are primarily made to collect information for pilots on airport conditions. The FAA relies on state and local agencies to perform inspections, so some inaccuracy may arise from variation in their adherence to federal guidelines regarding pavement condition reporting. In 1998, the U.S. General Accounting Office found that Pavement Condition Index information was available for about 35 percent of NPIAS airports (GAO/RCED-98-226).

TABLE 1-25. Median Age of Automobiles and Trucks in Operation in the United States

The R.L. Polk Co. is a private enterprise that purchases state registration data to maintain a database of operational vehicles. Its data represent a near census of registered vehicles in the United States, and the age estimate should be considered very reliable.

TABLE 1-26. Condition of U.S. Roadways by Functional System

U.S. Department of Transportation, Federal Highway Administration (FHWA) collects pavement condition data from each state through the Highway Performance Monitoring System. The FHWA uses two rating schemes—the Present Serviceability Rating (PSR) and the International Roughness Indicator (IRI). IRI is used to measure the condition of Interstates, other principal arterials, rural minor arterials, and other National Highway System roadways. PSR is used to measure the condition of rural major collectors and urban minor arterials and collectors. Rural minor collectors are not measured. Where IRI data are not reported for sampled sections, the PSR data are

collected. Using the PSR, values range from 0.1 to 5.0, where 5.0 denotes new pavement in excellent condition and 0.1 denotes pavement in extremely poor condition. On the IRI scale however, lower values indicate smoother roads (e.g., <60 for interstate pavement in very good condition to >170 for interstate pavement in poor condition).

The IRI is an objective measure of pavement roughness developed by the World Bank. The PSR is a more subjective measure of a broader range of pavement characteristics and therefore less comparable. Prior to 1993, all pavement conditions were evaluated using PSR values. Beginning with data published in *Highway Statistics 1993*, the FHWA began a transition to the IRI, which should eventually replace the PSR. The change from PSR to IRI makes comparisons between pre-1993 pavement condition data and 1993 and later pavement condition data difficult. Thus, trend comparisons should be made with care.

FHWA indicates that the protocol of measuring pavement roughness is not followed by all states, and some did not report for all required mileage. Totals only reflect those states reporting usable or partially usable data. Column percentages may not sum to 100 and may differ slightly from percentages in source tables, which were adjusted so that they would add to 100. FHWA believes that the IRI data are of “reasonably good quality.”

TABLE 1-27. Condition of U.S. Bridges

These figures are from the U. S. Department of Transportation, Federal Highway Administration (FHWA), National Bridge Inventory Database. State highway agencies are required to maintain a bridge inspection program and inspect most bridges on public roadways at a minimum of every two years. With FHWA approval, certain bridges may be inspected less frequently. A complete file of all bridges is collected and maintained, representing a very reliable assessment of bridge conditions. However, some inaccuracy may be attributable to variations in state inspector’s adherence to the National Bridge Inspection Standards.

TABLE 1-28. Average Age of Urban Transit Vehicles

These figures are based on information in the U.S. Department of Transportation, Federal Transit Administration (FTA), National Transit Database.

The legislative requirement for the NTD is found in Title 49 U.S.C. 5335(a). Transit agencies receiving funds through the Urbanized Area Formula Program are generally required to report financial and operating data, including vehicle inventories. Transit operators that do not report to FTA are those that do not receive Urbanized Area Formula Funding, typically private, small, and rural operators. The data are generally considered accurate because FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret certain data definitions.

TABLE 1-29. Class I Railroad Locomotive Fleet by Year Built

The data are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). Figures reported by AAR are based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2000, the threshold for Class I railroads was \$261.9 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive years. Although Class I railroads encompasses only 2 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated.

TABLE 1-30. Age and Availability of Amtrak Locomotive and Car Fleets

Amtrak maintains a computer database with a record of every locomotive and car it operates. For each vehicle those records include the year built, its service status (operating or not on a daily basis), and location. These data should be considered very reliable.

TABLE 1-31. U.S. Flag Vessels by Type and Age

The data are from the U.S. Army Corps of Engineers (USACE), *Waterborne Transportation Lines of the United States* (WTLUS), annual issues. The

WTLUS database contains information on vessel operators and characteristics and descriptions for all domestic vessel operations. Data are collected by the USACE's Navigation Data Center, primarily through a survey of vessel operating companies. More than 3,000 surveys are sent to these companies and response rates are typically above 90 percent. However, a USACE official did report that less than 10 percent of the total number of companies operating inland vessel fleets either did not receive and/or did not respond to the annual survey.

TABLE 1-32. U.S. Vehicle-Miles

TABLE 1-33. Roadway Vehicle-Miles Traveled (VMT) and VMT per Lane-Mile by Functional Class

TABLE 1-34. U.S. Passenger-Miles

Air Carrier, Certificated, Domestic, All Services

The U.S. Department of Transportation (USDOT), the Bureau of Transportation Statistics, Office of Airline Information, reports aircraft revenue-miles and passenger-miles in its publication *Air Traffic Statistics*. These numbers are based on 100-percent reporting of passengers and trip length by large certificated air carriers. Minor errors arise from nonreporting but amount to less than 1 percent of all air carrier passenger-miles. The figures do not include data for all airlines, such as most scheduled commuter airlines and all nonscheduled commuter airlines. These, if added, may raise total air passenger-miles by about 5 percent.

General Aviation

Passenger-mile numbers for 1975 to present are calculated by adjusting the Interstate Commerce Commission's 1974 figure for air passenger-miles by the percentage change in annual hours flown by general aviation aircraft as published in the USDOT, Federal Aviation Administration (FAA), *FAA Statistical Handbook of Aviation*. Numbers in the handbook are based on the General Aviation and Air Taxi Survey (GAATA). In 1993, the GAATA stopped including commuter aircraft. Commuter-miles collected before 1993 by the GAATA were, according to one FAA official, woefully underreported. Therefore, problems with the estimate of general aviation aircraft include: a break in the series between 1992 and 1993, a possible outdated factor

used to calculate passenger-miles, and the classification of commuter operations.

Highway

Highway vehicle-miles of travel (vmt) are estimated using data from the Highway Performance Monitoring System (HPMS), a database maintained by FHWA that contains information on highway characteristics supplied by individual states. Annual vmt by highway functional system is calculated as the product of the annual average daily traffic (AADT) along each highway section, the centerline length of each highway section, and the number of days in the year. Also, expansion factors are used for roadways that are sampled rather than continuously monitored. Vmt by vehicle type is estimated using vehicle share estimates supplied by states.

FHWA has established methods for collecting, coding, and reporting HPMS data in two manuals: *Traffic Monitoring Guide* (TMG) and *Highway Performance Monitoring System Field Manual*. The prescribed sampling process for collecting highway volume data, which is used to estimate AADT, is based on statistical methods. However, in practice, several factors affect the ultimate quality of the data. FHWA discusses many of these issues in their annual *Highway Statistics* report and other publications. However, BTS is not aware of any study or report that has statistically quantified the accuracy of vmt estimates. Some of the primary issues related to data quality are noted here.

1. The sampling procedures suggested in the TMG and HPMS *Field Manual* are designed to produce traffic volume estimates with an average precision level of 80-percent confidence with a 10-percent allowable error at the state level. FHWA provides additional guidance to states through annual workshops and other avenues to help them follow these procedures as closely as possible. However, the actual data quality and consistency of HPMS information are dependent on the programs, actions, and maintenance of sound databases by numerous data collectors, suppliers, and analysts at the state, metropolitan, and other local area levels. Not all states follow the recommended sampling, counting, and estimating procedures contained in the *Traffic Monitoring Guide*, and the exact degree to which the states follow these guidelines overall is

unknown. However, FHWA believes that most states generally follow the guidelines.

2. Estimates for higher level roadway systems are more accurate than those for lower level ones, since traffic volumes on higher level roadways are sampled at a higher rate. The TMG recommends that traffic counts be collected for all Interstate and principal arterial sections on a three-year cycle. Under this scheme, about one-third of the traffic counts for these roadway sections in a given year are actually measured, while volumes on the remainder are factored to represent present growth. Although some States collect data at all traffic count locations every year, most use some variation of the TMG data collection guidelines. Volumes on urban and rural minor arterials, rural major collectors, and urban collectors are collected using a sampling procedure. States are not required to report volumes for rural/urban local systems and rural minor collectors, though most do so. However, the methods used to estimate travel on these roadways vary from state to state since there are no standard guidelines for calculating travel on these roadways.

3. Vmt estimates by vehicle type are less accurate than are estimates for total motor vehicle vmt for several reasons: 1) vehicle classification equipment can frequently misclassify vehicles (see B.A. Harvey et al, *Accuracy of Traffic Monitoring Equipment*, GDOT 9210, (Georgia Tech Research Institute:1995)); 2) vehicle shares are often determined by methods or by special studies that are not directly compatible with HPMS data definitions and/or purposes, and observed local-level vehicle classification counts are difficult to apply on a statewide basis; and 3) vehicle type definitions can vary among states.

4. Vmt estimates for combination trucks in HPMS differ from survey-based estimates from the Truck Inventory and Use Survey (TIUS), as much as 50 percent for some categories of combination trucks. Much of this discrepancy appears to be due to differences in truck classification definitions and biases introduced by data collection practices. See R.D. Mingo et al.1995. *Transportation Research Record*, No. 1511 (Washington, DC: National Academy Press), pp. 42-46.

5. FHWA adjusts questionable data using a variety of standard techniques and professional judgment. For example, national average temporal

adjustment factors developed from HPMS and other national highway monitoring programs are applied to state data, when necessary, to compensate for temporal deficiencies in sampling practices. Also, in estimating vmt by vehicle type, FHWA employs an iterative process to reconcile vmt, fuel economy (miles per gallon), fuel consumption, and vehicle registration estimates. Fuel consumption, total vmt by highway functional class, and registrations by vehicle group are used as control totals. This process limits the size of errors and ensures data consistency.

6. Passenger-miles of travel (pmt) are calculated by multiplying vmt estimates by vehicle loading (or occupancy) factors from various sources, such as the Nationwide Personal Transportation Survey conducted by FHWA and TIUS. Thus, pmt data are subject to the same accuracy issues as vmt, along with uncertainties associated with estimating vehicle-loading factors.

Transit

The American Public Transit Association (APTA) figures are based on information in USDOT, Federal Transit Administration (FTA), National Transit Database. Transit data are generally considered accurate because FTA reviews and validates information submitted by individual transit agencies. However, reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret data. APTA adjusts the FTA data to include transit operators that do not report to the FTA database (private, very small, and rural operators).

Class I Rail (vehicle-miles)

Data are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). AAR data are based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report* required of Class I railroads. STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 1999, the adjusted threshold for Class I railroads was \$258.5 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive

years. Although Class I railroads encompasses only 2 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated.

Intercity Train

The AAR passenger-miles number is based on an almost 100-percent count of tickets and, therefore, is considered accurate.

TABLE 1-36. Long-Distance Travel in the United States by Selected Trip Characteristics: 1995

TABLE 1-37. Long-Distance Travel in the United States by Selected Traveler Characteristics: 1995

The data presented in these tables are estimates derived from the 1995 American Travel Survey (ATS) conducted for the U.S. Department of Transportation, Bureau of Transportation Statistics. The survey's estimation procedure inflates unweighted sample results to independent estimates of the total population of the United States. Values for missing data are estimated through imputation procedures.

Since ATS estimates come from a sample, they are subject to two possible types of error: nonsampling and sampling. Sources of nonsampling errors include inability to obtain information about all sample cases, errors made in data collection and processing, errors made in estimating values for missing data, and undercoverage.

The accuracy of an estimate depends on both types of error, but the full extent of the nonsampling error is unknown. Consequently, the user should be particularly careful when interpreting results based on a relatively small number of cases or on small differences between estimates.

Standard errors for ATS estimates that indicate the magnitude of sampling error as well as complete documentation of the source and reliability of the data may be obtained from detailed ATS reports. Because of methodological differences, users should use caution when comparing these data with data from other sources.

TABLE 1-38. U.S. Air Carrier Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons

The *Airport Activity Statistics of Certificated Air Carriers* (AAS) is the source of these data. Published annually by the U.S. Department of Trans-

portation, Bureau of Transportation Statistics, Office of Airline Information (OAI), the AAS presents traffic statistics for all scheduled and non-scheduled service by large certificated U.S. air carriers for each airport served within the 50 states, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration. The publication draws its data from the T-100 and T-3 databases maintained by OAI. These data are based on a 100-percent reporting of enplanements, departures, and tonnage information by large certificated U.S. air carriers via BTS Form 41.

Prior to 1993, the AAS included all scheduled and some nonscheduled enplanements for certificated air carriers but did not include enplanements for air carriers offering charter service only. Prior to 1990, the freight category was divided into both freight and express shipments and the mail category was divided into U.S. mail (priority and non-priority) and foreign mail. Beginning in 1990, only aggregate numbers were reported for freight and mail.

Air traffic hubs are designated as geographical areas based on the percentage of total passengers enplaned in the area. A hub may have more than one airport. This definition of hub should not be confused with the definition used by airlines in describing their "hub-and-spoke" route structures.

TABLE 1-39. Passengers Boarded at the Top 50 U.S. Airports

The *Airport Activity Statistics of Certificated Air Carriers* (AAS) is the source of these data. Published by USDOT, Bureau of Transportation Statistics, Office of Airline Information (OAI), the AAS presents traffic statistics for all scheduled and nonscheduled service by large certificated U.S. air carriers for each airport served within the 50 states, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration. The publication draws its data from the T-100 and T-3 databases maintained by OAI. These data are based on a 100-percent reporting of enplanements, departures, and tonnage information by large certificated U.S. air carriers via BTS Form 41.

Prior to 1993, the AAS included all scheduled and some nonscheduled enplanements for certificated air carriers but did not include enplanements for air carriers offering charter service only. Prior

to 1990, the freight category was divided into both freight and express shipments and the mail category was divided into U.S. mail (priority and nonpriority) and foreign mail. Beginning in 1990, only aggregate numbers were reported for freight and mail.

TABLE 1-40. Air Passenger Travel Arrivals in the United States from Selected Foreign Countries

TABLE 1-41. Air Passenger Travel Departures from the United States to Selected Foreign Countries

The International Trade Administration in the U.S. Department of Commerce publishes the *U.S. International Air Travel Statistics Report* annually. The passenger data is based on information collected by the U.S. Immigration and Naturalization Service using the INS Form I-92. All passengers on international flights must complete the I-92 form with the exception of those passengers on flights arriving or departing from Canada.

The international passenger arrivals and departures data for Canada is obtained from *Air Carrier Traffic at Canadian Airports*, which is published by Statistics Canada. Three surveys are conducted by Statistics Canada in order to collect the necessary passenger data. Since all data is not received by the time of publication and data is occasionally updated or resubmitted by the participating carriers, data should be considered preliminary for the years referenced in the source publication.

TABLE 1-44. U.S. Ton-Miles of Freight

Air Carrier

Air Carrier Traffic Statistics, published by the U.S. Department of Transportation, Bureau of Transportation Statistics (BTS), Office of Airline Information (OAI), is the source of these data. Large certificated U.S. air carriers report domestic freight activities to OAI via BTS Form 41. The information reported in the table represents transportation of freight (excluding passenger baggage), U.S. and foreign mail, and express mail within the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. It also covers transborder traffic to Canada and Mexico by U.S. carriers. The data does not include information on small certifi-

cated air carriers, which represent less than 5 percent of freight ton-miles.

Intercity Truck

The data are estimates from *Transportation in America*, published by the Eno Transportation Foundation, Inc. (Eno). Eno's estimates of intercity truck ton-miles are based on historic data from the former Interstate Commerce Commission (ICC), estimates from the American Trucking Association, and other sources. Eno supplements its estimates by using additional information on vehicle-miles of truck travel published in Highway Statistics by the Federal Highway Administration. Users should note that truck estimates in the tables do not include local truck movements.

Class I Rail

The data are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). AAR data are based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB). The data represent all revenue freight activities of the Class I railroads and are not based on information from the Rail Waybill Sample. The STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2000, the adjusted threshold for Class I railroads was \$ 261.9 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive years. Although Class I railroads encompasses only 1 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated.

Domestic Water Transport

The data are from *Waterborne Commerce of the United States*, published by the U.S. Army Corps of Engineers (USACE). All vessel operators of record report their domestic waterborne traffic movements to USACE via ENG Forms 3925 and 3925b. Cargo movements are reported according to points of loading and unloading. Certain cargo movements are excluded: 1) cargo carried on general ferries, 2) coal and petroleum products loaded from shore facilities directly into vessels for fuel use, 3)

military cargo moved in U.S. Department of Defense vessels, and 4) cargo weighing less than 100 tons moved on government equipment. USACE calculates ton-miles by multiplying the cargo's tonnage by the distance between the points of loading and unloading.

Oil Pipeline

The data for 1960, 1965, and 1970 are from *Transportation in America*, published by the Eno Transportation Foundation, Inc., and the data for 1975 to 1998 are from *Shifts in Petroleum Transportation*, by the Association of Oil Pipe Lines (AOPL). Eno's data are based on information from the former Interstate Commerce Commission's *Transport Economics*. Common carrier oil pipelines reported all freight activities to the ICC.

AOPL obtains barrel-miles from the Federal Energy Regulatory Commission (FERC), which requires petroleum shippers to report annual shipments. AOPL then converts barrel-miles to ton-miles using conversion figures in the American Petroleum Institute's (API's) *Basic Petroleum Data Book*. Since 16 percent of pipeline shipments are intrastate and not subject to FERC reporting requirements, AOPL makes adjustments to FERC data.

TABLE 1-45. Average Length of Haul: Domestic Freight and Passenger Modes

Freight

Air Carrier and Truck

The Eno Transportation Foundation, Inc. estimated these figures.

Class I Rail

The data are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). AAR data are based on 100-percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report* required of Class I railroads. The STB defined Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2000, the adjusted threshold for Class I rail-

roads was \$ 261.9 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive years. Although Class I railroads encompasses only 1 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated.

Water

The data are from *Waterborne Commerce of the United States*, published by the U.S. Army Corps of Engineers (USACE). All vessel operators of record report their domestic waterborne traffic movements to USACE via ENG Forms 3925 and 3925b. Cargo movements are reported according to points of loading and unloading. Certain cargo movements are excluded: 1) cargo carried on general ferries, 2) coal and petroleum products loaded from shore facilities directly into vessels for fuel use, 3) military cargo moved in U.S. Department of Defense vessels, and 4) cargo weighing less than 100 tons moved on government equipment. USACE calculates ton-miles by multiplying the cargo's tonnage by the distance between points of loading and unloading.

Oil Pipeline

The Eno Transportation Foundation, Inc., provided these figures, which are estimates based on U.S. Department of Energy and Association of Oil Pipe Lines reports. Figures are derived by dividing estimated pipeline ton-miles by estimated crude and petroleum products tonnage.

Passenger

Air Carrier

The U.S. Department of Transportation (USDOT), the Bureau of Transportation Statistics, Office of Airline Information, reports average trip length in its publication *Air Traffic Statistics*. These numbers are based on 100-percent reporting of passengers and trip length by large certificated air carriers via BTS Form 41. The figures do not include data for all airlines, such as most scheduled commuter airlines and all nonscheduled commuter airlines.

Bus

The Eno Transportation Foundation, Inc. estimated these figures based on Class I carrier passen-

ger data and vehicle-miles data from *Highway Statistics*, an annually published report of the USDOT, Federal Highway Administration.

Commuter Rail

The American Public Transit Association (APTA) provided these data, which are based on the USDOT, Federal Transit Administration's (FTA's), National Transit Database. Transit data are generally accurate because the FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret data. APTA conservatively adjusts FTA data to include transit operators that do not report to the database (private, very small, and rural operators).

Intercity/Amtrak

The Statistical Appendix to the *Amtrak Annual Report* is the source of these data. Amtrak data are based on 100 percent of issued tickets, and thus should be accurate.

TABLE 1-46. Top U.S. Foreign Trade Freight Gateways by Value of Shipments: 2001

The value of U.S. air, maritime, and land imports and exports are captured from administrative documents required by the U.S. Departments of Commerce and Treasury. In 1990, the United States entered into a Memorandum of Understanding with Canada concerning the exchange of import data. As a consequence, each country is using the other's import data to replace its own export data. U.S. international merchandise trade statistics, therefore, are no longer derived exclusively from the administrative records of the Departments of Commerce and Treasury, but from Revenue Canada. Import value is for U.S. general imports, customs value basis. Export value is FAS (free along ship) and represents the value of exports at the U.S. port of export, including the transaction price and inland freight, insurance, and other charges. Trade levels reflect the mode of transportation as a shipment entered or exited a U.S. Customs port.

Truck, rail pipeline, mail, and miscellaneous modes are included in the total for land modes. Data present trade activity between the United States, Puerto Rico, and the U.S. Virgin Islands and Canada and Mexico. These statistics do not

include traffic between Guam, Wake Island, and American Samoa and Canada and Mexico. These statistics also exclude imports that are valued at less than \$1,250 and for exports that are valued at less than \$2,500.

TABLE 1-49. U.S. Waterborne Freight

The data are from *Waterborne Commerce of the United States*, published by the U.S. Army Corps of Engineers (USACE). All vessel operators of record report their domestic waterborne traffic movements to USACE via ENG Forms 3925 and 3925b. Cargo movements are reported according to points of loading and unloading. Certain cargo movements are excluded: 1) cargo carried on general ferries, 2) coal and petroleum products loaded from shore facilities directly into vessels for fuel use, 3) military cargo moved in U.S. Department of Defense vessels, and 4) cargo weighing less than 100 tons moved on government equipment. USACE calculates ton-miles by multiplying the cargo's tonnage by the distance between points of loading and unloading.

Foreign waterborne statistics are derived from Census Bureau and U.S. Customs data, which excludes traffic between Guam, Wake Island, and American Samoa and any other foreign country, and imports and exports used by U.S. Armed Forces abroad. Individual vessel movements with origins and destinations at U.S. ports, traveling via the Panama Canal are considered domestic traffic.

TABLE 1-50. Tonnage of Top 50 U.S. Water Ports, Ranked by Total Tons

Data on the weight of U.S. maritime imports and exports are captured from administrative documents required by the U.S. Departments of Commerce and Treasury. In 1990, the United States entered into a Memorandum of Understanding with Canada concerning the exchange of import data. As a consequence, each country is using the other's import data to replace its own export data. The United States' merchandise trade statistics, therefore, are no longer derived exclusively from U.S. government administrative records, but from Revenue Canada. Maritime weight data are initially processed and edited by the Foreign Trade Division, U.S. Census Bureau (Census) as part of the overall edits and quality checks performed on all U.S. international merchandise trade data.

After Census processing, the U.S. Army Corps of Engineers (USACE) and the Maritime Administration (MARAD) perform additional maritime-specific processing and quality edits on maritime-related data elements, including the weight of maritime imports and exports. The USACE and MARAD began performing this function in October 1998 after the Foreign Waterborne Trade data program was transferred from the Census Bureau. Prior to October 1998, the USACE historically performed additional specialized edits at the port level, including reassignment of some tonnage data to the actual waterborne port rather than the reported U.S. Customs port.

TABLE 1-46. Modal Shares of Freight Shipments within the United States by Domestic Establishments: 1993 and 1997

TABLE 1-52. Value, Tons, and Ton-Miles of Freight Shipments within the United States by Domestic Establishment, 1997

TABLE 1-55. U.S. Hazardous Materials Shipments by Mode of Transportation, 1997

TABLE 1-56. U.S. Hazardous Materials Shipments by Hazard Class, 1997

These data are collected via the 1997 Commodity Flow Survey (CFS) undertaken through a partnership between the U.S. Department of Commerce, Census Bureau (Census), and the U.S. Department of Transportation, Bureau of Transportation Statistics. For the 1997 CFS, Census conducted a sample of 100,000 domestic establishments randomly selected from a universe of about 800,000 multiestablishment companies in the mining, manufacturing, wholesale trade, and selected retail industries. It excluded establishments classified as farms, forestry, fisheries, governments, construction, transportation, foreign, services, and most retail.

Reliability of the Estimates

An estimate based on a sample survey potentially contains two types of errors—sampling and nonsampling. Sampling errors occur because the estimate is based on a sample, not on the entire universe. Nonsampling errors can be attributed to many sources in the collection and processing of

the data and occur in all data, not just those from a sample survey. The accuracy of a survey result is affected jointly by sampling and nonsampling errors.

Sampling Variability

Because the estimates are derived from a sample of the survey population, results are not expected to agree with those that might be obtained from a 100-percent census using the same enumeration procedure. However, because each establishment in the Standard Statistical Establishment List had a known probability of being selected for sampling, estimating the sampling variability of the estimates is possible. The standard error of the estimate is a measure of the variability among the values of the estimate computed from all possible samples of the same size and design. Thus, it is a measure of the precision with which an estimate from a particular sample approximates the results of a complete enumeration. The coefficient of variation is the standard error of the estimate divided by the value being estimated. It is expressed as a percent. Note that measures of sampling variability, such as the standard error or coefficient of variation, are estimated from the sample and are also subject to sampling variability. Standard errors and coefficients of variation for CFS data presented in this report are given in Appendix B of the 1997 Economic Census report, and are available online www.census.gov/econ/wwwse0700.html.

Nonsampling Errors

In the CFS, as in other surveys, nonsampling errors can be attributed to many sources, including 1) nonresponse; 2) response errors; 3) differences in the interpretation of questions; 4) mistakes in coding or recoding the data; and 5) other errors of collection, response, coverage, and estimation.

A potentially large source of nonsampling error is due to nonresponse, which is defined as the inability to obtain all intended measurements or responses from selected establishments. Nonresponse is corrected by imputation.

TABLE 1-53. Value of U.S. Land Exports to and Imports from Canada and Mexico by Mode

The Transborder Surface Freight Data (TSFD) is derived from official U.S. international merchant-

dise import and export data. (For a description of U.S. merchandise trade statistics, see www.census.gov/foreign-trade/www/index.html). As of December 1995, about 96 percent of the value of all U.S. imports has been collected electronically by the Automated Broker Interface System. About 55 percent of the value of all U.S. exports is collected electronically through the U.S./Canada Data Exchange and the Automated Export Reporting Program. The balance is collected from administrative records required by the U.S. Departments of Commerce and Treasury.

The TSFD incorporates all data, by surface mode, on shipments entering or exiting the United States from or to Canada or Mexico. Prior to January 1997, this dataset also included transshipments—shipments entering or exiting the United States by way of U.S. Customs ports on the northern or southern borders even when the actual origin or final destination of the goods was other than Canada or Mexico. (In other U.S. Bureau of the Census trade statistics, transshipments through Canada and Mexico are credited to the true country of origin or final destination.) To make this dataset more comparable to other U.S. Census Bureau trade statistics, detailed information on transshipments has been removed. The TSFD presents a summary of transshipments by country, direction of trade, and mode of transportation. Shipments that neither originate nor terminate in the United States (i.e., intransits) are beyond the scope of this dataset because they are not considered U.S. international trade shipments.

In general, the reliability of U.S. foreign trade statistics is very good. Users should be aware that trade data fields (e.g., value and commodity classification) are typically more rigorously reviewed than transportation data fields (e.g., the mode of transportation and port of entry/exit). Users should also be aware that the use of foreign trade data to describe physical transportation flows may not be accurate. For example, this dataset provides surface transportation information for individual U.S. Customs districts and ports on the northern and southern borders. However, because of filing procedures for trade documents, these ports may or may not record where goods physically cross the border. This is because the information filer may choose to file trade documents at one port while shipments actually enter or exit at another port.

The TSFD, however, is the best publicly available approximation for analyzing transborder transportation flows. Since the dataset was introduced in April 1993, it has gone through several refinements and improvements. When improbabilities and inconsistencies were found in the dataset, extensive analytical reviews were conducted and improvements made. However, accuracy varies by direction of trade and individual field. For example, import data are generally more accurate than export data. This is primarily because the U.S. Customs Bureau uses import documents for enforcement purposes while it performs no similar function for exports. For additional information on TSFD, the reader is referred to the U.S. Department of Transportation, Bureau of Transportation Statistics Internet site at www.bts.gov/transborder.

TABLE 1-54. Crude Oil and Petroleum Products Transported in the United States by Mode

Pipelines

The Association of Oil Pipelines (AOPL) obtains barrel-miles from the Federal Energy Regulatory Commission (FERC), which requires petroleum shippers to report annual shipments. AOPL then converts barrel-miles to ton-miles using conversion figures in the American Petroleum Institute's (API's) *Basic Petroleum Data Book*. Since 16 percent of pipeline shipments are intrastate and not subject to FERC reporting requirements, AOPL makes adjustments to FERC data to include intrastate shipments. AOPL also conducts periodic studies to estimate intrastate shipments.

Water Carriers

Data are from *Waterborne Commerce of the United States*, published by the U.S. Army Corps of Engineers (USACE). All vessel operators of record report domestic freight and tonnage information to USACE via ENG Forms 3925 and 3925b. Cargo movements are reported according to points of loading and unloading. Certain cargo movements are excluded: 1) cargo carried on general ferries, 2) coal and petroleum products loaded from shore facilities directly into vessels for fuel use, 3) military cargo moved in U.S. Department of Defense vessels, and 4) cargo weighing less than 100 tons moved on government equipment. USACE calculates ton-miles by

multiplying the cargo's tonnage by the distance between the points of loading and unloading.

Motor Carriers

AOPL estimates ton-miles by multiplying tons by the average length of haul. For crude, the tonnage of the prior year is projected by using a growth rate established by data from the U.S. Department of Energy, Energy Information Administration's *Petroleum Supply Annual*, vol. 1, table 37. For products, the same calculation is made but with a growth rate estimated by the American Trucking Association in *Financial and Operating Statistics, Class I and II, Motor Carriers*, Summary table VI-B. Average length of haul is determined from the prior six years of data for ton-miles and tonnage of crude and petroleum products moved by motor carriers.

Railroad

AOPL calculates ton-miles by multiplying tonnage by average length of haul. Tonnage data for crude and products comes from the Association of American Railroad's *Freight Commodity Statistics*, U.S. Class I Railroads. The U.S. Department of Transportation, Federal Railroad Commission provides the average length of haul for crude and products in its Carload Way Bill Statistics.

TABLE 1-57. Worldwide Commercial Space Launches

The U.S. Department of Transportation, Federal Aviation Administration, Associate Administrator for Commercial Space Transportation (AST) licenses and regulates U.S. commercial space launches as authorized by the Commercial Space Launch Act of 1984 and Executive Order 12465. Every commercial space launch must be approved and monitored by AST. Thus, data reliability is high.

TABLE 1-58. Passengers Denied Boarding by the Largest U.S. Air Carriers

TABLE 1-59. Mishandled-Baggage Reports Filed by Passengers with the Largest U.S. Air Carriers

TABLE 1-60. Flight Operations Arriving On Time for the Largest U.S. Air Carriers

These numbers are based on data filed with the U.S. Department of Transportation on a monthly

basis by the largest U.S. air carriers – those that have at least one percent of total domestic scheduled-service passenger revenues. Data cover non-stop scheduled service flights between points within the United States (including territories). The largest U.S. carriers account for more than 90 percent of domestic operating revenues. They include Alaska Airlines, America West Airlines, American Airlines, Continental Airlines, Delta Air Lines, Northwest Airlines, Trans World Airlines, Southwest Airlines, United Airlines, and US Airways. However, there are other carriers offering domestic scheduled passenger service that are not required to report. In some cases, major airlines sell tickets for flights that are actually operated by a smaller airline that is not subject to the reporting requirement.

TABLE 1-61. U.S. Air Carrier Delays Greater than 15 Minutes by Cause

The source of these data, the U.S. Department of Transportation (USDOT), Federal Aviation Administration (FAA), counts a flight as delayed if it departed or arrived more than 15 minutes after its scheduled gate departure and arrival times. FAA calculates delayed departures based on the difference between the time a pilot requests FAA clearance to taxi and the time an aircraft's wheels lift off the runway, minus the airport's standard unimpeded taxi-out time. Users should note that taxi-out time varies by airport due to differences in configurations. The cause of delay is also recorded, e.g., weather, terminal volume, closed runways, etc.

USDOT guidance defines departure as the time the aircraft parking brake is released and gate arrival as the time the brake is set. According to the USDOT's Office of the Inspector General (OIG), FAA's omission of part of a plane's ground movement compromises the data's validity. A recent OIG report noted that the FAA tracks ground time only after a pilot requests clearance and fails to track a plane's time in the ramp area. OIG found that ramp time comprised 28.7 percent to 40.5 percent of the average taxi-out time at the three major New York area airports (OIG Audit Report CR-2000-112), and would not be counted as an FAA delay.

Reliability

Several data collection changes complicate comparisons over time. For example, FAA modified its

method for calculating volume-related delays that resulted in a 17 percent drop in such delays. Decreases in volume-related delays from 1998 to 1999 totaled less than one percent. Moreover, prior to 1999, USDOT did not provide a clear definition of what a departure was. An OIG Audit (CE-1999-054) report noted that air carriers used four different departure events: 1) rolling of aircraft wheels; 2) release of parking brake; 3) closure of passenger and/or cargo doors; and 4) a combination of door closures and release of the parking break. The same report also noted errors in the reporting of departure times by the air carriers.

Data are now manually entered in FAA's Operations Network (OSPNET) database, and reporting errors may arise and decrease reliability. The FAA monitors data quality assurance by spot checking the reported delay data and requesting that discrepancies be reviewed by the responsible facility. According to an OIG Audit (CR-2000-112), however, mistakes are not reliably corrected and many air traffic controllers suggested that delays are underreported sometimes by as much as 30 percent.

TABLE 1-62. Major U.S. Air Carrier Delays, Cancellations, and Diversions

A second data source for air-carrier delay is the USDOT, Bureau of Transportation Statistics, Office of Airline Information (OAI). This information originates from the Airline Service Quality Performance data. These figures are collected from the largest airlines—those that have at least one percent or more of total domestic scheduled service passenger revenues. Delays are categorized by phase of flight (i.e., gate-hold, taxi-out, airborne, or taxi-in delays). These data differ from FAA's OSPNET information due to differences in definition of delay.

While the FAA tracks delays on the taxiway, runway, and in the air, BTS tracks delays at the departure and arrival gates. OAI calculates delays as the difference between scheduled and actual gate departure. If a flight leaves the gate within 15 minutes of its scheduled time, then OAI would record it as departed on-time even if it sat for several hours on the ramp or runway, in which case the delay would be accounted for as a late arrival.

TABLE 1-63. Annual Person-Hours of Delay Per Person

TABLE 1-64. Roadway Congestion Index

TABLE 1-65. Congestion Index and Cost Values

The Texas Transportation Institute's (TTI) *Urban Roadway Congestion Annual Report* provided figures for tables 1-60 through 62. TTI relies on data from the U.S. Department of Transportation, Federal Highway Administration, Highway Performance Monitoring System database (HPMS). TTI utilizes these data as inputs to its congestion estimation model. Detailed documentation for the TTI model and estimations can be found at this website <http://mobility.tamu.edu>.

Structure, Assumptions, and Parameters

Urban roadway congestion levels are estimated using a formula measuring traffic density. Average travel volume per lane on freeways and principal arterial streets are estimated using area wide estimates of vehicle-miles of travel (vmt) and lane miles of roadway. The resulting ratios are combined using the amount of travel on each portion of the system so that the combined index measures conditions on the freeway and principal arterial street systems. Values greater than one are indicative of undesirable congestion levels. Readers seeking the algorithm for the congestion index should examine this website <http://mobility.tamu.edu>.

Annual person-hours of delay results from the multiplication of daily vehicle-hours of incident and recurring delay times 250 working days per year times 1.25 persons per vehicle. Two types of costs are incurred due to congestion: time delay and fuel consumption. Delay costs are the product of passenger vehicle hours of delay times \$12.85 per hour person time value times 1.25 occupants per vehicle. Fuel costs are calculated for passenger and commercial vehicles from the multiplication of peak period congestion speeds, the average fuel economy, fuel costs, and vehicle-hours of delay.

In previous reports, the TTI methodology assumed that 45 percent of all traffic, regardless of the urban location, occurred in congested conditions. TTI indicated that this assumption overestimated travel in congested periods. Thus, their 2002 estimates now vary by urban area anywhere from 18 percent to 50 percent of travel that occurs

in congestion. TTI's model structure applies to two types of roads: freeways and principal arterial streets. The model derives estimates of vehicle traffic per lane and traffic speed for an entire urban area. Based on variation in these amounts, travel is then classified under 5 categories: uncongested, moderately congested, heavily congested, severely congested, and extremely congested (a new category in 1999). The threshold between uncongested and congested was changed in 2002. Previous editions classified congested travel when areawide traffic levels reached 14,000 vehicles per lane per day on highways and 5,500 vehicles per lane per day on principal arterial streets. For the current edition, these values are 15,500 and 5,500 vehicles per lane per day, respectively. Previous years values have been re-estimated based on these new assumptions. Readers should refer to the TTI Internet site for more detailed algorithms and estimation procedures at <http://mobility.tamu.edu>.

TTI reviews and adjusts the data used in their models. State and local officials also review the

TTI data and estimations. Some of the limitations acknowledged in the TTI report include the macroscopic character of the index. Thus, it does not account for local variations in travel patterns that may affect travel times. The index also does not account for local improvements, such as ramp metering or travel speed advantages obtained with transit or carpool lanes.

TABLE 1-66. Amtrak On-Time Performance Trends and Hours of Delay by Cause

Amtrak determines on-time performance through its computer system maintained at the National Operations Center (NOPS) in Wilmington, Delaware. If a train is delayed, a call is made to the NOPS for recordkeeping. These data can be supplemented with computer entries made for locomotive or car malfunctions that cause delays. These data should be considered reliable.

Chapter 2 Safety

AIR DATA

TABLE 2-1. Transportation Fatalities by Mode

TABLE 2-2. Injured Persons by Transportation Mode

TABLE 2-3. Transportation Accidents by Mode

TABLE 2-4. Distribution of Transportation Fatalities by Mode

TABLE 2-7. Transportation-Related Occupational Fatalities

TABLE 2-9. U.S. Air Carrier Safety Data

TABLE 2-10. U.S. Commuter Air Carrier Safety Data

TABLE 2-11. U.S. Air Carrier Fatal Accidents by First Phase of Operation

TABLE 2-12. U.S. Commuter Air Carrier Fatal Accidents by First Phase of Operation

TABLE 2-13. U.S. On-Demand Air Taxi Safety Data

TABLE 2-14. U.S. General Aviation Safety Data

National Transportation Safety Board investigators perform onsite and offsite investigations of all accidents involving U.S. registered air carriers operating under 14 CFR 121, 14 CFR 135, and general aviation U.S. Department of Transportation (USDOT), Federal Aviation Administration (FAA) regulations. The investigators compile information on fatalities and injuries for all accidents. The counts for fatalities and serious injuries are expected to be extremely accurate. (See glossary for serious injury definition.)

Exposure data (aircraft-miles, aircraft-hours, and aircraft-departures) are obtained from the FAA, which in turn gets some of its exposure data from the USDOT, Bureau of Transportation Statistics, Office of Airline Information (OAI) and other exposure data from its own General Aviation and Air Taxi Activity and Avionics (GAATAA) Survey. The OAI data represent 100 percent reporting by airlines. Tables that include air carriers (14 CFR 121, scheduled and nonscheduled service) and commuter air carriers (14 CFR 135, scheduled service only) use OAI exposure data. Tables that include on-demand air taxi (14 CFR 135, non-

scheduled service) and general aviation use GAATAA Survey results. For information about the GAATAA Survey, please refer to the chapter 1 data accuracy statement for table 1-9.

The coefficients of variation for aircraft-hours vary by year, but are usually in the 9 to 10 percent range for on-demand air taxi and are approximately 2 percent for general aviation.

TABLE 2-15. Number of Pilot-Reported Near Midair Collisions by Degree of Hazard

Near Midair Collision reports are provided voluntarily by air carriers, general aviation companies, and the military, and this information is added to the Near Midair Collisions System database. Factors that may influence whether or not a near mid-air collision is reported include the pilot's or other crew member's perception of whether a reportable near midair collision occurred, which in turn can depend on factors such as visibility conditions; the reporter's flying experience; or the size of the aircraft involved. A reportable incident is one in which an aircraft is within 500 feet of another aircraft and a possibility of collision existed.

TABLE 2-16. Airline Passenger Screening Results by Type of Weapons Detected, Persons Arrested, and Bomb Threats Received

Federal Aviation Regulations (FARs) mandate that passenger screening be performed by each air carrier required to implement an approved security program. The USDOT, Federal Aviation Administration, monitors the records of passenger screening in accordance with FAR, and oversees compliance with the carriers' security programs through, for example, scheduled and unscheduled inspections. FAR requires the reporting of information on bomb threats.

HIGHWAY DATA

TABLE 2-1. Transportation Fatalities by Mode

TABLE 2-2. Transportation Injuries by Mode

TABLE 2-3. Transportation Accidents by Mode

TABLE 2-4. Distribution of Transportation Fatalities by Mode**TABLE 2-5. Highway-Rail Grade-Crossing Safety Data and Property Damage****TABLE 2-7. Transportation-Related Occupational Fatalities****TABLE 2-17. Motor Vehicle Safety Data****TABLE 2-18. Motor Vehicle Fatalities, Vehicle-Miles, and Associated Rates by Highway Functional System****TABLE 2-19. Occupant Fatalities by Vehicle Type and Nonoccupant Fatalities****TABLE 2-21. Passenger Car Occupant Safety Data****TABLE 2-22. Motorcycle Ride Safety Data****TABLE 2-23. Truck Occupant Safety Data****TABLE 2-24. Bus Occupant Safety Data****TABLE 2-25. Fatalities by Highest Blood Alcohol Concentration in Highway Crashes****TABLE 2-27. Motor Vehicle Fatal Crashes by Day of Week, Time of Day, and Weather and Light Conditions****TABLE 2-28. Motor Vehicle Fatal Crashes by Posted Speed Limit****TABLE 2-20. Occupant and Nonmotorist Fatalities in Crashes by Number of Vehicles and Alcohol Involvement****Fatalities**

Highway fatality data come from the Fatality Analysis Reporting System (FARS), which is compiled by trained FARS analysts at USDOT, National Highway Traffic Safety Administration (NHTSA) regional offices. Data are gathered from a census of police accident reports (PARs), state vehicle registration files, state drivers licensing files, state highway department data, vital statistics, death certificates, coroner/medical examiner reports, hospital medical reports, and emergency medical service reports. A separate form is completed for each fatal crash. Blood alcohol concentration (BAC) is estimated when not known.

Statistical procedures used for unknown data in FARS can be found in the NHTSA report: *Transitioning to Multiple Imputation - A New Method to Impute Missing Blood Alcohol Concentration (BAC) Values in FARS*, DOT HS 809 403 (Washington, DC: January 2002).

Data are collected from relevant state agencies and electronically submitted for inclusion in the FARS database on a continuous basis. Cross-verification of PARs with death certificates ensures that undercounting is rare. Moreover, when data are entered, they are checked automatically for acceptable range values and consistency, enabling quick corrections when necessary. Several programs continually monitor the data for completeness and accuracy. Periodically, sample cases are analyzed for accuracy and consistency.

Note that the FARS data do not include motor vehicle fatalities on nonpublic roads. However, previous NHTSA analysis found that these fatalities account for 2 percent or fewer of the total motor vehicle fatalities per year. (See glossary for highway fatality definition.)

Injuries and Crashes

NHTSA's General Estimates System (GES) data are a nationally representative sample of police-reported crashes that contributed to an injury or fatality or resulted in property damage, and involved at least one motor vehicle traveling on a trafficway. Trained GES data collectors randomly sample PARs and forward copies to a central contractor for coding into a standard GES system format. Documents such as police diagrams or supporting text provided by the officers may be further reviewed to complete a data entry.

NHTSA suggests that about half of motor vehicle crashes in the United States are not reported to police and that the majority of these unreported crashes involve minor property damage and no significant personal injury. A NHTSA study of injuries from motor vehicle crashes estimated the total count of nonfatal injuries at over 5 million compared with the GES's estimate of 3.2 million in 1998. (See glossary for highway crash and injury definitions.)

(See U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts*, 2000, DOT HS 809 337 (Washington, DC: December 2001), appendices B

and C for further information on GES, including a table of standard errors applicable to GES data.)

TABLE 2-29. Safety Belt and Motorcycle Helmet Use

The National Occupant Protection Use Survey (NOPUS), conducted biennially between 1994 and 2000 by the U.S. Department of Transportation, National Highway Traffic Safety Administration is the source for these data.

In 1994 and 1996, NOPUS consisted of three separate studies: 1) the Moving Traffic Study, which provides information on overall shoulder belt use, 2) the Controlled Intersection Study, which provides more detailed information about shoulder belt use by type of vehicle, characteristics of the belt users, and child restraint use, and 3) the Shopping Center Study, which provides information on rear-seat belt use and shoulder belt misuse. In 1998, the Shopping Center Study was dropped from the survey. The Controlled Intersection Study includes the collection of license plate information to link seat belt use to vehicle type. As the results of the Controlled Intersection Study for 2000 were not available prior to publication, only the Moving Traffic Study data were used in this table.

In 1998, NOPUS separated pickups from the light truck category, thereby creating three categories of passenger vehicles: passenger cars, pickup trucks, and other passenger vehicles. Other passenger vehicles include vans, minivans, and sport utility vehicles. In this table, 1998 and 2000 data for pickup trucks and other passenger vehicles are combined into the light truck category to allow comparison to data from the earlier surveys.

In 1994, operators and riders wearing any type of helmet were counted as helmeted. In 1996, 1998, and 2000, motorcycle helmets that meet USDOT standards are counted as valid protection, whereas those that do not meet USDOT standards were treated as if the operator/rider were not wearing a helmet.

Data collection from the Moving Traffic Study was conducted at 2,063 sites across the country. Shoulder belt use was obtained for drivers and right-front passengers only. Three observers (two observers in 1994 and 1996) were stationed for 30 minutes at interstate/highway exit ramps, controlled (intersections with stop signs or traffic signals), and uncontrolled intersections. Every day of

the week and all daylight hours (8 a.m. to 6 p.m.) were covered in each survey. Commercial and emergency vehicles were excluded.

NOPUS was designed as a multistage probability sample to ensure that the results would represent occupant protection use in the country. In the first stage, counties were grouped by regions (northeast, midwest, south, west), level of urbanization (metropolitan or not), and level of belt use (high, medium, or low). Fifty counties or groups of counties were selected based on vehicle miles of travel in those locations. In the next stage, roadways were selected from two categories: major roads and local roads. Of the originally selected sites, some were found to be ineligible during mapping and data collection, and at some sites no vehicles were observed. In 2000, a total of 157,694 passenger vehicles were observed: 93,916 passenger cars and 63,778 light trucks (of which 24,747 were pickup trucks and 39,031 were other passenger vehicles). 645 motorcycles were also observed during the 2000 NOPUS.

Each reported estimate has been statistically weighted according to the sample design. Two kinds of error can be attributed to all survey research: sampling and nonsampling. A measure, called the standard error, is used to indicate the magnitude of sampling error. The source information provides two standard errors along with each estimate. Nonsampling errors could include problems such as vehicles not counted, incorrect determination of restraint use, and data entry mistakes, among others.

TABLE 2-30. Estimated Number of Lives Saved by Use of Restraints

The U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) uses data obtained from the Fatality Analysis Reporting System to calculate the number of lives saved by the use of restraints. The methodology used is outlined in a NHTSA report, *Research Note, Estimating Lives Saved by Restraint Use in Potentially Fatal Crashes* (Washington, DC: June 1995). The general approach is to adjust the observed number of fatalities by a determined effectiveness rate for each type of restraint. This equates to subtracting the actual fatalities from the potential fatalities to determine the number of lives saved. This method is more

accurate than earlier estimation methods since all calculations are derived from NHTSA's count of fatalities in which restraints were used. Reported restraint use is believed to be accurate for fatalities.

The key to NHTSA's calculations is the effectiveness estimate for preventing fatalities for each type of restraint. With the exception of an adjustment in the effectiveness estimate for front outboard air bag-only restraint use in passenger cars (NHTSA, *Fourth Report to Congress, Effectiveness of Occupant Protection Systems and Their Use*, Washington, DC, May 1999), a list of effectiveness estimates can be found in a NHTSA report, *Estimating Alcohol Involvement in Fatal Crashes in Light of Increases in Restraint Use*, published in March 1998. This report also includes additional references describing the determination of these effectiveness estimates.

TRANSIT DATA

TABLE 2-1. Transportation Fatalities by Mode

TABLE 2-2. Transportation Injuries by Mode

TABLE 2-3. Transportation Accidents by Mode

TABLE 2-4. Distribution of Transportation Fatalities by Mode

TABLE 2-31. Transit Safety and Property Damage Data

TABLE 2-32. Transit Safety Data by Mode for All Reported Accidents

TABLE 2-33. Transit Safety Data by Mode for All Reported Incidents

TABLE 2-34. Reports of Violent Crime, Property Crime, and Arrests by Transit Mode

The data for this report are obtained from the U.S. Department of Transportation, Federal Transit Administration's (FTA's) National Transit Database (NTD) Reporting System. Transit agencies are required to file an NTD report at regular intervals if they are recipients of Urbanized Area Formula Funds. In 2000, 592 agencies reported to the NTD. Of that total, 67 transit agencies received exemptions from detailed reporting because they operated 9 or fewer vehicles, and 7 were deleted because their data were incomplete. Thus, 518

individual reporters were included in the NTD, accounting for 90 to 95 percent of passenger-miles traveled on transit. Of the transit agencies reporting, 23.7 percent contract for some or all of their transportation from private or public companies or organizations.

Transit operators report fatalities, injuries, accidents, incidents, and property damage in excess of \$1,000. Electronic reporting has recently been implemented for the NTD. Certification from a company's Chief Executive Officer must accompany all NTD reports along with an independent auditor's statement. Upon receipt, an NTD report is reviewed and outstanding items noted in writing to the agency that submitted the form. (See glossary for transit fatality, injury, and accident definitions.)

Four major categories of transit safety are collected: 1) collisions, 2) derailments/buses going off the road, 3) personal casualties, and 4) fires. These major categories are divided into subcategories. The collisions category comprises collisions with vehicles, objects, and people (except suicides). Of the four major categories, only the first two are included in the definition of transit accidents adopted in this report (see glossary). Understanding this definition of accident is relevant to understanding how double counting is removed in the grand total of U.S. transportation fatalities and injuries. (See cross modal comments in box 2-1.)

Transit data submitted to the NTD are generally considered accurate because the FTA reviews and validates information submitted by individual transit agencies. However, reliability may vary because some transit agencies cannot obtain accurate information or misinterpret data.

Security

FTA collects security data from transit agencies serving urbanized areas of over 200,000 in population, using Form 405, and manages it in the National Transit Database (NTD). The reporting of security data follows the FBI *Uniform Crime Reporting Handbook* (Washington, DC: 1984) and is divided into two categories: 1) Reported Offenses, including violent and property crime, and 2) Arrests, consisting of less serious crimes. The figures for violent and property crime are based on records of calls for service, complaints, and/or investigations. They do not reflect the findings of a

court, coroner, jury, or decision of a prosecutor. Security data were first reported in 1995 and were not compiled for earlier years.

In 2000, the number of agencies reporting to this database was 592. Of that, 67 transit agencies received exemptions from detailed reporting because they operated nine or fewer vehicles, and seven were deleted because their data were incomplete. Thus, 518 individual reporters are included in the full database in 2000. Of the transit agencies reporting, 23.7 percent contract for some or all of their transportation from private or public companies or organizations.

RAILROAD DATA

TABLE 2-1. Transportation Fatalities by Mode

TABLE 2-2. Transportation Injuries by Mode

TABLE 2-3. Transportation Accidents by Mode

TABLE 2-4. Distribution of Transportation Fatalities by Mode

TABLE 2-5. Highway-Rail Grade-Crossing Safety Data and Property Damage

TABLE 2-7. Transportation-Related Occupational Fatalities

TABLE 2-35. Railroad and Grade-Crossing Fatalities by Victim Class

TABLE 2-36. Railroad and Grade-Crossing Injured Persons by Victim Class

TABLE 2-37. Train Fatalities, Injuries, and Accidents by Type of Accident

TABLE 2-38. Railroad Passenger Safety Data

TABLE 2-39. Railroad System Safety and Property Damage Data

TABLE 2-40. Fatalities and Injuries of On-Duty Railroad Employees

Railroads are required to file a report for each train accident resulting in property damage in excess of \$6,600, each highway-rail accident, and each incident involving the operation of a railroad resulting in a fatality or a reportable injury. (See

glossary for reportable injury, train accident and incident, and nontrain incident definitions.)

Reporting requirements, which are fixed in law, are very broad and encompass events not strictly related to transportation. For example, if a passenger falls on a staircase and breaks a leg in the station while going to a train, the injury would be reported and appear in the data as a rail injury.

Box 2-1.

Cross-Modal Comparisons

Caution must be exercised in comparing fatalities (and injuries) across modes because different definitions for reportable events are used among the modes. In particular, rail and transit facilities and injuries include deaths and injuries that are not, strictly speaking, caused by transportation accidents, but are caused by such events as a fall on a transit station escalator; or for railroad employees, a fire in a workshop. Similar fatalities for the air and highway modes (death at airports not caused by moving aircraft, or fatalities from accidents in automobile repair shops) are not counted towards the totals for these modes.

Total fatalities (injuries) in the tables are less than the sum of the modal totals because some deaths (injuries) are reported and counted in more than one mode. To avoid double counting, adjustments have been made to fatality totals (see table 2-4).

WATERBORNE TRANSPORTATION DATA

TABLE 2-1. Transportation Fatalities by Mode

TABLE 2-2. Transportation Injuries by Mode

TABLE 2-3. Transportation Accidents by Mode

TABLE 2-4. Distribution of Transportation Fatalities by Mode

TABLE 2-7. Transportation-Related Occupational Fatalities

TABLE 2-41. Waterborne Transportation Safety Data and Property Damage Related to Vessel Casualties

TABLE 2-42. Waterborne Transportation Safety Data Not Related to Vessel Casualties

U.S. waterborne fatality and injury data are based on reports required by CFR Part 4.05-10. This code requires that the owner, agent, master,

operator, or person in charge file a written report of any marine casualty or accident within five days of the accident. Reports must be delivered to Investigative Officers (IOs) at a U.S. Coast Guard Marine Safety Office or Marine Inspection Office at the U.S. Department of Transportation, who use these reports as guides to investigate the marine casualty or accident. The IO ensures that all the entries on the forms are filled out and errors are corrected. Regulations require IO notification of marine casualties for certain circumstances, including loss of life; injuries that require medical treatment beyond first aid; and, for individuals engaged or employed onboard a vessel in commercial service, injuries that render a person unfit to perform routine duties.

Incidents requiring an investigation include death, injury resulting in substantial impairment, and other incidents determined important to promoting the safety of life or property or to protect the marine environment. These incidents are investigated in accordance with procedures set forth in the regulations. Furthermore, the Federal Water Pollution Control Act mandates that certain incidents be reported to the U.S. Coast Guard. The reports are entered into the Marine Safety Information System, which is later analyzed and transferred to the Marine Safety Management System maintained in Washington, DC.

RECREATIONAL BOATING DATA

TABLE 2-1. Transportation Fatalities by Mode

TABLE 2-2. Transportation Injuries by Mode

TABLE 2-3. Transportation Accidents by Mode

TABLE 2-4. Distribution of Transportation Fatalities by Mode

TABLE 2-43. Recreational Boating Safety, Alcohol Involvement, and Property Damage Data

TABLE 2-44. Personal Watercraft Safety Data

TABLE 2-45. U.S. Coast Guard Search and Rescue Statistics, Fiscal Years

Operators of boats involved in an accident resulting in 1) a fatality, 2) an injury requiring medical treatment beyond first aid, 3) damage to the

vessel or other property greater than \$500 or complete loss of vessel, or 4) the disappearance of a person from the vessel under circumstances indicating death or injury are required to file a report with the U.S. Coast Guard. If a person dies within 24 hours of the occurrence, requires medical treatment beyond first aid, or disappears from the vessel, reports must be made within 48 hours of the occurrence. In cases involving only damage to the vessel and/or property, reports are to be submitted within 10 days of the occurrence. Although there is no quantitative estimate of the response rate, there may be considerable underreporting, especially of nonfatal accidents, because of the difficulty of enforcing the requirement and because boat operators may not always be aware of the law.

NATURAL GAS AND LIQUID PIPELINE DATA

TABLE 2-1. Transportation Fatalities by Mode

TABLE 2-2. Transportation Injuries by Mode

TABLE 2-3. Transportation Accidents by Mode

TABLE 2-4. Distribution of Transportation Fatalities by Mode

TABLE 2-46. Hazardous Liquid and Natural Gas Pipeline Safety and Property Damage Data

U.S. fatality and injury data for natural gas pipelines are based on reports filed with the U.S. Department of Transportation (USDOT), Office of Pipeline Safety (OPS). Accidents must be reported as soon as possible, but no later than 30 days after discovery. Reports are sent to the Information Systems Manager at the OPS. Possible sources of error include a release going undetected; even if subsequently detected and reported, it may not be possible to accurately reconstruct the accident. Property damage figures are estimates. (See glossary for gas and liquid pipeline fatality data and injury definitions.)

TABLE 2-6. Hazardous Materials Safety Data and Property Damage Data

Incidents resulting in certain unintentional releases of hazardous materials must be reported under 49 CFR 171.16. Each carrier must submit a

► Appendix E: Data Source and Accuracy Statements

report to the U.S. Department of Transportation, Research and Special Programs Administration (RSPA) within 30 days of the incident, including information on the mode of transportation involved, results of the incident, and a narrative description of the accident. These reports are made available on the incident database within 60 days of receipt.

Fatalities and injuries are counted only if they are directly due to a hazardous material. For example, a truck operator killed by impact forces during a motor vehicle crash would not be counted as a hazardous-material fatality. RSPA verifies all reported fatalities and injuries by telephone with the carrier submitting the report.

Possible sources of error include a release going undetected; even if subsequently detected and

reported, it may not be possible to accurately reconstruct the accident. Although RSPA acknowledges that there is some level of underreporting, it believes that the underreporting is limited to small, nonserious incidents. As incident severity increases, it is more likely that the incident will come to RSPA's attention and will ultimately be reported. Additionally, the reporting requirements were extended to intrastate highway carriers on October 1, 1998, and the response rate from this new group is expected to increase over time. Property damage figures are estimates determined by the carrier prior to the 30-day reporting deadline and are generally not subsequently updated. Property damage figures, therefore, may underestimate actual damages.

Chapter 3 Transportation and the Economy

TABLE 3-1a & 3-1b. U.S. Gross Domestic Product Attributed to For-Hire Transportation Services (Current and chained 1996 dollars)

TABLE 3-2a & 3-2b. U.S. Gross Domestic Product Attributed to Transportation-Related Final Demand (Current and chained 1996 dollars)

TABLE 3-3a & 3.3b. U.S. Gross Domestic Demand Attributed to Transportation-Related Final Demand (Current and chained 1996 dollars)

TABLE 3-4a & 3-4b. Contributions to Gross Domestic Product: Selected Industries (Current and chained 1996 dollars)

TABLE 3-5. Gross Domestic Product by Major Social Function

Tables 3-1 through 3-5 present data on transportation's contributions to the economy through consumption (or the money spent on transportation activity). The *Survey of Current Business* (SCB) published by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). The SCB is a monthly journal that contains estimates of U.S. economic activity, including industry contributions to the Gross Domestic Product (GDP). GDP is defined as the net value of the output of goods and services produced by labor and property located in the United States. BEA constructs two complementary measures of GDP—one based on income and the other on expenditures (product). Together, they represent the National Income and Product Accounts (NIPA), our nation's principle framework for macroeconomic estimates. The product side results from the addition of labor, capital, and taxes for producing output. Consumption derives from household, business, and government expenditures and net foreign purchases.

Table 3-3 presents transportation's economic impact in a different form, Gross Domestic Demand (GDD). Also derived from the national accounts, GDD is the sum of personal consumption, gross private domestic investment, and government purchases. GDD includes imports, but excludes exports, thus counting only what is consumed, purchased, or invested in the United States.

GDP Methodology

The 1960 through 1985 data in table 3-1 are from the November 1993 issue of the SCB. The 1990 through 1991 data and 1992 through 1996 data are from an August 1996 and November 1997 SCB issue respectively. The October 1999 issue introduced a revised methodology for GDP estimates (Yuskavage 1996). This section describes BEA's methodology for estimating transportation's share of GDP.

BEA's current-dollar estimates of GDP by industry rely on several sources, including the Bureau of Labor Statistics (BLS), the Health Care Financing Administration, and the Internal Revenue Service (IRS). Some of the tables in this chapter report chained-dollar figures. BEA derived chained dollars by using the Fisher Ideal Quantity Index to calculate changes between adjacent years (Parker and Triplett 1996; Landerfeld and Parker 1997). Annual changes are then chained to form a time series that incorporates the effects of relative price and output composition changes. Please refer to page 142 of the August 1996 issue of the *Survey of Current Business* for the mathematical formulas (Yuskavage 1996). This method produced separate estimates of gross output and intermediate inputs for a sector's GDP calculation. BEA updated the reference year for the chained-dollar estimates from 1992 to 1996.

Transportation GDP in chained dollars was estimated using the double-deflation method, which relies on a chain-type quantity index formula, and requires gross output and intermediate input information. Principal source data for the transportation categories include: 1) operating revenues of air carriers and Federal Express from the U.S. Department of Transportation and public sources (air); 2) operating revenues for Class I motor carriers from historical records of the Interstate Commerce Commission and Census Bureau annual surveys (trucking and warehousing); 3) BEA personal consumption expenditures (PCE), BLS, and trade sources (local and interurban passenger transit); 4) operating revenues for Class I railroads and Amtrak (rail); and 5) other trade sources (pipelines). Data sources for water were not provided (Yuskavage, 1996).

Table 3-1 reported current dollar estimates from various SCB issues. BEA derived the 1991 data and subsequent years in four steps:

1. BEA's benchmark input-output (I-O) tables produced input compositions for 1977, 1982, and 1987.

2. BEA estimated 1978 through 1981 and 1983 through 1986 input compositions by interpolating the 1977, 1982, and 1987 figures.

3. BEA estimates the 1977 through 1987 imported and domestically imported shares of each detailed input.

4. BEA estimates the 1988 through 1994 input compositions based on the 1987 figures and the Economic Censuses of 1992.

For intermediate input estimations, BEA deflates each of the current-dollar inputs. (BEA deflates import and domestic production separately.) For deflation, quantities are approximated by real values (expressed at present with 1996 as the base period) that are calculated by dividing the current-dollar value of the component by its price index. BEA develops estimates for import prices with data from a variety of sources, but primarily from the BLS import price series.

Reliability and Accuracy

BEA views GDP as a reliable measure of output because of the source data underlying the estimates. The following reliability comments are based on the Valliant (1993) SCB article and Ritter (2000). GDP data originate from three types of sources. The foundational data come first from the economic censuses conducted every five years. These approach complete enumerations of sectoral activity in state and local governments, manufacturing, services, retail trade, wholesale trade, construction, transportation, communications and utilities, mining, finance, insurance, and real estate. Annual estimates from the second tier of GDP data and emanate from sources such as IRS tax returns and smaller surveys of establishments. The Annual Retail Trade Survey, for instance, forms one of the major components of the annual estimates. The U.S. Census Bureau collects sales and end-of-year inventory data from about 22,000 retail firms totaling \$2 trillion of the \$8.8 trillion GDP amount. While considered reliable by many economists, sampling variability may introduce errors into these annual estimates. Moreover, the Census

Bureau imputes (substitutes estimates for missing or clearly incorrect data) about 11 percent of reported national annual retail sales because of accounting inconsistencies or raw survey data errors. The third component of the GDP flows from quarterly estimates.

In the October 1993 SCB, Valliant described the reliability and accuracy of the quarterly estimates of GDP, providing insights into the pre-1985 data in terms of dispersion and bias. BEA followed a schedule that produced three successive "current" estimates; advanced, preliminary, and final. BEA analysts developed a dispersion and bias measure based on the difference between these three estimates.

Dispersion is the average of the absolute values of the revisions, or, the difference between P , representing the percentage change in the current estimates, and L representing the percentage change in the latest available estimates, divided by n , representing the number of quarterly changes. Bias is the average of the revisions. According to the October 1993 SCB, dispersion averaged 1.6 percent from 1958 to 63 and dropped to 1.1 percent for 1968 to 1972. BEA stated that these declines in dispersion correspond with more accurate initial and final estimates subsequent to the late 1950s. For years after 1973 until 1991, the BEA concluded that more accurate source data for preliminary and final estimates did not improve reliability by much. BEA also determined that bias was not large enough from 1978 to 1991 to be significant under normality assumptions at the five-percent confidence level. Overall, for the period beginning in 1978 and covering the 1985 data from table 3-1, the BEA concluded there was no evidence of reliability increases. BEA also questioned its own estimating procedures and, in particular, the use of disparate sources of data, which may explain why reliability levels have not increased.

The NIPA framework also undergoes major updates referred to as comprehensive, or benchmark revisions. Eleven of these have been completed including one in 1996 and most recently on October 28, 1999 that provided the data for tables 3-1 through 3-5. The major change encompassed a definitional change reflecting our evolving economic system. Software became a business investment rather than just a "purchased input," or the equivalent of raw material. Unless the company increased the price of its product to cover software

purchases, no impact registered in the GDP. With this benchmark revision, the Census Bureau increased the 1996 estimate by \$115 billion, or 1.5 percent—the amount of software investments made in that year. Another change involved the Census Bureau's interpretation of the value of “unpriced” banking services such as ATM (automatic teller machine) contributions to an establishment's productivity. Previously, banking service productivity relied only on an index constructed from labor input. Economists argued that this ignored productivity gains from technological improvements such as ATMs and electronic banking. The BLS developed a productivity based instead of bank transactions, and this was used in the 1999 revision. For more detail, readers should refer to Moulton and Seskin (1999).

Sources of Error for GDP Estimates

The GDP estimates can contain several kinds of error. One source of error arises from estimates based on preliminary or incomplete tabulations of source data or BEA judgment in the absence of data. Errors may also arise because of sampling errors and biases in monthly, quarterly, annual, or periodic tabulations. Another source of potential error may arise when data are seasonally adjusted. Readers should refer to the October 1993 SCB issue for more detail (Young 1993).

NIPA and Transportation-Related Final Demand

For table 3-2, transportation-related final demand (TRFD) is from NIPA reported in the SCB. It represents the sum of all consumer and government expenditures for transportation purposes, plus the value of goods and services purchased by business as investment for transportation purposes. Since TRFD includes only expenditures on the final products of the economy, it is comparable to GDP and provides a measure of transportation's importance from a consumption perspective.

NIPA tables report the composition of production and the distribution of incomes earned in production. The totals of these produce a GDP estimate that should theoretically be equal, but there is always a difference referred to as the “statistical discrepancy.” NIPA is based on four subaccounts of national economic activity. These include 1) the personal income and outlay account, 2) the gross savings and investment account, 3) the

government receipts and expenditures account, and 4) the foreign transactions account.

Personal Consumption Expenditures (PCE) for transportation include 1) road motor vehicles, such as new and used automobiles, and motorcycles; 2) motor vehicle parts, such as tires, tubes, accessories; 3) motor fuels and lubricants; and 4) transportation services, such as repair, greasing, washing, parking, storage, rental, leasing, tolls, insurance, and purchased local and intercity transportation services. Motor vehicles used primarily for recreation, boats, noncommercial trailers, and aircraft are excluded.

Gross private domestic fixed investment in transportation includes private purchases of transportation structures and equipment. Transportation structures include railroads and petroleum pipelines. Transportation equipment consists of automobiles, trucks, buses, truck trailers, aircraft, ships and boats, and railroad equipment.

Goods and services that are counted as part of transportation-related exports include 1) civilian aircraft, engines, and parts; 2) road motor vehicles, engines, and parts; 3) passenger fares, including receipts of U.S. air and ocean/cruise carriers for transporting non-U.S. residents between the United States and foreign countries or between two foreign points; and 4) other transportation. The total for road motor vehicles, engines and parts excludes boats, aircraft, and noncommercial trailers. Other transportation includes 1) the freight revenues of U.S.-operated ocean, air, and other carriers (e.g., rail, pipeline, and Great Lakes shipping) for international transport of U.S. exports and for transporting foreign freight between foreign points; 2) port expenditure receipts (representing payments for goods and services purchased in the United States by foreign-operated carriers); and 3) receipts of U.S. owners from foreign operators for the charter of vessels and rental of freight cars and containers.

Goods and services that are counted as part of transportation-related imports include 1) civilian aircraft, engines, and parts; 2) road motor vehicles, engines, and parts; 3) passenger fares, including payments to foreign air and ocean/cruise carriers for the transportation of U.S. residents between the United States and foreign countries or between two foreign points; and 4) other transportation. The total for road motor vehicle, engines and parts excludes boats, aircraft, and noncommercial trail-

ers. Other transportation includes 1) freight revenues of foreign-operated ocean, air, and other carriers (e.g., rail, pipeline, and Great Lakes shipping) for international transport of U.S. imports and for the transportation of foreign freight between foreign points; 2) port expenditure receipts (representing payments for goods and services purchased in foreign countries by U.S.-operated carriers); and 3) payments to foreign owners from U.S. operators for the charter of vessels and rental of freight cars and containers.

Transportation-related government purchases include federal, state, and local purchases of transportation services, and government expenditures on transportation-related structures and equipment. Federal, state, and local purchases represent the sum of consumption expenditures and gross inventory. Defense-related purchases include expenditures on the transportation of materials (care and movement of goods by water, rail, truck, and air); the rental of trucks and other transportation equipment and warehousing fees; and travel of persons (care and movement of Department of Defense military civilian employees), including tickets for all modes of travel, per diem, taxi fares, automobile rental, and mileage allowances for privately owned vehicles.

Further References

This data source and accuracy statement is based on several papers that have appeared in the SCB. Data users who desire more methodological detail can refer to the list of references at the end of this chapter.

TABLE 3-6. National Transportation and Economic Trends

The *Statistical Abstract of the United States* published by the U.S. Department of Commerce, Census Bureau, is the source of the population data. The *Current Population Reports* are the source of the *Abstract's* data that are collected through the *Current Population Survey* (CPS). This is a monthly survey administered by the Census Bureau of a scientifically selected sample representative of the noninstitutional civilian population in 754 areas covering every state and the District of Columbia. Like other surveys, the CPS is subject to sampling error. Readers should note that estimates based on the CPS may not agree with census

counts because different procedures are used. Changes in the CPS also mean that annual comparisons must be made with caution. For instance, in 1994, the CPS methodology was dramatically changed, and the estimates began to incorporate 1990 census population controls, adjusted for the estimated undercount.

Industrial production data come from the Industrial Production Index, produced by the Board of Governors of the Federal Reserve System and published in the *Economic Report of the President*. For annual figures, individual industrial production (IP) indexes are constructed from a variety of sources, including the quinquennial Censuses of Manufactures and Mineral Industries; the Annual Survey of Manufactures, prepared by the Census Bureau; the Minerals Yearbook, prepared by the U.S. Department of the Interior; and publications of the U.S. Department of Energy. The Federal Reserve Board (FRB) uses these data in a modeling framework to produce estimates of industrial production. Below are brief discussions on three major sources for the IP indexes; the survey of manufactures, the census of manufactures, and the electric utility survey.

Annual Survey of Manufacturers

The Census Bureau conducts a mail survey of approximately 55,000 manufactures with three different sample strata. The sampling frame is based on previously surveyed firms and is updated annually based partially on IRS administrative records and other sources. Large manufactures (shipments > \$500 million, and > 250 employees), some computer manufacturing firms, and all remaining firms with at least 250 employees are selected. Establishments with employment generally ranging from 20 to 250 employees are sampled with a probability proportional to a composite measure of establishment size. Approximately 5,000 of the smallest firms (5 to 20 employees) are also sampled and receive a shorter survey instrument. Additional information on the survey, readers should refer to www.census.gov/econ/www/ma0300.html.

Census of Manufacturers

The Census of Manufactures collects data through mail surveys from approximately 237,000 multiunit and single-unit firms with a minimum payroll figure. This census is supplemented by IRS

administrative data from over 142,000 firms not contacted by mail. For additional information on the census, readers should refer to www.census.gov/econ/www/ma0100.html.

Electric Utility Survey

Since 1971, the FRB has conducted the *Monthly Survey of Industrial Electricity Use* based on responses from utilities and manufacturing and mining firms that are cogenerators. This survey is the basis for estimates of the amount of electricity power used by 120 industrial sectors. More than 40 industrial production series estimates are based on data from this survey and compose 28 percent of the Industrial Production Index in 1994 value-added proportions.

Survey responses are voluntary and are gathered from a panel of 175 utilities and 186 cogenerating companies with a monthly response rate near 95 percent. In 1992, an additional 71 new cogenerators joined the panel. This resulted, according to an FRB statistical analysis, in a decrease of the standard deviation of errors for electricity growth rates from 3.0 to 1.9 percentage points. Overall, the estimates for total power use produce a standard error of about 0.5 percentage points. The panel accounts for approximately 73 percent of industrial electric power use in the United States.

The *Survey of Current Business*, published by the U.S. Department of Commerce, Bureau of Economic Analysis, is the source of GDP estimates. Readers should refer to the source and accuracy statement for tables 3-1 through 3-5 for information on GDP estimates.

TABLE 3-7. Passenger and Freight Transportation Expenditures

Detailed information from the source was not available at the time of publication. Readers should contact the Eno Transportation Foundation, Inc. directly for information about methodologies and reliability.

TABLE 3-8. Sales Price of Transportation Fuel to End-Users

The U.S. Department of Energy, Energy Information Administration's (EIA's) *Monthly Energy Review*, tables 9.4 and 9.7, provided price data, except for railroad fuel. Pre-1981 data were

reported by the EIA from Bureau of Labor Statistics reports. Beginning in 1983, the EIA administered a series of surveys to collect data on petroleum prices, market distribution, supply, and demand. The EIA-782 series encompasses three surveys: 1) Form EIA-782A, Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report; 2) Form EIA-782B, Resellers'/Retailers' Monthly Petroleum Product Sales Report; and 3) Form EIA-782C, Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption.

EIA developed a method for comparing data from the new surveys with older information gathered by various methods. As a result, a number of adjustment factors were developed and used to "backcast" price estimates. Readers who require a more detailed description of this methodology should refer to EIA's petroleum data publications web page (www.eia.doe.gov/oil_gas/petroleum/pet_frame.html) and the explanatory notes section.

Changes in sample elements or collection methods may affect data continuity. Two regulatory changes affected data collection in October 1993. The Clean Air Act Amendments of 1990 required that oxygenated gasoline be sold in the winter months in ozone nonattainment areas. Thus, the EIA-782 forms were modified to collect information on fuels divided among conventional, oxygenated, and reformulated categories. Second, requirements for the production and selling of low-sulfur diesel were required and necessitated the separation of diesel fuel into high- and low-sulfur categories. Moreover, surveys prior to October 1993 did not include propane. The EIA followed several different sampling designs during two periods in the 1980s and thus, there may be some price estimate discontinuity for periods between December 1983 and January 1984 as well as between August and September of 1988.

Data Collection

The 782 series occurs on a monthly schedule via mail. The 782A and 782C surveys reflect a census of about 115 and 190 firms, respectively. The 782B samples about 2,000 firms. The EIA first stratifies by sales volume for the form 782B survey to ensure that dealers with 5 percent or more of the market are captured with certainty. The remaining elements of the frame were assigned a probability of selection to form a 2,200 firm survey. These

“noncertainty” companies were poststratified by geographic area and type of sales category.

Data Reliability

EIA has studied its sampling effects on reliability and determined that the sample size of 2,000 should yield a less than 1-percent price coefficient of variation in its estimates. Errors can arise because of non-response, but an EIA official indicated that the response rates for the 1997-1999 782A, B, and C surveys averaged 95 percent, 86 percent, and 96 percent, respectively. Because survey data invariably contain incomplete data (because of reporting errors or non-response), EIA estimates or “imputes” missing data. Readers requiring imputation algorithms should refer to the 782 series explanatory notes referred to above.

TABLE 3-9. Price Trend of Gasoline v. Other Consumer Goods and Services

Data in this table were reproduced from the American Petroleum Institute's (API) *Basic Petroleum Data Book*. API noted that data reported prior to 1981 was obtained from Platt's *Oil Price Handbook and Oilmanac*. Platt's is part of Standard and Poor's, and an independent third party organization that tracks the petroleum industry. Platt's reported the retail price of gasoline based on telephone interviews with gas stations in 55 cities. More detailed historical information on their data collection methods could not be ascertained and the data's reliability is uncertain. API reported the Bureau of Labor Statistics (BLS) as its data source for 1981 to 2001 retail gasoline prices. The remainder of this section discusses the BLS Consumer Price Index (CPI) data collection and estimation methods used to derive the average retail price of gasoline.

BLS uses the CPI as a measure of average price changes paid by urban consumers for a fixed basket of goods and services. BLS estimates the CPI with a survey-based approach. Survey results define a categorization of goods and services, a representative sample of items to track, and weights according to the consumption of an average consumer during a base period.

Sample Design

BLS relies on two sampling frames for their CPI estimates. One represents the universe of retail outlets from which households may purchase

defined groups of commodities and services including gasoline. A second represents households across urban areas. Moreover, the household frame is based on an “urban-consumer” population and consists of households in Metropolitan Statistical Areas (MSA's) and in urban places with more than 2,500 inhabitants. This “all urban” CPI (CPI-U) provides the estimates for retail gasoline prices shown in table 3-9. Thus, this frame does not represent non-urban consumers.

For the retail outlet sampling frame, BLS relies on the Point-of-Purchase Survey (CPOPS) conducted by the Census Bureau in 94 Primary Sampling Units (PSUs) identified by BLS. PSUs are based on urban counties, groups of contiguous urban counties, or MSAs. For the household sample, a noncompact clustering procedure was employed which dispersed households evenly within a Census enumeration district (ED). More detailed sampling design information can be found in BLS's *Handbook of Methods* at <http://stats.bls.gov/opub/hom/homhome.htm>.

Prices for the goods and services used to calculate the CPI are collected in 91 PSUs located in 85 urban areas throughout the country. The sample size for the CPOPS totals about 21,000 retail and service establishments—supermarkets, department stores, gasoline stations, hospitals, etc. Food, fuels, and a few other items are priced monthly in all 85 locations. BLS field representatives collect all price information through visits or telephone calls in the household surveys. Price changes are computed based on a sample of outlets selected from locations identified by consumers. Specific sample items are then selected from each sample outlet to ensure that the market basket is representative of where households shop.

Estimation

BLS routinely updates its price estimates for specific items among the collection of goods and services, for example, a new car model year. BLS employs three techniques to produce new price estimates. First, an item that is directly comparable to the previous discontinued good will be used to provide a price estimate. However, a substitute item may be inappropriate when goods change slightly in their characteristics. BLS relies on Hedonic regression modeling as a second “quality adjustment” for price estimates. This statistical technique can model

the importance of various quality characteristics that add value to a particular good (the fiber content and construction of apparel products for instance). A researcher can estimate a Hedonic regression model that identifies the factors most important in determining the price of a good, and BLS field representatives will note these in their data collection. Imputation is a third quality adjustment used for “noncomparable” substitutions where BLS estimates the price change from previous averages. Detailed algorithms can be found in chapter 17 of the BLS *Handbook of Methods* at <http://stats.bls.gov/pub/hom/homhome.htm>.

Effective January 1999, BLS began using a new formula for calculating the basic components of the Consumer Price Index for all Urban Consumers (CPI-U) and the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). The new formula, the geometric mean estimator, is used in index categories that comprise approximately 61 percent of total consumer spending represented by the CPI-U. Based on BLS research, it is expected that use of the new formula will reduce the annual rate of increase in the CPI by approximately 0.2 percentage points per year. Additional information on this change was published in the April 1998 CPI Detailed Report and is available on the Internet at <http://stats.bls.gov/cpihome.htm>.

Accuracy

One of the CPI's limitations is that it represents price movements for urban residents and may not correctly represent nonurban consumption patterns. The CPI may also contain sampling error because it is estimated from a sample of consumer purchases. Nonsampling error may occur if respondents provide BLS field representatives with inaccurate or incomplete information. Another potential source of error identified by BLS may occur because of a time lag between the Point-of-Purchase Survey and the initiation of price collection for commodities and services at resampled outlets. Because of the time lag, the products offered by the outlet at the time pricing is initiated may not coincide with the set from which the CPOPS respondents were purchasing.

The CPI is also subject to response error when data are not collected because of nonresponse. BLS established a nonresponse auditing program in 1986. It reported that response rates in 1990 for

transportation commodities and services were above 90 percent.

Bias

Four categories of bias were identified in the BLS report, *Measurement Issues in the Consumer Price Index*, published in 1997. First, because of the fixed-weight nature of the index, the CPI creates substitution bias by placing too much weight on items measured in previous surveys from which consumers may have shifted away. Second, the study found that the index did not account for consumers switching to discount stores. Third, a quality change bias was also identified when the differences between goods priced in two different periods cannot be accurately measured nor deduced from the accompanying price difference between the goods. Finally, the report noted that the CPI also had a new product bias because the index inadequately reflected consumer value of products introduced into the market. The commission concluded that the CPI overstated the true cost-of-living change by 1.1 percentage points per year.

TABLE 3-10. Producer Price Indices for Transportation Services

TABLE 3-11. Producer Price Indices for Transportation Equipment

Data shown in these tables are drawn from annual issues of *The Supplement to Producer Price Indexes* published by the Bureau of Labor Statistics (BLS) in the U.S. Department of Labor. These indexes represent a measure of outputs in all goods-producing American industries as well as partial coverage of service industries including transportation. BLS defines a price as the net revenue accrued to a specified production establishment from a specified kind of buyer for a specific product shipped under specific transaction terms on a specified day of the month. BLS collects this data series through surveys of a sample of establishments that report their prices from economic transactions.

Data Collection

A BLS field economist visits an establishment or cluster of establishments selected for price sampling. The economist uses a disaggregation proce-

cedure to select a sample of transactions from all the establishment's revenue-producing activities. This disaggregation procedure assigns a probability of selection to each shipping or receipt category proportionate to its value within a reporting unit. In most cases, the final price index produced by the BLS requires that 1) there are at least three different respondents to a survey, 2) at least two reporting units provide price information in a given month, and 3) no single respondent accounts for 50 percent or more of the weight for a given item.

BLS regional offices review field data for consistency and completeness. The national office then conducts a final review and a survey is then tailored specifically to establishments or clusters of establishments. BLS refers to these as repricing schedules and sends them to reporting establishments on a regular basis. Most prices refer to a reporting schedule on a particular day of the month, usually, the first Tuesday or the 13th of a month.

Estimation

BLS collects prices for over 100,000 items. It utilizes several different weighting schemes for the numerous indexes produced because some products will have a greater effect on the movement of groupings of individual products. BLS utilizes the net output of shipment values as weights for the 4-digit SIC industries. Net output values include only shipments from establishments in one industry to other industry establishments and, thus, differ from gross shipment values. The latter would include shipments among establishments in the same industry, even if those establishments are separate firms. BLS also makes seasonal adjustments if statistical tests and economic rationale justify them, and computes data when a participating company does not deliver a price report. BLS bases the missing price estimation on the average of price changes for similar products reported by other establishments.

Accuracy

As in all surveys, the accuracy of producer price indexes depends on the quality of information voluntarily provided by participating establishments. One of the accuracy concerns of BLS revolves around the preferred use of realistic transaction prices (including discounts, premiums, rebates,

allowances, etc.) rather than list or book prices. Before BLS fully changed its data collection method in 1986, a survey indicated that about 20 percent of traditional commodity indexes were based on list prices. The newer and more systematic methodology decreased the use of list prices. BLS documentation (available at <http://stats.bls.gov/opub/hom>) provided no more details on sampling error, response rates, or the availability of generalized variance parameters or techniques for estimating them.

TABLE 3-12. Personal Expenditures by Category

TABLE 3-13. Personal Consumption Expenditures on Transportation by Subcategory

Data used in these tables are from the Bureau of Labor Statistics, *Annual Report of Consumer Expenditure Survey*. The Consumer Expenditure Survey (CEX) collects information from U.S. households and families on their buying habits (expenditures), income, and consumer characteristics. The strength of the survey is that it allows data users to relate the expenditures and income of consumers to the characteristics of those consumers. BLS uses 11 standard characteristics to classify consumers, including income, before-tax income class, age, size of the consumer unit, composition of the consumer unit, number of earners, housing tenure, race, type of area (urban or rural), region, and occupation.

The CEX is a national probability sample of households. The sampling frame (i.e., the list from which housing units are chosen) for this survey is generated from the 1990 census 100-percent detail file, which is augmented by a sample drawn from new construction permits. Coverage improvement techniques are also utilized to eliminate recognized deficiencies in the census.

Data Collection

The current survey consists of two separate surveys (Interview and Diary), each utilizing a different data collection technique and sample. Data is collected for each survey from approximately 5,000 households. In the Interview survey, each consumer unit (CU) in the sample is interviewed every three months over five calendar quarters. The interviewer uses a structured questionnaire to

collect both the demographic and expenditure data in the Interview survey. The interviewer collects the demographic data in the Diary survey whereas the respondent enters the expenditure data on the diary form. Both surveys accept proxy responses from any eligible household member who is at least 16 years old if an adult is not available after a few attempts to contact that person. The respondent family completes the Diary (or recordkeeping) survey at home for two consecutive one-week periods.

A reinterview program for the CEX provides quality control. The program provides a means of evaluating individual interviewer performance to determine how well the procedures are being carried out in the field. A member of the supervisory staff conducts the reinterview. Subsamples of approximately 6 percent of households in the Interview survey and 17 percent in the Diary survey are reinterviewed on an ongoing basis. A new diary form with more categories and expanded use of cues for respondents was introduced in 1991, based on results from earlier field and laboratory studies.

Estimation

Missing or invalid data on demographic or work experience are imputed. No imputation is done for missing data on expenditures or income. Selected portions of the Diary data are also adjusted by automated imputation and allocation routines when respondents report insufficient detail to meet publication requirements. These procedures are performed annually on the data. The imputation routines assign qualifying information to data items when there is clear evidence of invalid nonresponse.

The statistical estimation of the population quantities of interest, such as the average expenditure on a particular item by a CU or the total number of CUs in a particular demographic group, is conducted via a weighting scheme. Each CU included in the survey is assigned a weight that is interpreted as representing the number of similar families in the universe of interest, the U.S. civilian noninstitutional population. Readers should refer to http://stats.bls.gov/opub/hom/homch16_c.htm for the detailed weighting method.

Beginning with 1997 data, BLS introduced a new calibration method to compute weights in the Consumer Expenditure Survey. The weights are calculated using a model-assisted, design-based regression estimator.

Accuracy

The Consumer Expenditures Survey is a sample survey and hence is subject to two types of errors, nonsampling and sampling. Nonsampling errors can be attributed to many sources, such as differences in the interpretation of questions, inability or unwillingness of the respondent to provide correct information, mistakes in recording or coding the data obtained, and other errors of collection, response, processing, coverage, and estimation for missing data. The full extent of nonsampling error is unknown. Sampling errors occur because the survey data are collected from a sample and not from the entire population. Tables with coefficients of variation and other reliability statistics are available on request from the national office. However, because the statistics are shown at the detailed item level, the tables are extensive.

TABLE 3-14. Cost of Owning and Operating an Automobile

Your Driving Costs produced by the American Automobile Association (AAA) provided the data for this table. Prior to 1985, the cost figures are for a mid-sized, current model, American car equipped with a variety of standard and optional accessories. After 1985, the cost figures are for a composite of three current model American cars:

1. A 1999 Chevrolet Cavalier LS,
2. A 1999 Ford Taurus SEL Deluxe, and
3. A 1999 Mercury Grand Marquis LS.

Thus, the estimates are not reliable estimates for all cars.

Fuel costs were based on an average price of \$1.195 per gallon of regular unleaded gasoline, weighted 20 percent full-serve and 80 percent self-serve. Insurance figures were based on personal use of vehicles driven less than 10 miles to or from work, with no young drivers. Normal depreciation costs were based on the vehicle's trade-in value at the end of four years or at 60,000 miles. American Automobile Association (AAA) analysis covers vehicles equipped with standard and optional accessories, including automatic transmission, air conditioning, power steering, power disc brakes, AM/FM stereo, driver-and passenger side air bag, anti-lock brakes, cruise control, tilt steering wheel, tinted glass, emission equipment, and rear window defogger.

**TABLE 3-15a & 3-15b. Average Passenger Fare
(Current and chained 1996 dollars)**

TABLE 3-18. Total Operating Revenues

Air

The U.S. Department of Transportation, Bureau of Transportation Statistics (BTS), Office of Airline Information, reports passenger fares and operating revenues in its publication *Air Carrier Financial Statistics*. These numbers are based on 100 percent reporting by large certificated air carriers. Minor errors from nonreporting may occur but amount to less than one percent of all passenger or freight activity. The figures do not include data for all airlines; such as most scheduled commuter airlines and all nonscheduled commuter airlines.

Class I Bus

Class I passenger motor carriers are required to report financial and operating information to BTS using form MP-1. (Prior to 1996, Class I carriers were required to report to the Interstate Commerce Commission.) Class I passenger motor carriers are defined as those having annual gross operating revenues, as adjusted for inflation, of \$5,000,000 or more. This table does not include Class I carriers whose data had not been received at the time of publication. Thus, these data do not represent total Class I passenger motor carrier activity.

Transit

The American Public Transit Association (APTA) reports these figures, which are based on the annual National Transit Database (NTD) report published by the USDOT, Federal Transit Administration (FTA). The legislative requirement for the NTD is found in Title 49 U.S.C. 5335(a). Transit agencies receiving funds through the Urbanized Area Formula Program are generally required to report financial and operating data, including capital expenditures, revenues and expenses. These data are generally considered accurate because the FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or misinterpret certain data definitions. APTA conservatively adjusts FTA data to include transit operators that do not report to the

database (private and very small operators and rural operators).

Rail

Data are from *Railroad Facts* published annually by the Association of American Railroads (AAR). AAR figures are based on 100-percent reporting by all nine Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million in 1991 and adjusted annually in concert with changes in the "Railroad Freight Rate Index" published by the Bureau of Labor Statistics. In 2000, the adjusted threshold for Class I railroads was \$ 261.9 million. Declassification from Class I status occurs when a railroad falls below the applicable threshold for three consecutive years. Although Class I railroads comprise only 1 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage operated, 91 percent of total freight rail revenue, and 88 percent of railroad employment.

Intercity/Amtrak

Average passenger fare data are based on 100 percent of issued tickets, and thus should be accurate. Created as a publicly-owned for-profit corporation, Amtrak collects its own financial data and reports this information in its annual report. Auditing should ensure the accuracy of the operating revenue figures.

Trucking and Courier Services (except air)

The Census Bureau's Transportation Annual Survey (formerly known as the Motor Freight Transportation and Warehousing Survey) is the source of this information. The sample survey represents all employer firms with one or more establishments engaged primarily in providing commercial motor freight transportation or public warehousing services. It excludes motor carriers that operate as auxiliary establishments to nontransportation companies, as well as independent owner-operators with no paid employees. Thus, the data do not represent the total trucking industry.

In 1999, Transportation Annual Survey was merged with the Census Bureau's Service Annual Survey (SAS) and is the source of data for years 1998 and later. SAS provides estimates of operating

revenue of taxable firms and revenue and expenses of firms exempt from federal income taxes for selected service industries. Unlike the Transportation Annual Survey, the SAS is based on the North American Industry Classification System (NAICS).

As with all sample surveys, two types of errors are possible: sampling and nonsampling. Nonsampling errors may include response errors and mistakes in coding or keying data. For additional information about the survey and data reliability, the reader is referred to the Census Bureau website at www.census.gov.

Water (Domestic)

Eno Transportation Foundation, Inc. is the source of these data. Eno estimates these figures by multiplying ton-mile figures by estimated revenue per ton-mile. The U.S. Army Corps of Engineers reports the ton-mile figures in its publication *Waterborne Commerce of the United States*, and the revenue per ton-miles figures are estimated by Eno.

Oil Pipeline

Eno Transportation Foundation, Inc., publishes these data, which are based on Federal Energy Regulatory Commission (FERC) data and reported by the Oil Pipeline Research Institute for years 1977 to the present. FERC data originates from required quarterly reports filed by pipeline companies. Prior to 1977, the data are based on the former Interstate Commerce Commission data for regulated pipelines, and estimated to be 16 percent of the total of nonregulated pipelines.

Gas Pipeline

These statistics originate from *Gas Facts*, published annually by the American Gas Association (AGA). AGA data are based on gas utilities participation and reporting to the Uniform Statistical Report and estimates for those companies not reporting based on recent historical experience. Varying percentages of nonreporters from year to year introduce minor reliability problems for time-series comparisons.

TABLE 3-19. Employment in For-Hire Transportation and Selected Transportation-Related Industries

Employment data by industry are from the National Employment, Hours, and Earnings esti-

mates published by the Bureau of Labor Statistics (BLS), U.S. Department of Labor. These estimates originate from the Current Employment Statistics (CES) survey program. The CES is a monthly survey conducted by state employment security agencies in cooperation with the BLS. The survey provides employment, hours, and earnings estimates based on payroll records of nonfarm business establishments, including government.

BLS uses a stratified sample based on a sector's employment size, or the degree of variability among its establishments, or both. This ensures that BLS captures a more representative survey from employers with large payrolls. Thus, large establishments are certain of selection while smaller ones have less of chance.

Data Collection

Data are collected electronically from about two-thirds of the respondents and by mail or fax from the remainder. The primary type of electronic reporting is touch-tone phone self-response; others are computer-assisted phone interviews and phone voice recognition technology. Increasingly, data are collected through electronic data interchange from a small but growing number of companies that have a large number of establishments across the country. Mail respondents submit Form 790 to the BLS each month. It is then edited and returned to the respondent for use again the following month. All firms with 250 employees or more are asked to participate in the survey, as well as a sample of smaller firms.

Estimation

Employment estimates are made at what is termed the basic estimating cell level and aggregated upward to broader levels of industry detail by simple addition. Basic cells are defined by industry (usually at the 3- or 4-digit SIC level) and are stratified within industry by geographic region and/or size class in the majority of cases. Within the wholesale trade, retail trade, and services divisions, most industries are stratified into three to five size classes (beginning in 1984).

Most national employment estimates are multiplied by bias adjustment factors to produce the monthly published estimates. Bias adjustment factors are used primarily to compensate for the inability to capture the entry of new firms on a

timely basis. New firms contribute a substantial amount to employment growth each year, but there is a lag between the creation of a firm and its inclusion on the sample frame (i.e., the Unemployment Insurance universe file). It is, therefore, necessary to use modeling techniques to capture this segment of the population. BLS also performs seasonal adjustments for certain SIC industries.

Accuracy

BLS does not publish data reliability information along with estimates. Instead, it provides estimation formula and the necessary parameters so that users can estimate standard errors. For additional information, see the "Explanatory Notes and Estimates of Error" in the BLS monthly publication *Employment and Earnings*.

The CES survey, which began over 50 years ago, predates the introduction of probability sampling as the internationally recognized standard for sample surveys. Instead, a quota sample has been used since its inception. Quota samples are at risk for potentially significant biases, and recently completed BLS research suggests that, despite the large CES sample size, employment estimates based on that sample at times diverge substantially from those that a more representative sample would have been expected to produce. This leads to an over-reliance on bias adjustment in the estimation procedure. Because bias adjustment is primarily based on past experience, it is limited in its ability to accurately reflect changing economic conditions on a timely basis.

Government Employment

The Office of the Secretary provides employment figures for the U.S. Department of Transportation. State and local highway department employment figures are from the *State and Local Government Employment and Payroll Estimates*, published by the U.S. Department of Commerce, Bureau of the Census. The data are for the 50 states and the District of Columbia. Employment and payroll data pertain to the month of October. At present, data are collected for one pay period that includes October 12 (regardless of the period's length) through the Public Employment Survey (PES).

Employment refers to all persons gainfully employed by and performing services for a govern-

ment. Employees include all persons paid for personal services performed from all sources of funds, including persons paid from federally funded programs, paid elected officials, persons in a paid leave status, and persons paid on a per meeting, annual, semiannual, or quarterly basis. Excluded from employment statistics are unpaid officials, pensioners, persons whose work is performed on a fee basis, and contractors and their employees.

The Census Bureau derives full-time equivalent (FTE) employment by summing the number of full-time employees reported and converting the number of hours worked by part-time employees to a full-time equivalent amount. Up until 1985 data, the method used to calculate FTEs was based solely on payroll data. Effective with 1986 data, the annual employment survey started collecting data on the number of hours worked by part-time employees in order to provide a more accurate representation of full-time equivalent employment. No October 1985 FTE employment data are available.

Beginning in 1999, the Public Employment Survey (PES) was conducted using a separate sample of approximately 11,000 government units to improve data accuracy and survey efficiency. Government units meeting any of the following criteria are included in the survey: 1) counties with populations greater than 100,000; 2) cities with populations greater than 75,000; 3) townships in New England and Mid-Atlantic with populations greater than 50,000; 4) special districts with FTEs greater than 1000; 5) independent school districts with enrollment greater than 10,000; and 6) all dependent and independent schools providing college level education. In 1999, government units were sampled to obtain a relative standard error of 3 percent or less for FTE and total payroll for each of the states by type of government groups.

Prior to 1993, the PES used a joint sample of approximately 24,000 units for both employment and finance. From 1993 to 1998, the sample size was reduced to around 14,000 units. The standard error for the PES prior to 1999 was designed to be around 3 percent for major state- or county-level estimates of finance variables (state-level for 1993-1998 and county-level prior to 1993). Employment estimates are made using regression, except when the number of noncertainty cases contributing to the estimate is less than 20, where a simple unbiased estimate is used.

TABLE 3-20. Employment in Transportation Occupations**TABLE 3-22. Median Weekly Earnings of Full-Time Wage and Salary Workers in Transportation by Detailed Occupation**

Employment by detailed transportation occupation data are from the Occupational Employment Statistics (OES) survey, collected by the Bureau of Labor Statistics (BLS). The OES is a periodic mail survey of nonfarm establishments that collects occupational employment data on workers by industry. The OES program surveys approximately 725,000 establishments in 400 detailed industries. The average response rate for the last three years, according to a BLS official, averaged about 70 percent.

The sample is selected primarily from the list of business establishments reporting to the state unemployment insurance program. The OES sample initially stratifies the universe of establishments by three-digit industry code and size-class code. Establishments employing 250 employees or more are sampled with certainty. Establishments employing fewer than 250 employees but more than 4 employees are sampled with probability proportional to the size class employment within each three-digit industry. Establishments employing four or fewer employees (i.e., size class 1 establishments) are not sampled. Instead, the employment for these establishments are accounted for by assigning a larger sampling weight to establishments employing five to nine employees (i.e., size-class 2 establishments). Within each three-digit industry/size-class cell, establishments are systematically selected into the sample through a single random start.

Data Collection

Employers are the source of occupational data. Within establishments, the main source of occupational data reported by respondents is personnel records. Data are collected from respondents primarily by mail. Occasionally, visits are made to large employers and to other respondents who indicate particular difficulty in completing the questionnaires. Ordinarily, two mailings follow the initial mailing. After the third mailing, a subsample of the remaining nonrespondents is drawn and contacted by telephone. The OES survey follows a 3-year cycle. Three surveys are conducted

alternately for manufacturing, nonmanufacturing, and the balance of nonmanufacturing industries.

Estimation

During the sample selection process, each sampled establishment is assigned a sampling weight that is equal to the reciprocal of its probability of selection. For example, if an establishment on the sampling frame had a 1 in 10 chance of being selected into the sample, then its sampling weight is 10. For establishments that did not respond to the survey, a nonresponse adjustment factor is calculated and applied against the sampling weights of the responding establishments within each state/3-digit industry/size-class cell. Multiplying these adjustment factors by sampling weights increases the weight of the responding establishments so they can account for the missing employment data of the nonresponding establishments.

Accuracy

The OES survey uses a subsample replication technique to estimate variances in occupational employment at the 3-digit industry/size-class level. For additional information on occupational employment estimates and measurements of sampling error associated with the estimates, the reader is referred to <http://stats.bls.gov/oes/home.htm>.

TABLE 3-21. Average Wage and Salary Accruals per Full-Time Equivalent Employee by Transportation Industry**TABLE 3-23. Total Wage and Salary Accruals by Transportation Industry**

The *Survey of Current Business* (tables 6.3c and 6.6c) published by the U.S. Department of Commerce, Bureau of Economic Analysis, is the source of transportation wage and salary data. These estimates are based on BLS tabulations of employee wages that are covered by State unemployment insurance. As a component of the income side of National Income and Product Account, wages and salaries comprise part of the GDP calculation. These data reflect the monetary remuneration of employees in terms of wage accruals less disbursements. It is defined as the difference between wages and salaries on a “when-earned” basis, or accrued, and wages and salaries on a “when-paid,” or dis-

bursed basis. This computation was instituted in 1992 because a significant portion of bonus payments were missed in previous calculations. Readers should also refer to the earlier discussion of GDP methods and reliability for more detail.

TABLE 3-24. Labor Productivity Indices for Selected Transportation Industries

The Bureau of Labor Statistic's (BLS) *Industry Productivity Measures* is the source of transportation labor productivity data. BLS develops industry productivity measures based on various data sources.

For rail, BLS uses freight ton-mile and passenger miles that are collected by the Surface Transportation Board (STB), the Association of American Railroads (AAR), and Amtrak. BLS also aggregates four different air transportation outputs to form a single productivity index: domestic passenger-miles, domestic freight ton-miles, international passenger-miles, and international freight ton-miles. Air transportation data come from *Air Carrier Traffic Statistics and Air Carrier Financial Statistics*, published by the U.S. Department of Transportation, Bureau of Transportation Statistics. For petroleum pipeline, BLS relies on data from the Association of Oil Pipelines and derived an output index based on trunkline barrel-miles. A barrel-mile is one barrel of petroleum moved through one mile of pipeline.

Estimation

BLS generally calculates labor productivity by dividing an index of output (in this case, ton-miles) by an index of hours. Output is derived with a weight adjusted Tornqvist formula that produces an output ratio for one year. BLS then combines these in a series that produces a chained output index. The hour indexes are developed from data in BLS's Current Employment Statistics (CES; see discussion above for table 3-12) and are the results of dividing the annual aggregate hours for each year by a base-period figure. Readers who need more detail, such as mathematical specifications or equations, should refer to Kunze and Jablonski (Kunze and Jablonski 1998) or call the Office of Productivity and Technology at BLS.

Accuracy

BLS provides no measures of reliability. However, BLS makes an assumption that transportation

outputs should be measured using the production of passenger-miles or freight-miles. Another school of thought might assume that many transportation firms or facilities are actually providing capacity rather than actual use. Thus, an argument can be made that productivity should be based on capacity rather than use. In fact, this is how BEA measures transportation output. To evaluate the BLS assumption, one study compared the two approaches by examining the different growth rates produced by BLS and BEA and found that in 25 of 35 service industries, the differences are within one percentage point. For transportation, differences in growth rates across BLS and BEA estimates were two percentage points or less (Kunze and Jablonski 1998).

Beginning with 1997 data, the indices for bus and petroleum pipelines did not meet BLS publication standards and are considered less reliable than those for other modes. These industries had between 14,000 and 15,000 employees, far below the 50,000-employee threshold established for transportation industries by BLS. However, they both met a basic test of variability of the annual percent changes in the output per hour measure.

GOVERNMENT REVENUES AND EXPENDITURES

TABLE 3-25a & 3-25b. Federal, State, and Local Government Transportation-Related Revenues and Expenditures, Fiscal Year (Current and constant 1996 dollars)

TABLE 3-26a & 3-26b. Federal Transportation-Related Revenues, Fiscal Years (Current dollars and constant 1996 dollars)

TABLE 3-27a & 3-27b. Federal Transportation-Related Expenditures by Mode, Fiscal Year (Current and constant 1996 dollars)

TABLE 3-28. Cash Balances of the Transportation-Related Federal Trust Funds, Fiscal Year

The main sources for federal-level data are the *Budget of the United States Government* and the *Appendix to the Budget*. These data are the actual figures as reported for the various transportation-related programs in the appendices of each year's

budget document.¹ The figures are consistent from year to year and follow the definitional structure required by the Office of Management and Budget (OMB).

Primary sources for state and local transportation-related revenues and expenditures data are censuses and surveys collected by the U.S. Census Bureau. All units of government are included in the Census of Governments, which is taken at five-year intervals for years ending in 2 or 7, and these data are full counts, which are not subject to sampling error.

State and local government data for noncensus years are obtained by annual surveys, which are subject to sampling error. For U.S. totals of local government revenues and expenditures in this report, sampling variability is less than 3 percent.

Federal figures in this report correspond to the federal fiscal year, which begins on October 1, while state and local data are for fiscal years that generally start in July. While this may create a small error in totals for any given year, the data are suitable for illustrating trends in public transportation finance. Programs terminated before 1985 are excluded from the tables. The totals for transportation revenues and expenditures in this report are the sum of the Census Bureau's state and local numbers plus the total of the federal numbers.

The source of the chained dollar deflators is *The National Income and Product Account Tables*, Bureau of Economic Analysis, table 7.1, "Quantity and Price Indexes for Gross Domestic Product." All inflation-adjusted data are for the base year 1996, instead of 1992 as in previous editions of *National Transportation Statistics*. Note that deflators used for the federal data differ from those used for state and local data. Thus, if expenditures are totaled across different levels of government in

¹ The federal budget is broken down into 20 functional categories, of which one is transportation (function 400). Function 400 is not tied to any one department or agency, but instead aggregates transportation functions wherever in the federal government they occur. Thus, the transportation function may include many activities, such as highway construction and safety, airways and airports, maritime subsidies, U.S. Coast Guard operations, railroads, and mass transit. It also covers grants-in-aid programs to support state and local activities. A good summary of the federal budget process can be found in Stanley E. Collender, *The Guide to the Federal Budget, Fiscal Year 1996* (Washington, DC: Urban Institute Press, 1995).

chained dollars before and after federal grant transfers, the totals will not match.

Transportation Revenues

Transportation revenue estimates include transportation-related user charges, taxes, or fees earmarked for transportation-related expenditures. Estimates include transit fares from systems owned and operated by state and local governments, including those systems operated under contract by a private firm under day-to-day financial oversight by government.

Federal transportation revenues generally consist of trust-fund collections from user charges, such as fuel taxes, vehicle taxes, registration and licensing fees, and air passenger ticket taxes. Damage payments made by private parties are deposited in the funds to reimburse the government for related fund expenditures.

The five transportation-related Federal trust funds are established by law:

1. Highway Trust Fund (HTF), which includes both highway and transit accounts;
2. Airport and Airway Trust Fund (AATF);
3. Harbor Maintenance Trust Fund (HMTF);
4. Inland Waterways Trust Fund (IWATF); and
5. Oil Spill Liability Trust Fund (OSLTF).

Highway Revenues

The Highway Trust Fund (HTF) was established by the Highway Revenue Act of 1956. Highway Trust Fund revenues are derived from various excise taxes on highways users (e.g., motor fuel, motor vehicles, tires, and parts and accessories for trucks and buses) and interest earned on balances. The Transportation Equity Act for the 21st Century (TEA-21), which was enacted in June 1998, made important changes to the Federal Highway Trust Fund legislations (FHWA, 1999):

- extension of deposit provisions of almost all highway user taxes through September 30, 2005;
- after September 30, 1998, the HTF can no longer earn interest on balances, and the balance in the highway account would be transferred to the general fund;
- TEA-21 keys Federal-aid highway funds to receipts of the Highway Account of the HTF; and

► Appendix E: Data Source and Accuracy Statements

- the Transit Account share of fuel tax rose from 2 cents per gallon to 2.86 cents per gallon.

The Excise tax on gasoline is the most important source of the HTF revenues and has changed five times since 1985. It increased from 9 cents per gallon in 1985 to 9.1 cents per gallon on January 1, 1987; to 14.1 cents per gallon on December 1, 1990; to 18.4 cents per gallon on October 1, 1993; to 18.3 cents per gallon on January 1, 1996; and to 18.4 cents per gallon on October 1, 1997 (FHWA, 1999).

Money paid into the fund is earmarked primarily for the Federal-aid Highway program, which is apportioned to states for planning, constructing, and improving the nation's highway system, roads, and bridges. Effective April 1983, the Highway Revenue Act of 1982 created the Mass Transit Account within the HTF.

Some portion of the HTF is dedicated to budget deficit reduction and the Leaking Underground Storage Tank Trust Fund (LUSTTF). For example, 4.3 cents per gallon of the federal excise tax on gasoline has been assigned to the general fund since January 1, 1996, and 0.1 cents per gallon was apportioned to the LUSTTF since October 1, 1997 (FHWA, 1999). These funds are not considered as transportation-related in this report.

State and local highway revenues include state and local taxes on motor fuels, motor vehicle licenses, and motor vehicle operator licenses, along with state and local charges for regular toll highways and local parking charges. Regular highway charges (revenues) include reimbursements for street construction and repairs, fees for curb cuts and special traffic signs, and maintenance assessments for street lighting, snow removal, and other highway or street services unrelated to toll facilities. Local governments use special assessments and property taxes that may be commingled with other local revenue in a general fund to finance local road and street programs. Consistent with federal revenues, state and local transportation revenues in this report do not include general funds that may be allocated to transportation.

Transit Revenues

As mentioned above, the Highway Revenue Act of 1982 created the Mass Transit Account within the HTF. Effective April 1983, the act provided one cent per gallon of the federal excise tax on gasoline sales to be set-aside for the Mass Transit

Account to help finance transit capital projects. The rate was increased to 1.5 cents per gallon on December 1, 1990; to 2 cents per gallon on January 1, 1996; and to 2.86 cents per gallon on October 1, 1997 (FHWA, 1999). Although highway users pay these taxes, the funds are treated as federal transit revenues.

State and local transit revenues include revenues from operations of public mass transportation systems (rapid transit, subway, bus, railway, and commuter rail services), such as fares, charter fees, advertising income, and other operations revenues. They exclude subsidies from other governments to support either operations or capital projects.

Air Revenues

The Tax Equity and Fiscal Responsibility Act of 1982, as amended by Omnibus Budget Reconciliation Acts of 1990 and 1993, the Small Business Job Protection Act of 1996, and the Taxpayers Relief Act of 1997, provides for the transfer of receipts received in the U.S. Treasury from the passenger ticket tax and certain other taxes paid by airport and airway users to the Airport and Airways Trust Fund (AATF). Effective October 1, 1997, the Taxpayers Relief Act of 1997 extends aviation excise taxes for 10 years and includes the following major provisions (FAA, 1999):

1. retains existing freight way bill, general aviation fuel and gas taxes, and a 6-dollar departure tax on domestic flights to and from Alaska and Hawaii;
2. converts the 10 percent ad valorem tax on domestic passenger tickets to a combination of ad valorem and flight segment tax over three years beginning October 1, 1997;
3. imposes a new 7.5 percent tax on payments to airlines for frequent flyer and similar awards by banks and credit card companies, merchants, frequent flyer program partners—other airlines, hotels, or rental car companies and other businesses;
4. increases the current 6-dollar international departure tax to 12 dollars per passenger and adds a 12-dollar international arrival tax;
5. lowers tax rates on flights to certain rural airports to 7.5 percent without a flight segment component; and
6. transfers revenues from the 4.3 cents-per-gallon aviation fuel taxes currently dedicated to

reduce the national U.S. deficit from the general fund to the AATF.

Most of this trust fund is used to finance the Federal Aviation Administration's (FAA's) capital programs, namely, Facilities and Equipment; Research, Engineering, and Development; and Airport Improvement Program. Within certain limits set by Congress, some of the remaining money is used to cover FAA operation and maintenance expenses. The portion of the FAA's operation and Maintenance expenses not paid from the trust fund revenues are financed by U.S. Treasury general funds.

State and local revenues from air transportation are derived from airport charges. Beginning in 1992, local governments began collecting passenger facility charges and spending these revenues (both subject to FAA approval) to finance capital programs.

The collection of passenger facility charges was authorized by the Aviation Safety and Capacity Expansion Act of 1990.¹

Waterway and Marine Revenues

Federal water revenues come from four primary sources: the Harbor Maintenance Trust Fund (HMTF), the Inland Waterways Trust Fund (IWATF), the Oil Spill Liability Trust Fund (OSLTF), and tolls and other charges collected by the Panama Canal Commission.

The Harbor Maintenance Trust Fund was established in accordance with the Harbor Maintenance Revenue Act of 1986. Revenues for this fund are derived from receipts of a 0.125 percent ad valorem user fee imposed on commercial users of specified U.S. ports, Saint Lawrence Seaway tolls. On March 31, 1998, per a U.S. Supreme Court ruling, the tax on exports was terminated (OMB, 2000). This fund is used to finance up to 100 percent of the U.S. Army Corps of Engineers' harbor operation and maintenance (O&M) costs, including O&M costs associated with Great Lakes navigational projects, and the fund fully finances the operation and maintenance of the Saint Lawrence Seaway Development Corp.

The Inland Waterways Trust Fund was established by the Inland Waterways Revenue Act of 1978 and amended by the Water Resources Development Act of 1986. The trust fund has been in

effect since fiscal year 1981. The sources for the fund are taxes imposed on fuel for vessels engaged in commercial waterway transportation and investment interest. From this tax of 24.3 cents per gallon, 4.3 cents goes for deficit reduction, and a statutory maximum of 20 cents (raised to that level from the previous maximum of 19 cents at the beginning of 1995) goes to the Trust Fund. The funds are earmarked for financing one-half of the construction and rehabilitation costs of specified inland waterway projects.

The Oil Spill Liability Trust Fund was established by the Omnibus Budget Reconciliation Act of 1989. Revenues for this fund are raised through tax collection of 5 cents on each barrel of oil produced domestically or imported (OMB, 1999). The resources from this fund are used to finance oil pollution prevention and cleanup activities by various federal agencies. For the U.S. Coast Guard, the fund finances oil spill recovery and payment of claims. Beginning in 1997, the fund also finances the annual disbursement to the Prince William Sound Oil Spill Recovery Institute.

The Panama Canal Commission was established by the Panama Canal Act of 1979 to manage, operate, and maintain the Panama Canal under the Panama Canal Treaty of 1977. The treaty period ended on December 31, 1999, when the Republic of Panama assumed full responsibility for the canal. During the treaty period, the commission collected tolls and other revenues, which were deposited in the U.S. Treasury in an account known as the Panama Canal Revolving Fund. Money from this fund was used to finance canal operations and capital programs, which were reviewed annually by Congress. The revenues reported under this category for FY 2000 are for the first quarter (October 1999 – December 1999) of Panama Canal operations.

State and local water revenues are derived from canal tolls, rents from leases, concession rents, and other charges for use of commercial or industrial water transport and port terminal facilities and related services. Fees and rents related to water facilities provided for recreational purposes, such as marina and public docks, and toll ferries are not included.

¹ Public Law 101-508, 104 Stat. 1388 (Nov. 5, 1990).

Rail Revenues

There are no governmental transportation revenues for rail (Rail generates fuel taxes that are designated for deficit reduction and, thus, are not considered transportation revenues in these tables).

Pipeline Revenues

The Pipeline Safety Program is funded by user fees assessed on a per-mile basis. The assessments are made on each pipeline operator regulated by the Office of Pipeline Safety (OPS) of the Research and Special Programs Administration (RSPA) in the U.S. Department of Transportation. There are no state and local revenues for pipeline.

General Support Revenues

General support revenues come from the Emergency Preparedness Fund, which is generated from fees paid by registered shippers of hazardous materials. RSPA administers and distributes the revenues to states, territories, and tribes through the Hazardous Materials Emergency Preparedness (HMEP) grant program, which is authorized by Federal Hazardous Materials Transportation Law.

Transportation Expenditures

Expenditures, rather than obligations, are used in these tables because they represent the final, actual costs to the government, by year, for capital goods and operating services required by transportation programs. Obligations suggest government commitment to future transportation expenditures, but do not indicate when the funds will actually be disbursed or even if the amounts obligated will be spent.

It is important to recognize that in some accounts in the *Budget of the United States Government*, expenditures for a particular year understate total government disbursements. This is because certain offsetting collections of fees and assessments from the public are not treated as government revenues, but deducted from disbursements to determine expenditures. These collections are those mandated, by statute, to directly fund agency expenditures rather than be transferred to the U.S. Treasury. For this reason, expenditures do not necessarily indicate how much the federal government actually spends on transportation each year.

Highway Expenditures

Federal Highway Administration (FHWA) expenditures include funds for Federal Aid Highways (financed from the HTF) and the Interstate Substitution and Railroad Crossing Demonstration (financed from the general fund). The National Highway Traffic Safety Administration (NHTSA) expenditures include: operations, research, and highway traffic safety grants. Federal highway expenditures also include road construction activities managed by the Department of the Interior's National Park Service, Bureau of Indian Affairs, Bureau of Reclamation, and Bureau of Land Management; the Department of Agriculture's Forest Service; the Department of Housing and Urban Development; and other federal agencies.

State and local governments' highway expenditures reported by the Census Bureau are generally slightly lower than those reported in FHWA's *Highway Statistics* because the FHWA includes some highway expenditure data, such as law enforcement activities and patrols, and policing of streets and highways not included in the Census data. Box 3-1 outlines the major differences in Census Bureau and FHWA calculation of state and local highway transportation financial statistics.

Transit Expenditures

Federal expenditures include grants to states and local agencies for the construction, acquisition, and improvement of mass transportation facilities and equipment and for the payment of operating expenses. Several other items are also included: Federal Railroad Administration (FRA) commuter rail subsidies related to the transition of Conrail to the private sector; research and administrative expenses of the Federal Transit Administration (FTA); and Federal interest payment contribution to the Washington Metropolitan Area Transportation Authority (WMATA).

Air Expenditures

Federal expenditures reported here consist of all FAA expenditures, such as those associated with constructing, operating, and maintaining the national air traffic system; administration of the airport grant program; safety regulation; and research and development. NASA expenses related to air transportation are also included.

State and local expenditures for air include the operation and maintenance of airport facilities, as administered by local airport and port authorities quasigovernment agencies with responsibilities for promoting safe navigation and operations for air modes.

Waterway and Marine Expenditures

Federal expenditures comprise those parts of the U.S. Coast Guard's expenses that are transportation-related, such as aids to navigation, marine safety, and marine environmental protection. All expenses of the U.S. Maritime Administration are included, such as subsidies for construction and operation of vessels by U.S.-flag operators, research and development, and training of ship officers. Also included are those expenses of the U.S. Army Corps of Engineers for construction and operations and maintenance of channels, harbors, locks and dams; protection of navigation; the salaries and expenses of the Federal Maritime Commission; and the expenses of the Panama Canal Commission. Expenditures of the Panama Canal Commission for FY 2000 include outlays for the first quarter of operations, including severance pay and accumulated leave. FY 2001 expenses are for the settlement of remaining accident and contract claims against the Commission.

State and local governments incur water transportation expenditures by operating and maintaining water terminal facilities within ports and harbors.

Rail Expenditures

Federal rail transportation expenditures include:

1. expenses for rail safety enforcement;
2. inspection and program administration;
3. railroad research and development;
4. financial assistance to states for planning, acquisition, rail facility construction, and track rehabilitation with respect to low volume freight lines;
5. grants to Amtrak, including funds to upgrade the high-speed line between Boston, Massachusetts, and Washington, DC, owned by Amtrak (the Northeast Corridor Improvement Program); annual appropriations to cover operating losses; and funds to invest in new equipment and facilities;
6. the purchase of redeemable preference shares for track rehabilitation and line acquisition; and

7. loan guarantee defaults for railroad rehabilitation and improvement and Conrail labor protection.¹

The local rail freight assistance program, a program of FRA grants to state governments, has had a 70:30 percent federal-state funding share since 1982.

Pipeline Expenditures

The Office of Pipeline Safety (OPS) reimburses state agencies up to 50 percent of their costs to carry out state pipeline safety programs. Federal expenditures are for the enforcement programs, research and development, and grants for state pipeline safety programs.

General Support Expenditures

General fund expenditures include all of the expenses of the following agencies: Office of Inspector General, National Transportation Safety Board, all expenses of the Research and Special Programs Administration, (except pipeline expenditures) and the Office of the Secretary of Transportation (except for payments to Air Carriers and the Commission on Aircraft Safety).

Limitations of the Source Data Sets

The database covers civilian transportation-related activities of government agencies including those of the U.S. Army Corps of Engineers and U.S. Coast Guard.

As mention earlier, federal government data are compiled for the federal fiscal year, which begins on October 1, while state and local data are for fiscal years that generally start in July except for four states with other starting dates (Alabama and Michigan in October, New York in April, and Texas in September). While this may create a small error in totals for any given year, the data are suitable for illustrating trends in public transportation finance.

Readers should note that state and local governments data for census years are full counts and not subject to sampling errors, whereas the data for

¹ Funds in the Conrail Labor Protection Program were provided for benefits to Conrail employees deprived of employment because of work force reductions and other actions. This program no longer exists since Conrail has been returned to the private sector. In 1988, the unobligated balances available from this program were transferred to the USCG, and in 1990 they were returned to the U.S. Treasury.

Box 3-1.

U.S. Census Bureau and Federal Highway Administration Calculations of State and Local Transportation Financial Statistics Differ in the Following Ways:

Item	Census	FHWA
Motor fuel tax revenues	Includes state and local tax revenues on any fuel used in motor vehicles and on gasoline used by aircraft.	Includes state and local fuel tax revenues attributed to highway use of fuels, including diesel fuel, gasohol, and liquefied petroleum gas used by private and commercial highway use motor vehicles and transit. Does not include revenues on gasoline used by aircraft.
Motor vehicle license tax revenues	Includes vehicle mileage and weight taxes on motor carriers; highway use taxes; or off-highway fees.	Does not include vehicle mileage and weight taxes on motor carriers; highway use taxes or off-highway fees.
Local parking charges revenues	Includes local parking revenues.	Not explicitly collected.
Highway expenditures	Excludes patrols or policing of streets and highways; traffic control activities of police or public safety agencies; law enforcement and safety activities of vehicle inspection enforcement, and vehicle size and weight enforcement; street cleaning activities; and roads within parks maintained by a park agency.	Includes patrols or policing of streets and highways; traffic control activities of police or public safety agencies; law enforcement and safety activities of vehicle inspection enforcement, and vehicle size and weight enforcement; street cleaning activities; and roads within parks maintained by a park agency.

noncensus years are estimated from annual surveys of the Bureau of the Census, which are subject to sampling variability of less than three percent. The Census Bureau’s database also does not include detailed modal information on interest earnings and bond issue proceeds on the revenue side nor bond retirement and interest payments on the expenditure side

Revenues

Transportation-related revenues like local government property taxes on vehicles, equipment, and streets, and state income taxes to support rail and intercity bus services are not covered because they are not shown in the source materials used to compile the database. In addition, taxes collected from users of the transportation system that go into the general fund are not included. For example, rail generates fuel taxes that are designated for deficit reduction and hence are not considered as

transportation revenues. The portion of the Highway Trust Fund (HTF) that goes to the general fund is not considered as transportation revenues.

Expenditures

It is important to recognize that in some accounts in the *Budget of the United States Government*, expenditures for a particular year understate total government disbursements. This is because certain offsetting collections of fees and assessments from the public are not treated as government revenues, but deducted from disbursements to determine expenditures. These collections are those mandated, by statute, to be applied directly to finance agency expenditures rather than being transferred to the Treasury.

In addition, the Census Bureau’s highway expenditures data do not include highway law enforcement expenditures, which form a part of the state and local highway expenditures published in the

Highway Statistics. To maintain consistency between the different modes regarding the types of expenditures included, these additional data from the *Highway Statistics* report have not been used.

Data Adjustments

Revisions and corrections to previously published data have been made in most cases. The base year for chained dollar estimates for current data sets is 1996, while the earlier version was presented in chained 1992 dollars. Moreover, the following adjustments have been incorporated.

Revenues

Transportation-related revenues of the Aquatic Resources Fund have been added to water transportation revenues. In this case, only the excise tax charged on motor boat fuels for the Boat Safety Program is assumed to be transportation-related.

The preceding data series did not account for revenues of Pollution Fund, Off-Shore Oil Pollution Fund, and Deep Water Port Liability Fund prior to FY 1990. The current data sets includes revenues for these funds prior to FY 1990.

Expenditures

Not all expenditures for the U.S. Coast Guard (USCG), as reported by the Office of Management and Budget, are considered transportation-related. A new approach has been used to arrive at more accurate USCG transportation-related expenditures. Similar to the previous approach, the current approach includes all expenditures for Environmental Compliance and Restoration, Alteration of Bridges, and Oil Spill Recovery. Part of the expenditures for Operations, Acquisition, Construction and Improvement, Research & Development, and Test and Evaluation are considered as transportation. Within these program areas, only Aids to Navigation, Marine Safety, and Marine Environmental Protection activities are included in the earlier data sets. In the current version, more activities like Search and Rescue and Ice Operations have been included. In addition, Boat Safety Program expenditures have also been included.

Trust fund share of pipeline safety was added to the Research and Special Programs Administration expenditures since FY 1994. This item was not covered in the previously published data.

Federal Grants

Federal grants to state and local governments for the Boat Safety Program have been included. These were not included in the previously reported data.

Data for federal transit grants are obtained from the Office of Management and Budget public budget database. In the previous data series, they were estimated by deducting direct federal transit expenditures grants from the total federal transit expenditures.

REFERENCES

Corrado, C., C. Gilbert, et al. (1997). "Industrial Production and Capacity Utilization: Historical Revision and Recent Developments." *Federal Reserve Bulletin* 83(2): 67.

Korn, E.L. and B.I. Graubard. 1991. "A Note on the Large Sample Properties of Linearization, Jackknife and Balanced Repeated Replication Methods for Stratified Samples." *The Annals of Statistics* 19 (4):2275-2279.

Krewski, D. and J.N. K. Rao. 1981. "Inference from Stratified Samples: Properties of Linearization, Jackknife and Balanced Repeated Replication Methods." *The Annals of Statistics* 9(5):1010-1019.

Kunze, K. and M. Jablonski (1998). *Productivity in Service-Producing Industries*. Brookings Workshop on New Service-Sector Data, Washington, DC.

Landerfeld, J. S. and R. P. Parker (1997). "BEA's Chain Indexes, Time Series, and Measures of Long-term Economic Growth." *Survey of Current Business* 77(5): 58.

Moulton, B.R. and E.P. Seskin (1999). "A preview of the 1999 Comprehensive Revision of the National Income and Product Accounts: Statistical Changes." *Survey of Current Business* 79 (October 1999): 6-17.

Parker, R. P. and J. E. Triplett (1996). "Chain-Type Measures of Real Output and Prices in the U.S. National Income and Product Accounts: an Update." *Business Economics* 31 (4): 37.

► Appendix E: Data Source and Accuracy Statements

Ritter, J.A. (2000). "Feeding the National Accounts." Federal Reserve Bank of St. Louis Review. March/April:11-20

SCB (1991). "Gross Domestic Product as a Measure of U.S. Production." *Survey of Current Business*.

Seskin, E. P. and R. P. Parker (1998). "A Guide to the NIPA's." *Survey of Current Business* 78(3):26.

U.S. Department of Labor, Bureau of Labor Statistics. 1997. Measurement Issues in the Consumer Price Index. Referenced at <http://stats.bls.gov/cpigm697.htm> on May 13, 1999.

Valliant, R. 1993. "Poststratification and Conditional Variance Estimation." *Journal of the American Statistical Association* 88 (421):89-96.

Young, A. H. (1993). "Reliability and accuracy of the Quarterly Estimates of GDP." *Survey of Current Business* 73(10): 29.

Young, A. H. and H. S. Tice (1985). "An Introduction to National Economic Accounting." *Survey of Current Business* 65: 59.

Yuskavage, R. E. (1996). "Improved Estimates of Gross Product by Industry, 1959-94." *Survey of Current Business* 76(8): 133.

Chapter 4 Energy and the Environment

PETROLEUM SUPPLY

TABLE 4-1. Overview of U.S. Petroleum Production, Imports, Exports, and Consumption

The petroleum supply system is extremely complicated, with many different processes, products, and entities involved. Briefly, crude oil is produced or imported, transported to refineries where it is refined into various products, and then transported to markets. Imports and exports of crude oil and products must be accounted for, as must be non-petroleum components of final products, such as natural gas plant liquids and ethanol for gasoline blending.

The U.S. Department of Energy, Energy Information Administration (EIA) collects extensive data at select points in the petroleum supply system. Sixteen surveys are conducted by EIA's Petroleum Supply Reporting System to track the supply and disposition of crude oil, petroleum products, and natural gas plant liquids:

- five weekly surveys cover refineries (form EIA-800), bulk terminal stocks (form EIA-801), product pipelines (form EIA-802), crude stocks (form EIA-803), and imports (form EIA-804).
- eight monthly surveys cover the same five points plus tanker and barge movement (form EIA-817), gas processing facilities (form EIA-816), and oxygenates (form EIA-819M).
- one survey (form EIA-807) collects propane data on a monthly basis in the warmer months (April-September) and on a weekly basis in the colder months.
- one annual survey determines production capacity of oxygenates and fuel ethanol (form EIA-819A), and
- one annual survey determines refinery fuel use, capacity, and crude oil receipts by transportation mode (form EIA-820).

The five weekly surveys target key points in the petroleum supply system. They do not include all companies, but sample 90 percent of volume at each selected point in the supply system. EIA ranks the companies involved in the survey and sends surveys as it scrolls down the list, stopping when it reaches the 90 percent level. Although 100

percent coverage is sacrificed, this method keeps the level of incoming data manageable and avoids burdening the smallest companies. All data are reviewed and anomalies checked.

Monthly surveys provide data that are used in the monthly and annual reports. They are similar to the weekly surveys, but are more exhaustive in both the range of data collected and the depth of the collection. Sample sizes and response rates for several of the key points in the supply system are shown in table A. The eight monthly surveys cover the industry more accurately than the weekly surveys and provide some double-check points that the other surveys do not. EIA expends considerable effort to ensure that its data are as accurate as possible. Revisions are made throughout the year. For example, EIA's *Annual Energy Review 1996*, released in July 1997, provided a preliminary 1996 number for total petroleum production of 8.30 million barrels per day (mmbd). The *Annual Energy Review 1997*, released a year later, revised that to 8.25 mmbd, and the 1999 Review reported 8.29 mmbd.

TABLE A. Average Response Rates for Monthly Surveys, 1998

Survey Site	Average universe site	Average number of respondents	Percent
Refinery	252	243	96.3
Bulk terminal	300	287	95.6
Pipeline	81	80	99.3
Crude oil stocks	174	169	99.1
Refinery	252	243	96.3
Bulk terminal	300	287	95.6

NOTE: The average response rate is calculated by summing individual monthly response rates and dividing by 12.

SOURCE: Tammy G. Heppner and Carol L. French, Energy Information Administration, U.S. Department of Energy, Accuracy of Petroleum Supply Data (Washington, DC: 1998)

No complicated survey is likely to be 100 percent accurate. EIA lists four sources of potential systematic errors:

1. Some members of the target population are missed. EIA reports that it continually reviews the lists and searches industry periodicals and newspapers to identify new actors. Considering the nature

of the petroleum industry, it is very unlikely that companies with significant production are not surveyed.

2. Some members of the target population do not respond. EIA reports a 97 percent response rate for monthly surveys. For some points in the supply system, the average response is over 99 percent. Survey respondents are required by law to respond, but some nonresponse is inevitable, especially among small companies. EIA assumes that the nonrespondent's value for that month is the same as for the previous month except for imports. Since imports vary widely, with respondents frequently having no imports, EIA assumes a nonresponse means zero imports. It can be assumed that EIA is good at "filling in the blanks." Assuming for illustration purposes that 0.5 percent of production does not respond, and that EIA is 90 percent accurate in covering the gap, then there is a possibility of a 0.05 percent error. Applying that to total production of 8.29 mmbd in 1999 suggests that there could be an error of 0.0041 mmbd (4,100 barrels per day), which would not affect the published number.

3. The most serious problem may be response error. A company may have poor data, perhaps as a result of imperfect measurements, or it may transmit the wrong number. EIA has no control over a company's data quality. Companies have incentive to measure their inputs and products accurately. Otherwise, they may be cheating themselves or risking ill will with their customers or suppliers. However, no instrumentation is perfectly accurate. The high throughput of, say, a refinery with capacity of several hundred thousand barrels per day, with a variety of products changing density and some lost or used on site, is very complicated to measure. Instrumentation errors are likely to be systematic at any one site, although they will be more nearly random in the aggregate for all facilities. There is potential for small but significant overall errors.

Mistakes may be made in recording and transferring the data. EIA reviews the data and flags gross errors or missing data for review by the respondent. However, not all errors will be picked up by EIA and/or the respondent. Overall, response errors probably are several times as large as nonresponse errors, but it is beyond the scope of this profile to estimate them.

4. The final potential source of systematic error is in the clarity of the survey form, i.e., whether all respondents interpret it correctly. No doubt errors and ambiguities can creep into a form, but at least for petroleum supply, that does not appear to be a major risk. The supply system is not changing rapidly, and EIA should be able to keep with it and the terminology. However the final digit of EIA's published supply data is questionable.

For additional information on survey methodology and statistical reliability, the reader is referred to the EIA reference cited in the tables or the EIA Internet site at www.eia.doe.gov.

FUEL AND ENERGY CONSUMPTION

TABLE 4-1. Overview of U.S. Petroleum Production, Imports, Exports, and Consumption

TABLE 4-2. U.S. Consumption of Energy from Primary Sources by Sector

TABLE 4-3. Domestic Demand for Refined Petroleum Products by Sector

TABLE 4-4. U.S. Energy Consumption by the Transportation Sector

TABLE 4-7. Domestic Demand for Gasoline

Petroleum consumption is far more complex to measure than supply. Instead of a few hundred companies at most measuring points in the supply system, there are tens of millions of consumers. It would be impossible for any survey of individual consumers to produce the high rate of return of U.S. Department of Energy (DOE), Energy Information Administration's (EIA's) supply surveys. EIA's transportation data collection is further limited by the termination of the Residential Transportation Energy Consumption Survey (RTECS). Therefore, EIA uses surveys of sales of products (e.g., Form EIA-821: Annual Fuel Oil and Kerosene Sales Report) or tax collection data from the U.S. Department of Transportation, Federal Highway Administration (FHWA).

EIA reviewed the accuracy of its energy consumption data in a 1990 monograph *Energy Consumption by End-Use Sector, a Comparison of Measures by Consumption and Supply Surveys*. Unfortunately, this monograph does not discuss the

transportation sector because the consumption and supply surveys were not comparable. However, some of the results from other sectors indicate the discrepancies between supply and consumption surveys. Table B shows the ratio of fuel supplied to the sector to consumption reported by the sector in consumption surveys.

In most cases, supply is reported as substantially larger than consumption. Supplies of fuel oil to the commercial sector are reported at almost twice the level of consumption reported by that sector. Some of the discrepancies may be due to definition differences (e.g., fuel oil for apartment buildings is included in commercial supply surveys but not in consumption surveys). Overall, however, the differences are too large for great confidence in the accuracy of the data.

If transportation had been reviewed in the same format, it is likely that the discrepancies would have been larger. Most transportation fuel (gasoline for automobiles) is purchased in small quantities at irregular intervals and cannot be checked simply by looking at a utility bill. Hence, highway transportation energy consumption surveys must be extensive to avoid the risk of large uncertainties in the data. But, with the termination of the RTECS, EIA ceased conducting such surveys. Consumption data must be derived indirectly from sales of petroleum products and tax collection data. While petroleum supply may be accurate to one decimal place, it is likely that disaggregating by sector use may be within plus or minus several percentage points, or perhaps about half a quadrillion British thermal unit (Btu) in table 4-1.

TABLE B.
Reported Ratio of Fuel Supply to Reported Consumption

Sector	Electricity	Gas	Oil
Residential	1.05	0.92	0.92
Commercial	0.91	1.38	1.96
Industrial	1.18	1.28	1.34

SOURCE: U.S. Department of Energy, Energy Information Administration, *Energy Consumption by End-Use Sector, A Comparison of Measures by Consumption and Supply Surveys*, DOE/EIA-0533 (Washington, DC: 1990).

Motor Gasoline

Almost all gasoline is consumed in the transportation sector. Small amounts are used in the commercial sector for nonhighway use and the

industrial sector, which includes agriculture, construction, and other uses. Subtracting estimates of those uses from the known total sales yields the transportation sector's total, which is further subdivided into highway and marine use. Aviation gasoline is, of course, used entirely in the transportation sector (for a very few high-performance automobiles as well as small aircraft).

Data on actual sales is collected by the states for revenue purposes. These data are forwarded to FHWA. EIA uses the data from FHWA to allocate highway consumption of motor gasoline among the states. For 1999, FHWA reported 124.7 billion gallons of gasoline sold nationally for highway use. EIA's table 5.12c of the *Annual Energy Review 2000* lists 8.33 mmbd of gasoline supplied for the transportation sector, the same as 127.7 billion gallons.

Such close agreement between supply and demand is not totally convincing. Definitions are unique to each state (e.g., whether gasohol is counted as pure gasoline or part gasoline and part renewables), measurement points vary from state to state, and each state handles losses differently. Hence, the total of all states' sales of gasoline is not entirely consistent.

Separation of highway from nonhighway uses of gasoline is, by necessity, based in part on careful estimates. Nevertheless, overall gasoline sales are well documented, and the separation is probably fairly accurate. Refinery output of motor gasoline was 7.93 mmbd in 1999, which is probably accurate to the first decimal place and maybe a little better. The transportation sector's 8.33 mmbd would have about the same accuracy.

Diesel Fuel

Diesel fuel is used in highway vehicles, railroads, boats, and military vehicles. Sales are only about 30 percent of gasoline in the transportation sector, but uncertainties are greater. More diesel than gasoline is used for nonhighway purposes, especially agriculture and construction. In addition, there has been more potential for cheating to avoid the tax; heating oil is virtually the same as diesel fuel and can easily be transferred to a vehicle. However, this is less significant now that tracers have been added to fuel oil. After the addition of tracers, the amount of transportation diesel fuel use jumped.

To estimate diesel fuel sales by mode, EIA starts with the total supply of distillate fuel and subtracts

the small amount sold to electric utilities (the most accurately known sector, as measured by EIA Form EIA-759). The remainder is divided among the other end-use sectors according to EIA's sales surveys (Form EIA-821: Annual Fuel Oil and Kerosene Sales Report, and Form EIA-863: Petroleum Product Sales Identification Survey).

This method introduces several potential elements of inaccuracy. First, the surveys of each sector are probably less accurate than the supply surveys noted earlier. Companies and individuals may inadvertently send incorrect data, or not respond at all. Then EIA has to determine what adjustment factor to use for each end-use sector. Since each sector will have a different response rate to the surveys, the adjustments will be different. Large adjustments can introduce large errors. EIA has not published its adjustments for the transportation sector. As shown in table 2, the adjustments in other sectors range from 5 to 96 percent of reported consumption. Even a 20 percent adjustment could introduce an error of one or two percentage points (plus or minus) for any one sector.

Overall, the accuracy of diesel fuel use in the transportation sector should be viewed with some skepticism.

Jet Fuel

Jet fuel is the only other petroleum-based fuel that is used in large quantities (over 1 million barrels/day) in the transportation sector. Virtually all of it is used by airlines. These data are accurate because airlines are required to report usage, and because there are relatively few certificated air carriers, data collection should be manageable.

NONPETROLEUM FUELS CONSUMPTION

TABLE 4-10. Estimated Consumption of Alternative and Replacement Fuels for Highway Vehicles

Collectively, oxygenates, natural gas, electricity, and various alternative fuels amount to only about 3 percent of all energy used in the transportation sector. While this may not be much greater than the error bars associated with petroleum use, it is important to track changes in these fuels accurately.

Oxygenates

Oxygenates, mostly methyl tributyl ether (MTBE), which is derived from natural gas and ethanol, are part of mainstream gasoline supply. They are measured routinely with petroleum supply (forms EIA-819A and 819M). Consumption is estimated from production, net imports, and stock changes. Refineries and other entities are required to report data on oxygenates, and EIA also monitors production capability to provide a crosscheck. Thus, oxygenates data are likely to be reasonably accurate.

Natural Gas

Natural gas is used in the transportation sector mainly as the fuel for compressor stations on natural gas transmission lines. A small but growing amount is used in compressed or liquefied form in vehicles. EIA collects data on natural gas much as it does for petroleum, but the system is much simpler. Natural gas transmission companies may not know exactly how much gas is used in compressor stations, but they have a good idea based on the size of the equipment and the load on the line. The reported numbers probably are reasonably accurate. Data on natural gas-fueled vehicles are collected by DOE via Form-886, which is sent to fuel suppliers, vehicle manufacturers, and consumers. In addition, private associations and newsletters are important sources of information on alternative vehicles and alternative fuels use. Since most groups work cooperatively with DOE, it is likely that the data reported are accurate. EIA tracks the number of natural gas vehicles and the number of refueling stations to provide a cross check on estimates of natural gas consumption.

Electricity

Electricity powers intercity trains (Amtrak) and intracity rail systems. In addition, the number of electric vehicles is growing. There is considerable uncertainty over the energy consumed by these modes. Amtrak no longer provides national totals of its electricity consumption. Data on intracity transit is based on U.S. Department of Transportation, Federal Transit Administration's (FTA's) National Transit Database (NTD). The legislative requirement for the NTD is found in Title 49 U.S.C. 5335(a). Transit agencies receiving funds through the Urbanized Area Formula Program are

generally required to report financial and operating data, including energy use. Although the data is generally considered accurate because FTA reviews and validates information submitted, reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret certain data.

If electric vehicles become important over the next decade or two, dedicated charging stations may become commonplace, which could provide accurate data. Fleet owners (e.g., electric utilities) can keep accurate records, but individuals who plug their vehicles in at home may not. Electricity use must be estimated from the number of such vehicles and the expected driving cycles. Hence, data on electric power for transportation must be viewed as an estimate.

It should also be noted that electricity is a form of work that usually is generated from heat with the loss of about two-thirds of the energy. Automobile engines are equivalent to electric generators in that they convert chemical energy to heat and then to work, losing most of the energy as waste heat. When electrical energy is compared to petroleum in transportation, the waste heat must be included for consistency. A kilowatt-hour of electricity is equivalent to 3,413 British thermal units (Btu), but about 10,000 Btu of heat are required to produce it. This factor is dropping as generators become more efficient. High efficiency gas turbines may require 8,000 Btu or less, but the average is much higher. It is usually impossible to tell where the power for a specific use is generated, so average figures for a region are used to estimate the waste energy, a factor that further reduces the accuracy of the data.

Alternative Fuels

In addition to oxygenates, natural gas, and electricity, alternative fuels include ethanol and methanol. EIA tracks the numbers of such vehicles through Form-886, state energy offices, federal demonstration programs, manufacturers, and private associations. These numbers probably are fairly accurate although it is difficult to monitor retirements. Fuel consumption is estimated from the types of vehicles in operation, vehicle miles traveled, and expected fuel efficiency. Adjustments are necessary for the relatively few flexible-fuel

vehicles. Obviously, the reported data are estimates only.

FUEL AND ENERGY CONSUMPTION BY MODE

TABLE 4-5. Fuel Consumption by Mode of Transportation

TABLE 4-6. Energy Consumption by Mode of Transportation

TABLE 4-8. Certificated Air Carrier Fuel Consumption and Travel

TABLE 4-9. Motor Vehicle Fuel Consumption and Travel

TABLE 4-11. Passenger Car and Motorcycle Fuel Consumption and Travel

TABLE 4-12. Other 2-Axle 4-Tire Vehicle Fuel Consumption and Travel

TABLE 4-13. Single-Unit 2-Axle 6-Tire or More Truck Fuel Consumption and Travel

TABLE 4-14. Combination Truck Fuel Consumption and Travel

TABLE 4-15. Bus Fuel Consumption and Travel

Fuel consumption data are collected quite differently than supply data collected by the U.S. Department of Energy, Energy Information Administration (EIA). Highway fuel consumption, for example, is based on U.S. Department of Transportation, Federal Highway Administration (FHWA) data collected from states in the course of revenue collection. EIA starts from the fuel delivered to transportation entities.

Highway

Highway fuel data (tables 4-5, 4-9, and 4-11 through 4-15) are collected mainly by FHWA. All states plus the District of Columbia report total fuel sold along with travel by highway category and vehicle registration. Data typically flows from state revenue offices to the state departments of transportation to FHWA. Even if reporting is reasonably accurate, some data are always anomalous or missing and must be modified to fit expected

patterns. In addition, as discussed earlier, there are some significant differences in methodology and definitions among the states. In particular, states differ in where the tax is applied in the fuel supply system, how gasoline is counted, how nonhighway use is treated, and how losses are handled.

Nonhighway use of gasoline and diesel fuel is a particularly large source of potential error. Some states designate nonhighway users as tax-exempt, others make the tax refundable. In either case, many people won't bother to apply if the amount of money is small. Nonhighway use of diesel fuel is especially large because many construction and agricultural vehicles are diesel powered. Thus, the fraction of petroleum attributed to transportation could be overestimated. On the other hand, some nonhighway fuel finds its way into the transportation system because heating oil can be used as diesel fuel, evading the tax. Tracers are now added to heating oil, which appears to have reduced the level of such tax evasion—if found in a truck's fuel tank, the tracer indicates diversion from a nontaxed source.

Breaking fuel use down by class of motor vehicle introduces the potential for error. FHWA must estimate the miles each class is driven and the fuel economy. Estimation of miles is based on the 1995 Nationwide Personal Transportation Survey (NPTS), administered by FHWA, and the Vehicle Inventory and Use Survey (formerly known as the Truck Inventory and Use Survey) conducted by the U.S. Census Bureau. For information about these two surveys, the reader is referred to the technical appendix of *Our Nation's Travel*, available from the FHWA, Office of Highway Information Management; and the 1997 Census of Transportation, available from the Economics and Statistics Administration within the Census Bureau. Fuel economy is based on state-supplied data, TIUS, and the National Highway Traffic Safety Administration data on new car fuel economy, which must be reduced by about 15 percent to reflect actual experience on the road. Overall, both vehicle-miles of travel and fuel economy are estimates.

Fuel consumption by buses is particularly uncertain. FHWA collects data on intercity buses, and the American Public Transit Association (APTA) covers local travel. Very little data are collected on school buses. APTA figures are based on data from the USDOT, Federal Transit Administration's

(FTA's) National Transit Database, which covers about 90 to 95 percent of total passenger-miles. These data are generally accurate because FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or may misinterpret data. APTA conservatively adjusts the FTA data to include transit operators that do not report to FTA, such as private and very small operators and rural operators. Prior to 1984, APTA did not include most rural and demand responsive systems.

Air

The U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information (OAI) is the source of these data. The numbers are based on 100-percent reporting of fuel use by large certificated air carriers (those with revenues of more than \$100 million annually) via Form 41. The data are probably reasonably accurate because the airlines report fuel use regularly, and the limited number of airlines aids data management.

Smaller airlines, such as medium size regional and commuter air carriers, are not required to report energy data. OAI estimates that about 8 percent would have to be added to the total of the larger airlines to account for this use, but that has not been done in table 4-5 or 4-8.

General aviation aircraft and air taxis are covered in the General Aviation and Air Taxi and Avionics Survey, conducted by the Federal Aviation Administration (FAA). The survey is conducted annually and encompasses a stratified, systematic design from a random start to generate a sample of all general aviation aircraft in the United States. It is based on the FAA registry as the sampling frame. For instance, in 2000, a sample of 31,039 aircraft was identified and surveyed from an approximate population of 256,927 registered general aviation aircraft.

The reliability of the GAATA survey can be impacted by two factors: sampling and nonsampling error. A measure, called the standard error, is used to indicate the magnitude of sampling error. Standard errors can be converted for comparability by dividing the standard error by the estimate (derived from the sample survey results) and multiplying it by 100. This quantity, referred to as the percent standard error, totaled two and four-tenths

of a percent in 2000 for the general aviation fleet. A large standard error relative to an estimate indicates lack of precision, and inversely, a small standard error indicates precision.

Nonsampling errors could include nonresponse, a respondent's inability or unwillingness to provide correct information, differences in interpretation of questions, and data entry mistakes. The reliability of general aviation fleet data comparisons over time would decrease because of changes implemented in 1978 and sampling errors discussed above. Readers should note that nonresponse bias may be a component of reliability errors in the data from 1980 to 1990. The FAA conducted telephone surveys of nonrespondents in 1977, 1978, and 1979 and found no significant differences or inconsistencies between respondent and nonrespondent replies. The FAA discontinued the telephone survey of nonrespondents in 1980 to save costs. Nonresponse surveys were resumed in 1990; and the FAA found notable differences and make adjustments to its data to reflect nonresponse bias.

The U.S. Government, in particular the Department of Defense (DOD), uses a large amount of jet fuel as shown in table 4-19 (see discussion on government consumption below). However, DOD reports all fuel purchased, including from foreign sources for operations abroad. While the data may be accurate, it is not comparable to EIA's overall U.S. supply and consumption figures on jet fuel.

International operations are included in table 4-8 but not table 4-5. The fuel use for international operations includes that purchased by U.S. airlines for return trips. OAI does not collect data on foreign airline purchases of fuel in the United States. Thus, a significant use of U.S. jet fuel is missed. However, these two factors approximately balance each other out. As shown in table 1-34, foreign carrier traffic is just slightly less than U.S. carrier international traffic, so presumably the fuel purchased here by foreign carriers is very close to the fuel purchased abroad by U.S. carriers.

Rail

The data are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). AAR figures are based on 100 percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. Thus, the data are considered accu-

rate. STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of \$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2001, the adjusted threshold for Class I railroads was \$266.7 million. Although Class I railroads represent only 1 percent of the number of railroads in the country, they account for over 70 percent of the industry's mileage operated and more than 90 percent of all freight revenue; energy consumption should be of the same order. For passenger travel, information is unavailable. Amtrak no longer provides data on a national basis, and the regional data appears to be inconsistent.

Transit

The APTA figures are based on information in FTA's National Transit Database. APTA conservatively adjusts FTA data to include transit operators that do not report to the FTA Database (private and very small operators and rural operators), which accounts for about 90 to 95 percent of the total passenger-miles. The data are generally accurate because the FTA reviews and validates information submitted by individual transit agencies. Reliability may vary because some transit agencies cannot obtain accurate information or misinterpret certain data definitions in federal guidelines.

Water

The EIA collects data on residual and distillate fuel oils and diesel through its *Annual Fuel Oil and Kerosene Sales Report* survey, form EIA-821. The survey targets companies that sell fuel oil and kerosene to end users. This survey commenced in 1984 and data from previous years should be used with caution.

Sampling Frame and Design

The sample's target universe includes all companies that sell fuel oil and kerosene to end users. EIA derives the sampling frame from the EIA-863 database containing identity information for approximately 22,300 fuel oil and kerosene sellers. EIA stratifies the sampling frame into two categories: companies selected with certainty and uncertainty. Those in the certainty category varied but included the end use "vessel bunkering," or sales for the fueling of commercial and private watercraft.

Sampling Error, Imputation, and Estimates

EIA reported a 92.5 percent response rate for the 2000 survey. The EIA also provides estimates of the sampling error for geographic areas and U.S. averages are 1.8 for residential distillate fuel oil, 0.8 for nonresidential retail distillate fuel oil, and 0.1 for retail residual fuel oil. Some firms inevitably ignore survey requests, causing data gaps. EIA estimates the volumes of these firm's sales by imputation; more detailed information and the algorithm can be obtained at EIA's web site in the technical notes for the Annual Fuel Oil and Kerosene Sales Report. See http://www.eia.doe.gov/oil_gas/petroleum/data_publications/fuel_oil_and_kerosene_sales/foks.html.

TABLE 4-19. U.S. Government Energy Consumption by Agency and Source

Energy consumption data are collected by DOE's Office of Federal Energy Management Programs in cooperation with most departments and agencies. DOD is by far the largest consumer, accounting for about 80 percent of the total. As discussed above, the data includes fuel purchased abroad for military bases. Since government agencies are required to report these data, they are probably accurate. However, it is possible that some consumption is missed. For example, some agencies may report only fuel supplied directly, missing consumption such as gasoline purchased by employees while on government business for which they are then reimbursed. In addition, smaller agencies were neglected. Overall, however, the data should provide a fairly good approximation of government energy consumption.

ENERGY EFFICIENCY

TABLE 4-20. Energy Intensity of Passenger Modes

TABLE 4-21. Energy Intensity of Certificated Air Carriers, All Services

TABLE 4-22. Energy Intensity of Passenger Cars, Other 2-Axle 4-Tire Vehicles, and Motorcycles

TABLE 4-24. Energy Intensity of Transit Motor Buses

TABLE 4-25. Energy Intensity of Class I Railroad Freight Service

TABLE 4-26. Energy Intensity of Amtrak Service

Total energy consumed for each mode can be estimated with reasonable accuracy. Miles traveled are known for some modes, such as air carriers, but less accurately for others, most notably automobiles. When the numbers of passengers or tons are required to calculate energy efficiency, another uncertainty is introduced. Again, air carriers and intercity buses know how many passengers are on board and how far they travel, but only estimates are available for automobiles and intracity buses.

Thus, table 4-21 should be quite accurate for certificated air carriers, though it is missing small airlines and private aircraft. Table 4-22 is based on FHWA fuel tax data, derived from state fuel tax revenues. VMT is as discussed for tables 1-9 and 1-10. Data for motorcycles must be adjusted significantly more than for automobiles because less information is collected from the states or from surveys. Transit bus data (table 4-24) are very uncertain because, unlike intercity buses, the distance each passenger travels is not measured by ticket sales.

The intermodal comparison of passenger travel in table 4-20 must be viewed with considerable caution. Data for the different modes are collected in different ways, and the preparation of the final results is based on different assumptions. As noted above, airlines accurately record passenger miles, but the data on occupancy of private automobiles must be estimated from surveys. Even relatively certain data, such as state sales of gasoline, must be modified to resolve anomalies, and transit data are even harder to make consistent. Furthermore, different groups collect the data for the various modes, and they have different needs, assumptions, and methodologies. Thus, the comparisons are only approximate.

Freight service data (table 4-25) are from *Railroad Facts*, published annually by the Association of American Railroads (AAR). AAR figures are based on 100 percent reporting by Class I railroads to the Surface Transportation Board (STB) via Schedule 700 of the *R1 Annual Report*. STB defines Class I railroads as having operating revenues at or above a threshold indexed to a base of

\$250 million (1991) and adjusted annually in concert with changes in the Railroad Freight Rate Index published by the Bureau of Labor Statistics. In 2000, the adjusted threshold for Class I railroads was \$ 261.9 million. Although Class I railroads comprise only 1 percent of the number of railroads in the country, they account for over 71 percent of the industry's mileage and 91 percent of all freight revenue; energy data should be of the same order.

TABLE 4-27. Annual Wasted Fuel Due to Congestion

TABLE 4-28. Wasted Fuel per Eligible Driver

The Texas Transportation Institute's (TTI) *Urban Roadway Congestion Annual Report* provided figures for tables 4-27 and 4-28. TTI relies on data from the U.S. Department of Transportation, Federal Highway Administration, Highway Performance Monitoring System database (HPMS). (See box 1-1 for detailed information about the HPMS.) TTI utilizes these data as inputs for its congestion estimation model. Detailed documentation for the TTI model and estimations can be found at <http://mobility.tamu.edu/>.

The sum of fuel wasted in typical congestion (recurring delay) and incident related delays equal the annual wasted fuel for an urban area. Recurring delay is the product of recurring delay (annual hours in moderate, heavy, and severe delays) and average peak period system speed divided by average fuel economy. Incident delay hours are multiplied by the average peak period system speed and divided by the average fuel economy to produce the amount of incident fuel wasted.

Structure, Assumptions, and Parameters

Urban roadway congestion levels are estimated using a formula measuring traffic density. Average daily travel volume per lane on freeways and principal arterial streets are estimated using area wide estimates of vehicle-miles of travel and lane miles of roadway. The resulting ratios are combined using the amount of travel on each portion of the system (freeway and principal arterials) so that the combined index measures conditions overall. This variable weighting factor allows comparisons between areas such as Phoenix-where principal

arterial streets carry 50 percent of the amount of travel of freeways-and cities such as Phoenix where the ratio is reversed. Values greater than one are indicative of undesirable congestion levels. Readers seeking the algorithm for the congestion index should examine <http://mobility.tamu.edu/>.

In previous reports, TTI assumed that 45 percent of all traffic, regardless of the urban location, occurred in congested conditions. TTI indicated that this presumption overestimated travel in congested periods. Its 2002 estimates now vary by urban area anywhere from 18 to 50 percent of travel that occurs in congestion. TTI's model structure applies to two types of roads: freeways and principal arterial streets. The model derives estimates of vehicle traffic per lane and traffic speed for an entire urban area. Based on variation in these amounts, travel is then classified under 5 categories: uncongested, moderately congested, heavily congested, severely congested, and extremely congested (a new category in 1999). The threshold between uncongested and congested was changed in 1999. Previous editions classified congested travel when area wide traffic levels reached 14,000 vehicles per lane per day on highways and 5,500 vehicles per lane per day on principal arterial streets. For the current edition these values are 15,500 and 5,500 vehicles per lane per day respectively. Previous years values have been re-estimated based on these new assumptions. Readers should refer to the TTI website for more detailed information on its estimation procedures <http://mobility.tamu.edu/>.

TTI reviews and adjusts the data used in its model, including statewide average fuel cost estimates (published by the American Automobile Association) and the number of eligible drivers for each urban area (taken from the Statistical Abstract of the United States, published by the U.S. Department of Commerce, Bureau of the Census). The model has some limitations because it does not include local variations (such as bottlenecks, local travel patterns, or transportation improvements) that affect travel times. TTI documentation does not provide information on peer-review, sensitivity analysis, or estimation errors for their model. Information about sensitivity analysis or external reviews of the model could not be obtained and users should interpret the data cautiously.

ENVIRONMENT

TABLE 4-38. Estimated National Average Vehicle Emissions Rates by Vehicle Type and Fuel

TABLE 4-39. National Average Vehicle Emissions Rates by Vehicle Type Using Reformulated Gasoline

The U.S. Environmental Protection Agency uses its Mobile Source Emissions Factor Model (MOBILE) to generate average emissions factors for each vehicle and fuel type. The methods used in the model are theoretically sound, the assumptions are reasonable, but the data vary in quality, and no formal analysis of the accuracy of these estimates has been performed. Emissions rate estimates for light-duty vehicles are considered more reliable than those for heavy-duty vehicles because in-use emissions tests are performed on a sample of vehicles each year. Deterioration for heavy-duty vehicles in the national fleet are based only on manufacturer's engine deterioration tests. In addition, because reformulated fuels (table 4-39) are newer than other gasoline fuels (table 4-38), in use emissions test data for reformulated fuels are not as extensive.

The estimates in the tables represent average emissions rates taking into account the characteristics of the nation's fleet, including vehicle type and age, and fuel used. The model also assumes Federal Test Procedure conditions. The model does not take into account actual travel distributions across different highway types with their associated average speeds and operating mode fractions, nor do they consider ambient local temperatures. However, fleet composition and deterioration because of age are considered. Thus, these rates illustrate only trends due to vehicle emissions control improvements and their increasing use in the national fleet and should not be used for other purposes.

TABLES 4-40, 4-41, 4-42, 4-43, 4-44, 4-45 and 4-46. Estimates of National Emissions of Carbon Monoxide, Nitrogen Oxides, Volatile Organic Compounds, Particular Matter, Sulfur Dioxide, and Lead

Emissions by sector and source are estimated using various models and calculation techniques

and are based on a number of assumptions and on data that vary in precision and reliability. The methods used are theoretically sound, the assumptions are reasonable, but the data vary in quality, and no formal analysis of the accuracy of these estimates has been performed.

Carbon Monoxide (CO), Nitrogen Oxides (NO_x), and Volatile Organic Compounds (VOCs)

Highway vehicle emissions of CO, NO_x, and VOC are generated by the U.S. Environmental Protection Agency's (EPA's) Mobile Source Emissions Factor Model (MOBILE), which uses per-mile vehicle emissions factors and vehicle travel (vehicle-miles) to calculate county-level emissions. Emissions rates are then adjusted based on fuel characteristics, vehicle fleet composition, emissions control measures, average vehicle speed, and other factors that can affect emissions. (Emissions rates used in MOBILE are based on vehicle certification tests, emissions standards, and in-use vehicle tests and are updated approximately every three years.) The U.S. Department of Transportation, Federal Highway Administration's Highway Performance Monitoring System is the source of vehicle travel estimates used in the model. Although the methodology for this survey data is sound and well documented, analyses have shown that individual states vary in how rigorously they follow the established sampling guidelines.

The nonhighway vehicle emissions are calculated annually by running EPA's NONROAD model for all categories except aircraft, commercial marine vessels, and railroads, which are calculated via emission factors and relevant activity data. Inputs to the NONROAD model include average temperatures, Reid vapor pressure, fuel usage programs and controls.

Particulate Matter Under 10 Microns (PM-10) and 2.5 Microns (PM-2.5) in Size

Highway vehicle emissions are estimated using the U.S. Environmental Protection Agency's PART model, which estimates emissions factors for exhaust emissions and brake and tire wear by vehicle type. Exhaust emissions factors are based on certification tests, while brake wear (per vehicle) and tire wear (per tire) are assumed values, which are constant over all years. Per-mile emissions factors are multiplied by vehicle travel (vehicle-miles)

and adjusted to account for other factors that effect exhaust emissions (e.g., fuel composition, weather, etc.). The U.S. Department of Transportation, Federal Highway Administration's Highway Performance Monitoring System is the source of vehicle-miles of travel (VMT) estimates used in the model. While the methodology for this survey data is sound and well documented, analyses have shown that individual states vary in how rigorously they follow the established sampling guidelines.

Fugitive dust estimates for paved and unpaved roads are calculated by multiplying VMT on each type of road by emissions factors for each vehicle type and road type.

The non-highway vehicle emissions are calculated annually by running EPA's NONROAD model for all categories except aircraft, commercial marine vessels, and railroads, which are calculated via emission factors and relevant activity data. Inputs to the NONROAD model include average temperatures, Reid vapor pressure, fuel usage programs and controls.

Sulfur Dioxide (SO₂)

Highway vehicle SO₂ emissions are estimated by multiplying vehicle travel (for each vehicle type and highway type) by an emissions factor reflecting each vehicle type and highway type. Highway SO₂ emissions factors are based on vehicle type and model year, sulfur content of fuel by type and year, fuel density by fuel type, and vehicle fuel efficiency by type and model year.

In general, estimates for nonhighway vehicles are calculated based on fuel consumption and sulfur content of fuel, though other factors may be considered.

Lead

In general, lead emissions are estimated by multiplying an activity level by an emissions factor that represents the rate at which lead is emitted for the given source category. This estimate is then adjusted by a factor that represents the assumed effectiveness of control technologies. For lead released during combustion, a top-down approach is used to share national estimates of fuel consumption by fuel type to each consumption category (e.g., motor fuel, electric utility, etc.) and, subsequently, each source (e.g., passenger cars, light-duty trucks, etc.).

TABLE 4-47. Air Pollution Trends in Selected Metropolitan Statistical Areas (MSAs)

TABLE 4-48. Areas in Nonattainment of National Ambient Air Quality Standards for Criteria Pollutants

The U.S. Environmental Protection Agency measures concentrations of pollutants in the ambient air at its air quality monitoring sites, which are operated by state and local agencies. These sites conform to uniform criteria for monitor siting, instrumentation, and quality assurance, and each site is weighted equally in calculating the composite average trend statistics. Furthermore, trend sites must have complete data for 8 of the 10 years in the trend time period to be included. However, monitoring devices are placed in areas most likely to observe significant concentrations of air pollutants rather than a random sampling of sites throughout the nation.

TABLE 4-49. U.S. Carbon Dioxide Emissions from Energy Use by Sector

The combustion of fossil fuels, such as coal, petroleum, and natural gas, is the principal anthropogenic (human caused) source of carbon dioxide (CO₂) emissions. Since fossil fuels are typically 75 percent to 90 percent carbon by weight, emissions from the combustion of these fuels can be easily measured in carbon units, as is shown in the table.

CO₂ emissions data are derived from estimates. The U.S. Department of Energy, Energy Information Administration (EIA), estimates CO₂ emissions by multiplying energy consumption for each fuel type by its carbon emissions coefficient, then subtracting carbon that is sequestered by nonfuel use of fossil fuels. Carbon emissions coefficients are values used for scaling emissions to specific activities (e.g., pounds of CO₂ emitted per barrel of oil consumed).

Emissions estimates are based on energy consumption data collected and published by EIA. Several small adjustments are made to its energy consumption data to eliminate double counting or miscounting of emissions. For example, EIA subtracts the carbon in ethanol from transportation gasoline consumption because of its biological origin.

Emissions coefficients are based on the density, carbon content, and heat content of petroleum

products. For many fuels, except liquefied petroleum gas (LPG), jet fuel, and crude oil, EIA assumed coefficients to be constant over time. For LPG, jet fuel, and crude oil, EIA annualized carbon emissions coefficients to reflect changes in chemical composition or product mix.

Since the combustion of fossil fuels is a major producer of CO₂ emissions, sources of uncertainty are related to: 1) volumes of fuel consumed; 2) characteristics of fuel consumed; 3) emissions coefficients; and 4) coverage. EIA notes that volumetric fuel data are fairly reliable in the 3 percent to 5 percent range of uncertainty. The density and energy content of fuels are usually estimated. According to EIA, the reliability of these estimates vary. For example, estimates of the energy content of natural gas are reliable to 0.5 percent, while estimates for coal and petroleum products are lower because they are more heterogeneous fuels. The reliability of emissions coefficients depends on whether the characteristics of a fuel are difficult to measure accurately. Finally, uncertainties may result because data may be excluded or unknown sources of emissions not included.

EIA's estimation methods, emissions coefficients, and the reliability of emissions estimates are discussed in detail in U.S. Department of Energy, Energy Information Administration, *Emissions of Greenhouse Gases in the United States*, 1998 available on: www.eia.doe.gov/oiaf/1605/ggrpt/index.html.

TABLE 4-50. Petroleum Oil Spills Impacting U.S. Waterways

The U. S. Coast Guard's (USCG) Marine Safety Information System (MSIS) is the source of these data. It includes data on all oil spills impacting U.S. navigable waters and the Coastal Zone. The USCG learns of spills through direct observation, reports from responsible parties and third parties. Responsible parties are required by law to report spills to the National Response Center (NRC). Reports may be made to the USCG or Environmental Protection Agency predesignated On Scene Coordinator for the geographic area where the discharge occurs if direct reporting to the NRC is not practicable. There is no standard format for these reports, but responsible personnel face significant penalties for failing to do so. Most reports are made by telephone, and USCG personnel complete investigations based on the information provided.

The type and extent of an investigation conducted varies depending on the type and quantity of the material spilled. Each investigation will determine as closely as possible source of the pollutant, the quantity of the material spilled, the cause of the accident, as well as whether there is evidence that any failure of material (either physical or design) was involved or contributed to the incident. These are so financial responsibility may be properly assigned for the incidents, as well as proper recommendations for the prevention of the recurrence of similar incidents may be made.

Some spills may not be entered into MSIS because they are either not reported to or discovered by the USCG. The probability of a spill not being reported is inversely proportional to its size. Large spills impact a large area and a large number of people, resulting in numerous reports of such spills. Small spills are less likely to be reported, particularly if they occur at night or in remote areas where persons other than the responsible party are unlikely to detect them. Responsible parties are required by law to report spills and face penalties for failing to do so, providing a strong incentive to report spills that might be detected by others. Experience with harbor patrols shows that the number of spills increases as the frequency of patrols increases. However, the volume of material spilled does not increase significantly, indicating that the spills discovered through increased harbor patrols generally involved very small quantities.

Data Collection

From 1973 to 1985, data were collected on forms completed by the investigator and later entered into the Pollution Incident Reporting System (PIRS) by data entry clerks at USCG headquarters. Since 1985, data have been entered directly into MSIS by the investigator. From 1985 to 1991, data were entered into a specific electronic form that captured information on the spilled substance and pollution response actions. Since 1995, a growing number of reports of pollution incidents of 100 gallons or less of oil have been captured on a Notice of Violation ticket form, which are then entered into MSIS.

The information shown in this table comes from the USCG Spill Compendium, which contains spill data from the applications described above. The Compendium contains summary data from 1969

through 2000 and is intended to provide general information to the public, the maritime industry and other interested persons about spills in and around U.S. waterways. For more information about spill data, please refer to the USCG Internet site at <http://www.uscg.mil/hq/g-m/nmc/response/stats/aa.htm>

Nonsampling Errors

According to the USCG, nonsampling errors, such as nonreporting and mistakes made in data collection and entry, should not have a major impact on most interpretations of the data, but the impact will vary depending on the data used. The error rate for volume spilled is estimated to be less than 5 percent because larger spills, which account for most of the volume of oil spilled, are thoroughly reviewed at several levels. The error rate for the number of spills is difficult to estimate primarily due to low reporting rates for small spills. Most of the error in spill counts involves spills of less than 100 gallons.

TABLE 4-51. Leaking Underground Storage Tank Releases and Cleanups

A national inventory of reported spills and corrective actions taken for leaking underground storage tanks is compiled biannually based on state counts of leaking tanks reported by owners as required by the Resource Conservation and Recovery Act of 1976.¹ These data may be affected by general accounting errors, some of which have changed semiannual counts by as many as 2,000 actions.

TABLE 4-52. Highway Noise Barrier Construction

State highway agencies (SHAs) provide data on highway noise barrier construction, extent, and costs to the U.S. Department of Transportation, Federal Highway Administration. Individual SHA definitions of barriers and costs may differ. This could lead to nonuniformity and/or anomalies among state data, which will in turn affect national totals.

TABLE 4-53. Number of People Residing in High-Noise Areas Around U.S. Airports

The number of the people exposed to aircraft noise around airports is estimated by computer modeling rather than by actual measurements. The U.S. Department of Transportation (USDOT), Federal Aviation Administration's (FAA's) Integrated Noise Model (INM) has been the primary tool for assessing aircraft noise around airports for nearly 30 years. This model uses information on aircraft mix, average daily operations, flight tracks, and runway distribution to generate and plot contours of Day Night Sound Level (DNL). With the addition of a digitized population census database, the model can estimate the number of residents exposed to noise levels of 65 decibels (db) DNL.

The U.S. Environmental Protection Agency (EPA) produced the first estimate of airport noise exposure in 1975. It reported that 7 million residents were exposed to significant levels of aircraft noise in 1978. This number became the “anchor point” for all future estimates of the nationwide noise impacts. In 1980, FAA developed another methodology for estimating the change in the number of people impacted by noise (from the 1975 anchor value) as a function of changes in both the national fleet and in the FAA's Terminal Area Forecast (TAF). In 1990, the FAA created an improved method of estimating the change in number of people impacted (relative to the 1980 estimates).

In 1993, the FAA began using its newly developed Nationwide Airport Noise Impact Model (NANIM) to estimate the impact of airplane noise on residential communities surrounding U.S. airports that support jet operations. FAA uses this model to determine the relative changes in number of people and land area exposed to 65 db DNL as a result of changes in nationwide aircraft fleet mix and operations. NANIM uses data on air traffic patterns found in the Official Airline Guide (OAG), air traffic growth projections found in FAA's TAF, population figures from the U.S. Census Bureau, and information on noise contour areas for the top 250 U.S. civil airports with jet operations.

The methodology used in NANIM has been peer reviewed and approved. However, a formal evaluation of the model's accuracy has not been conducted. Some data used in NANIM are updated manually, thus the possibility of data entry errors

¹ Public Law 94-580, 90 Stat. 2795 (Oct. 21, 1976).

does exist. Entries are reviewed and then corrected as appropriate. The aircraft mix and operations files from FAA's TAF and OAG are updated automatically. Changes to either of the sources could introduce errors. For example, it was recently discovered that OAG redefined some aircraft codes and altered some data fields in its database. These changes make it impossible for the NANIM utility program to accurately read the current OAG database. A rewrite of the source code is necessary to eliminate this error. Also, since airport authorities are not required to produce noise exposure maps and reports unless they intend to apply for Federal grants, 14 of the 50 busiest commercial airports, including JFK and LaGuardia, have not produced (for public consumption) noise exposure maps in several years. In the absence of actual data, the NANIM database contains approximations of the noise contours areas based on airports of similar size and similar operation. Without actual airport data, it is impossible to quantify the error introduced by the approximation.

The number of people exposed to aircraft noise for 1998 through 2001 was estimated by the FAA's latest version of its MAGENTA model. This new, more accurate model is based on 2000 census data and uses input data on aircraft and operations specific to U.S. airports. This revised model also uses the FAA Terminal Forecast (TAF), which provides information on how operations will increase on an airport specific basis. Updated monthly, the TAF allows a more accurate forecast of U.S. operations.

TABLE 4-54. Motor Vehicles Scrapped

The Polk Company's Vehicles in Operation database is the source of these data. This database is a census of vehicles that are currently registered in all states within the United States. It is based on information from state department of motor vehicles. Polk updates the database quarterly (March, June, September, and December).

Scrapped vehicles are those that Polk removes from its database when: 1) States indicate registered vehicles have suffered major damage (such as a flood or accident), or 2) No renewal (reregistration) notice is received by Polk within a state's allotted time (normally one year). In the latter case, if a vehicle is subsequently reregistered, it is returned to the database. The Polk data on motor vehicles is broken down into passenger cars and

trucks, and this identification comes with the registration data from the DMV.

REFERENCES

U.S. Department of Energy, Energy Information Administration. 1994. *Accuracy of Petroleum Supply Data*. Tammy G. Heppner and Carol L. French, eds. Washington, DC.

U.S. Department of Energy, Energy Information Administration. 1990. *Energy Consumption by End-Use Sector, A Comparison of Measures by Consumption and Supply Surveys*, DOE/EIA-0533. Washington, DC.

U.S. Environmental Protection Agency, Office of Mobile Sources. 1998. *MOBILE5 Information Sheet #7: NOx Benefits of Reformulated Gasoline Using MOBILE5a*. Ann Arbor, MI. September 30.

U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. 1998. *National Air Pollutant Emission Trends, Procedure Document, 1900-1996*. EPA-454/R-98-008. Research Triangle Park, NC. May.

U.S. Environmental Protection Agency, Office of Mobile Sources. 1996. Memorandum on Release of MOBILE5b. (Revised Chapter 2 for the Users Guide to MOBILE5). October 11.

U.S. Environmental Protection Agency, Office of Air Quality and Standards, Emission Factor and Inventory Group. 1995. *Compilation of Air Pollutant Emission Factors AP-42, Volume II: Mobile Sources*. Appendix H. Fifth ed. June 30.

U.S. Environmental Protection Agency, Office of Mobile Sources (OMS). 1995. Draft User's Guide to PART5: *A Program for Calculating Particle Emissions from Motor Vehicles*, EPA-AA-AQAB-94-2. Ann Arbor, MI. February.

U.S. EPA, Office of Mobile Sources. 1994. *Users Guide to MOBILE5 (Mobile Source Emission Factor Model)*, EPA-AA-TEB-94-01. Ann Arbor, MI. May.

U.S. Environmental Protection Agency, Office of Air and Radiation. 1992. *Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources*, EPA-450/4-81-026d (Revised).

