

APPENDIX A. SELECTED METRIC TABLES



Table 2-1M. Freight Shipments by Weight and Value

Mode	Metric Tonnes (millions)			Value (\$ billions)		
	1998	2010	2020	1998	2010	2020
Total	13,854	19,392	23,449	9,312	18,339	29,954
Domestic	12,232	17,073	20,445	7,876	15,152	24,075
Air	8	16	24	545	1,308	2,246
Highway	9,470	13,544	16,447	6,656	12,746	20,241
Rail	1,773	2,293	2,625	530	848	1,230
Water	982	1,220	1,349	146	250	358
International	1,621	2,319	3,004	1,436	3,187	5,879
Air	8	15	22	530	1,182	2,259
Highway	380	665	970	772	1,724	3,131
Rail	325	470	634	116	248	432
Water	123	181	236	17	34	57
Other ¹	784	989	1,142	NA	NA	NA

Key: NA = Not available.

¹Other includes international shipments that moved via pipeline or by an unspecified mode.

Notes: Domestic shipments by pipeline are excluded. Modal numbers may not add to totals due to rounding. 1 ton = 0.91 metric tonne.

Table 2-2M. U.S. Merchandise Trade with Canada and Mexico

Mode	1997		2000		2001	
	Value (\$ billions)	Weight (millions of metric tonnes)	Value (\$ billions)	Weight (millions of metric tonnes)	Value (\$ billions)	Weight (millions of metric tonnes)
Truck	323	NA	429	NA	395	164
Rail	70	NA	94	NA	93	88
Air	28	NA	45	NA	37	0
Water	22	NA	33	NA	29	194
Pipeline	14	NA	24	NA	26	72
Other ¹	19	NA	29	NA	33	1
Total	475	NA	653	NA	614	519

Key: NA = not available.

¹Other includes "flyaway aircraft" (i.e., aircraft moving from the manufacturer to a customer and not carrying any freight), vessels moving under their own power, pedestrians carrying freight, and miscellaneous.

Notes: Individual modal totals may not sum to exact export or import totals due to rounding. 1 ton = 0.91 metric tonne.

TABLE 2-1M. FREIGHT SHIPMENTS BY WEIGHT AND VALUE

Source: U.S. Department of Transportation, Federal Highway Administration, Freight Analysis Framework, 2002.

TABLE 2-2M. U.S. MERCHANDISE TRADE WITH CANADA AND MEXICO

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, *International Trade and Freight Transportation Trends* (Washington, DC: 2003), tables 22 and C-11, available at www.bts.gov as of July 12, 2004.





Table 2-8M. Top 25 Airports by Landed Weight of All-Cargo Operations¹
Rankings based on 2002

Airport	Rank	Landed weight (thousands of metric tonnes)		
		2000	2001	2002
Anchorage, AK (Ted Stevens Anchorage International) ²	1	7,333	7,055	8,159
Memphis, TN (Memphis International)	2	5,732	6,228	8,007
Louisville, KY (Louisville International-Standiford Field)	3	3,617	3,653	3,812
Miami, FL (Miami International)	4	2,657	2,771	2,879
Los Angeles, CA (Los Angeles International)	5	2,624	2,657	2,756
New York, NY (John F. Kennedy International)	6	2,534	2,307	2,642
Indianapolis, IN (Indianapolis International)	7	2,616	2,862	2,121
Chicago, IL (O'Hare International)	8	1,870	1,825	2,011
Newark, NJ (Newark Liberty International)	9	1,779	1,628	1,595
Oakland, CA (Metropolitan Oakland International)	10	1,643	1,487	1,584
Fort Worth, TX (Dallas/Fort Worth International)	11	1,534	1,402	1,343
Philadelphia, PA (Philadelphia International)	12	1,319	1,318	1,330
Ontario, CA (Ontario International)	13	1,107	1,172	1,310
Atlanta, GA (William B. Hartsfield International)	14	989	946	1,058
Covington/Cincinnati, OH (Cincinnati/Northern Kentucky International)	15	828	889	946
San Francisco, CA (San Francisco International)	16	1,149	918	939
Honolulu, HI (Honolulu International)	17	628	716	880
Dayton, OH (James M. Cox Dayton International)	18	2,026	1,310	814
Seattle, WA (Seattle-Tacoma International)	19	961	869	799
Phoenix, AZ (Sky Harbor International)	20	835	760	787
Portland, OR (Portland International)	21	800	732	740
Denver, CO (Denver International)	22	817	729	710
Boston, MA (Logan International)	23	638	591	577
Rockford, IL (Greater Rockford)	24	593	618	572
Orlando, FL (Orlando International)	25	610	554	565
Top 25 airports		47,237	45,995	48,936
United States, all airports³		67,815	64,796	66,617
Top 25 as % of U.S. total		69.7%	71.0%	73.5%

¹All-Cargo operations are aircraft operations dedicated to the exclusive transportation of cargo. This does not include aircraft carrying passengers that may also be carrying cargo. Aircraft landed weight is the certificated maximum gross landed weight of the aircraft as specified by the aircraft manufacturers.

²Anchorage includes a large proportion of all-cargo operations in-transit.

³Limited to airports with an aggregate landed weight in excess of 100 million pounds (50,000 short tons) annually.

Note: 1 short ton = 2,000 lbs.

TABLE 2-8M. TOP 25 AIRPORTS BY LANDED WEIGHT OF ALL-CARGO OPERATIONS
Rankings based on 2002

Source: U.S. Department of Transportation, Federal Aviation Administration, ACAIS Database Report F5, CY 2002 and CY 2000, available at <http://www2.faa.gov/arp/planning/stats> as of December 16, 2003.

Table 2-9M. U.S. Hazardous Materials Shipments by Transportation Mode: 1997

Transportation mode	Value		Metric tonnes		Tonne-kilometers	
	\$ Billion	Percent	(Millions)	Percent	(Billions)	Percent
All modes, Total	466.4	100.0	1,419.9	100.0	385.2	100.0
Single modes, total	452.7	97.1	1,398.6	98.5	378.0	98.1
Truck ¹	298.2	63.9	789.1	55.6	109.4	28.4
For-hire	134.3	28.8	305.1	21.5	66.0	17.1
Private ²	160.7	34.5	474.2	33.4	42.1	10.9
Rail	33.3	7.1	87.7	6.2	109.1	28.3
Water	27.0	5.8	129.9	9.1	99.6	25.9
Air	8.6	1.8	0.1	Z	0.1	Z
Pipeline ³	85.7	18.4	392.0	27.6	S	S
Multiple modes, total	5.7	1.2	5.5	0.4	4.5	1.2
Parcel, U.S. Postal Service or courier	2.9	0.6	0.1	Z	0.1	Z
Other	2.9	0.6	5.3	0.4	4.4	1.1
Unknown and other modes, total	7.9	1.7	15.8	1.1	2.7	0.7

Key: S = data are not published because of high sampling variability or other reasons; Z = zero or less than 1 unit of measure.

¹Truck as a single mode includes shipments that went by private truck only, for-hire truck only, or a combination of both.

²Private truck refers to a truck operated by a temporary or permanent employee of an establishment or the buyer/receiver of the shipment.

³Excludes most shipments of crude oil.

Notes: 1 ton = 0.91 metric tonne; 1 ton-mile = 1.46 tonne-kilometer.

Table 2-10M. U.S. Hazardous Materials Shipments by Hazard Class: 1997

Hazard Class	Description	Value		Metric tonnes		Tonne-kilometers	
		\$ Billions	Percent	Millions	Percent	Billions	Percent
Class 1	Explosives	4.3	0.9	1.4	0.1	S	S
Class 2	Gases	40.9	8.8	104.3	7.3	31.9	8.3
Class 3	Flammable liquids	335.6	72.0	1,146.9	80.8	233.6	60.6
Class 4	F solids ^{solids}	3.9	0.8	10.7	0.8	14.0	3.6
Class 5	Oxidizers and organic peroxides	4.5	1.0	8.4	0.6	6.5	1.7
Class 6	Toxics	10.1	2.2	5.8	0.4	4.1	1.1
Class 7	Radioactive materials	2.7	0.6	0.1	Z	0.1	Z
Class 8	Corrosive materials	40.4	8.7	83.1	5.9	60.1	15.6
Class 9	Miscellaneous dangerous goods	23.9	5.1	59.3	4.2	33.2	8.6
Total		466.4	100.0	1,419.9	100.0	385.2	100.0

Key: S = data are not published because of high sampling variability or other reasons; Z = zero or less than 1 unit of measure.

Note: 1 ton = 0.91 metric tonne; 1 ton-mile = 1.46 tonne-kilometer.

TABLE 2-9M. U.S. HAZARDOUS MATERIALS SHIPMENTS BY TRANSPORTATION MODE: 1997

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

TABLE 2-10M. U.S. HAZARDOUS MATERIALS SHIPMENTS BY HAZARD CLASS: 1997

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

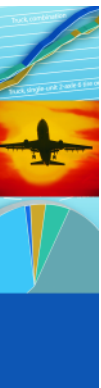
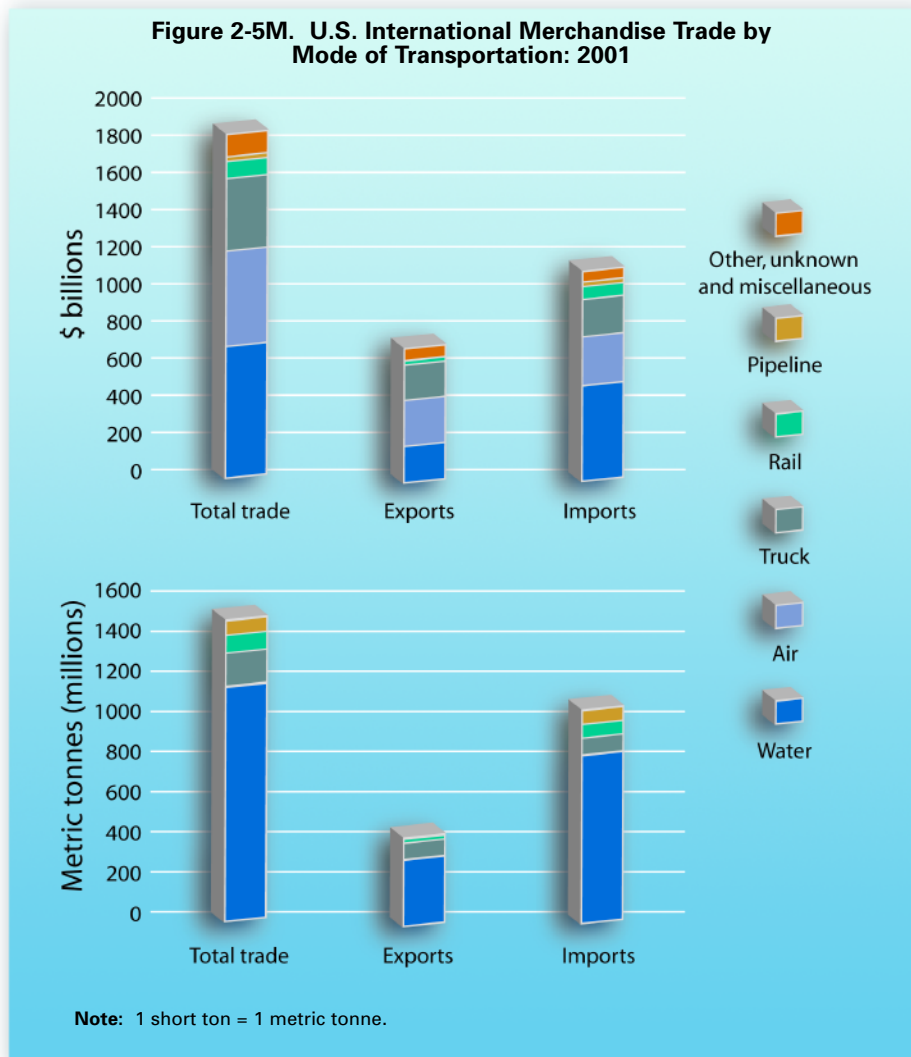


FIGURE 2-5M. U.S. INTERNATIONAL MERCHANDISE TRADE BY MODE OF TRANSPORTATION: 2001
 Source: U.S. Department of Transportation, Bureau of Transportation Statistics, *U.S. International Trade and Freight Transportation Trends*, (Washington, DC: 2003), table 7, available at www.bts.gov as of July 12, 2004.

Table 3-1M. Kilometers of Infrastructure by Mode

	1980	1990	2000	2002	Percent change, 1980-2002
Public roads, route kilometers	6,211,806	6,223,214	6,358,677	6,407,878	3.2
National Highway System (NHS)	N	N	259,409	259,969	N
Interstates	66,176	72,540	75,116	75,232	13.7
Other NHS	N	N	184,292	184,737	N
Freight intermodal connectors ¹	N	N	N	2,883	NA
Other	N	N	9,269	6,147,910	N
Strategic Highway Corridor Network (STRAHNET)	N	N	99,886	101,054	N
Interstate	N	N	75,116	75,232	N
Non-Interstate	N	N	24,766	25,822	N
Railroad	294,634 ²	283,098	274,412	227,547	-22.8
Class I	NA	,347	194,082	160,843	NA
Regional	NA	29,572	33,761	24,217	NA
Local	NA	39,167	46,570	42,487	NA
Inland waterways					
Navigable channels	17,703	17,703	17,703	17,703	0.0
Great Lakes-St. Lawrence Seaway	3,769	3,769	3,769	3,769	0.0
Pipelines					
Oil	351,469	335,954	284,847	NA	NA
Gas	1,692,666	1,942,308	2,220,090	2,305,707	36.2

Key: N = not applicable; NA = not available.

¹Excludes intermodal connectors serving intercity bus, Amtrak, and public transit facilities.

²Excludes Class III railroads.

Note: 1 mile = 1.61 kilometers.

TABLE 3-1M. KILOMETERS OF INFRASTRUCTURE BY MODE

Sources: Public roads: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues).

Intermodal connectors: U.S. Department of Transportation, Federal Highway Administration, Office of Planning, National Highway System Intermodal Connectors, available at <http://www.fhwa.dot.gov/hep10/nhs/intermodalconnectors/index.html> as of August 24, 2004.

Rail: Association of American Railroads, *Railroad Facts* (Washington, DC: various issues).

Navigable channels: U.S. Army Corps of Engineers.

Great Lakes-St. Lawrence Seaway: Great Lakes-St. Lawrence Seaway System, "Seaway Facts," available at <http://www.greatlakes-seaway.com/en/aboutus/seawayfacts.html> as of May 11, 2004.

Oil Pipelines: Eno Transportation Foundation, Inc., *Transportation in America, 2002* (Washington, DC: 2002).

Gas Pipelines: American Gas Association, *Gas Facts* (Arlington, VA: Annual issues).



Table 3-3M. Truck Kilometers by Primary Load Carried¹
(millions of kilometers)

Primary load carried	1992	1997
Total	187,617	253,252
Farm products	13,902	16,126
Live animals	4,093	4,452
Animal feed	3,255	3,495
Mining products	2,226	2,499
Logs and other forest products	4,983	5,962
Lumber and fabricated wood products	6,117	8,187
Processed foods	28,240	38,209
Textile mill products	4,061	7,957
Building materials	19,379	25,060
Furniture or hardware	4,658	5,276
Paper products	8,457	10,307
Chemicals	6,333	8,044
Petroleum	7,372	7,954
Plastics and/or rubber	3,037	4,361
Primary metal products	6,079	7,639
Fabricated metal products	4,658	5,406
Machinery	5,919	11,909
Transportation equipment	8,363	10,135
Glass products	945	1,007
Miscellaneous products of manufacturing	4,700	8,362
Industrial "waste" water	324	338
Mixed cargoes	17,360	29,631
Recyclable products	1,413	2,070
Hazardous waste (EPA manifest)	683	750
Hazardous waste (non-EPA manifest)	185	133
Household goods	3,334	6,461
Scrap, refuse, or garbage	4,068	5,353
Craftsman's equipment	6,316	8,122
Personal transportation	1,603	1,533
Passengers	189	446
No load carried	3,065	2,887
Other and not reported ²	2,303	3,180

Key: NA = not available.

Note: 1 mile = 1.61 kilometers.

¹Excludes pickups, panels, minivans, sport utilities, and station wagons

²Includes vehicles which, though licensed, were not operated or were wrecked or inoperative for more than 6 months during 1997.

TABLE 3-3M. TRUCK KILOMETERS FOR TRUCKS, EXCLUDING PICKUPS, PANELS, MINIVANS, SPORT UTILITIES, AND STATION WAGONS (MILLIONS OF KILOMETERS)
Source: U.S. Department of Commerce, U.S. Census Bureau, *Vehicle Inventory and Use Survey 1997: United States* (Washington, DC: 1999) available at <http://www.census.gov/svsd/www/97vehinv.html> as of August 17, 2004.

Table 3-4M. Number and Vehicle Kilometers Traveled (VKT) of Trucks by Average Weight (Including Vehicle and Load)¹

Average weight (kilograms)	1987		1992		1997		Percent change, 1987-1997	
	Number (thousands)	VKT (millions)	Number (thousands)	VKT (millions)	Number (thousands)	VKT (millions)	Number	VKT
Total	3,624	144,796	4,008	168,960	4,701	237,979	30	64
Light-heavy	1,030	17,329	1,259	22,551	1,436	31,889	39	84
4,536 to 6,350	525	8,754	694	12,875	819	18,510	56	111
6,351 to 7,257	242	4,407	282	4,791	316	6,359	31	44
7,258 to 8,845	263	4,168	282	4,885	301	7,020	15	68
Medium-heavy	766	12,200	732	13,104	729	16,301	-5	34
8,846 to 11,793	766	12,200	732	13,104	729	16,301	-5	34
Heavy-heavy	1,829	115,266	2,017	133,305	2,536	189,789	39	65
11,794 to 14,969	377	8,708	387	9,163	428	11,413	13	31
14,969 to 18,144	209	6,619	233	8,505	257	10,612	23	60
18,144 to 22,680	292	12,271	339	15,485	400	21,047	37	72
22,680 to 27,216	188	11,518	227	13,999	311	20,362	66	77
27,216 to 36,287	723	73,127	781	82,147	1,070	120,256	48	64
36,288 to 45,359	28	8	2,013	33	2,460	3,906	64	94
45,360 to 58,967	8		708	12	1,181	1,691	129	139
58,967 or more	4	298	5	365	6	502	34	69

¹Excludes trucks with an average weight of 4,535 kilograms or less.

Notes: Weight includes the empty weight of the vehicle plus the average weight of the load carried; 1 mile = 1.61 kilometers; 1 pound = 0.45 kilogram.

Table 5-7M. Fuel Consumption by Transportation Mode

	1980	1990	2000	2002
Highway				
Gasoline, diesel and other fuels (million litres)	435,171	494,962	615,338	634,928
Truck, total	75,557	92,705	133,356	139,137
Single-unit 2-axle 6-tire or more truck	26,206	31,635	36,200	39,010
Combination truck	49,350	61,070	97,156	100,127
Truck (percent of total)	17.4	18.7	21.7	21.9
Rail, Class I (in freight service)				
Distillate / diesel fuel (million litres)	14,778	11,792	14,006	14,120
Water				
Residual fuel oil (million litres)	33,887	23,947	24,264	18,351
Distillate / diesel fuel oil (million litres)	5,595	7,817	8,559	7,870
Gasoline (million litres)	3,982	4,921	4,255	4,093
Pipeline				
Natural gas (million cubic meters)	17,970	18,684	18,185	18,888

Note: 1 gallon = 3.8 liters; 1 cubic foot = 0.03 cubic meters.

TABLE 3-4M. NUMBER AND VEHICLE KILOMETERS TRAVELED (VKT) OF TRUCKS BY AVERAGE WEIGHT (INCLUDING VEHICLE AND LOAD)¹

Source: U.S. Department of Commerce, U.S. Census Bureau, *1997 Vehicle Inventory and Use Survey: United States* (Washington, DC: 1999), available at <http://www.census.gov/econ/www/viusmain.html> as of July 1, 2004; U.S. Department of Commerce, U.S. Census Bureau, *1992 Truck Inventory and Use Survey: United States* (Washington, DC: 1995), available at <http://www.census.gov/econ/www/viusmain.html> as of July 1, 2004.

TABLE 5-7M. FUEL CONSUMPTION BY TRANSPORTATION MODE

Sources: Highway: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table VM-1 and similar tables in earlier editions.

Rail: Association of American Railroads, *Railroad Facts 2003* (Washington, DC: October 2003), p. 40.

Water: U.S. Department of Energy, Energy Information Administration, *Fuel Oil and Kerosene Sales* (Washington, DC: Annual issues), tables 2, 4, and similar tables in earlier editions.

Pipeline: U.S. Department of Energy, *Natural Gas Annual 2002*, DOE/EIA-0131(02) (Washington, DC: January 2004), table 15 and similar tables in earlier editions.

Table 5-8M. Single-Unit 2-Axle 6-Tire or More Truck Fuel Consumption and Travel

	1980	1990	2000	2002
Number registered (thousands)	4,374	4,487	5,926	5,651
Vehicle-kilometers (millions)	64,073	83,527	113,459	122,128
Fuel consumed (million litres)	26,206	31,635	36,200	39,010
Average kilometers traveled per vehicle	14,649	18,615	19,146	21,613
Average kilometers traveled per litre	2.4	2.6	3.1	3.1
Average fuel consumed per vehicle (litres)	5,992	7,050	6,109	6,904

Note: 1 mile = 1.61 kilometers; 1 gallon = 3.8 liters.

Table 5-9M. Combination Truck Fuel Consumption and Travel

	1980	1990	2000	2002
Number registered (thousands)	1,417	1,709	2,097	2,277
Vehicle-kilometers traveled (millions)	110,527	151,827	217,294	223,124
Fuel consumed (million litres)	49,350	61,070	97,155	100,127
Average kilometers traveled per vehicle	78,008	88,845	103,640	98,005
Average kilometers traveled per litre	2.2	2.5	2.2	2.2
Average fuel consumed per vehicle (litres)	34,831	35,737	46,339	43,980

Note: 1 mile = 1.61 kilometers; 1 gallon = 3.8 liters.

TABLE 5-8M. SINGLE-UNIT 2-AXLE 6-TIRE OR MORE TRUCK FUEL CONSUMPTION AND TRAVEL

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics*, (Washington, DC: Annual issues).

TABLE 5-9M. COMBINATION TRUCK FUEL CONSUMPTION AND TRAVEL

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues).

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