

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 2-3M. U.S. Merchandise Trade with Canada and Mexico by Transportation Mode

Mode	1997		2000		2001 ¹		2004	
	Value (\$ billions)	Weight (millions of metric tonnes)	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	453	NA
Rail	70	NA	94	NA	93	88	108	NA
Air	28	<1	45	<1	37	<1	32	<1
Water	22	173	33	194	29	194	46	222
Pipeline	14	NA	24	NA	26	72	39	NA
Other	19	NA	29	NA	31	1	34	NA
Total	475	479	653	526	612	519	712	NA

Key: NA = not available.

¹2001 data are from the 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. "Other" 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 totals due to rounding. 1 ton = 0.91 metric tonne. For value, "Other" includes the difference between the total value and the sum of the modes.

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

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

TABLE 2-3M. U.S. MERCHANDISE TRADE WITH CANADA AND MEXICO BY TRANSPORTATION MODE

Source: U.S. Department of Transportation, Bureau of Transportation Statistics; U.S. Department of Commerce, Census Bureau; Statistics Canada; Transport Canada; Instituto Mexicano del Transporte; Instituto Nacional de Estadística, Geografía e Informática; Secretaría de Comunicaciones y Transportes; North American Trade Statistics Database, tables 6-1c and 6-2c, available at <http://nats.sct.gov.mx> as of November 2, 2005.

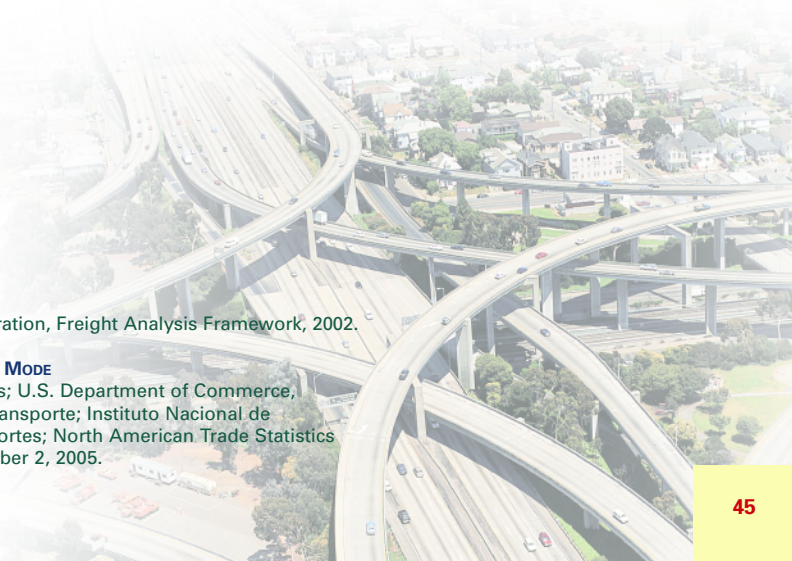


Table 2-9M. Top 25 Airports by Landed Weight of All-Cargo Operations¹

Airport	2003 Rank	Landed weight (thousands of metric tonnes)			
		2000	2001	2002	2003
Anchorage, AK (Ted Stevens Anchorage International) ²	1	7,333	7,055	8,159	8,171
Memphis, TN (Memphis International)	2	5,732	6,228	8,007	7,947
Louisville, KY (Louisville International-Standiford Field)	3	3,617	3,653	3,812	3,785
Miami, FL (Miami International)	4	2,657	2,771	2,879	2,938
Los Angeles, CA (Los Angeles International)	5	2,624	2,657	2,756	2,830
New York, NY (John F. Kennedy International)	6	2,534	2,307	2,642	2,664
Chicago, IL (O'Hare International)	7	2,616	2,862	2,121	2,133
Indianapolis, IN (Indianapolis International)	8	1,870	1,825	2,011	2,065
Newark, NJ (Newark Liberty International)	9	1,779	1,628	1,595	1,664
Oakland, CA (Metropolitan Oakland International)	10	1,643	1,487	1,584	1,537
Fort Worth, TX (Dallas/Fort Worth International)	11	1,534	1,402	1,343	1,344
Philadelphia, PA (Philadelphia International)	12	1,319	1,318	1,330	1,238
Ontario, CA (Ontario International)	13	1,107	1,172	1,310	1,213
San Francisco, CA (San Francisco International)	14	989	946	1,058	1,089
Atlanta, GA (William B. Hartsfield International)	15	828	889	946	1,083
Covington/Cincinnati, OH (Cincinnati/Northern Kentucky International)	16	1,149	918	939	996
Honolulu, HI (Honolulu International)	17	628	716	880	923
Seattle, WA (Seattle-Tacoma International)	18	2,026	1,310	814	722
Dayton, OH (James M. Cox Dayton International)	19	961	869	799	712
Phoenix, AZ (Sky Harbor International)	20	835	760	787	707
Portland, OR (Portland International)	21	800	732	740	679
Denver, CO (Denver International)	22	817	729	710	678
Minneapolis, MN (Minneapolis-St Paul International/Wold Chamberlain)	23	564	532	564	624
Houston, TX (George Bush Intercontinental)	24	435	420	437	604
San Juan, PR (Luis Munoz Marin International)	25	440	379	487	591
Top 25 airports		(R) 46,835	(R) 45,563	(R) 48,709	48,940
United States, all airports³		(R) 67,815	(R) 64,796	(R) 66,488	66,290
Top 25 as % of U.S. total		69.1%	70.3%	73.3%	73.8%

Key: R = revised.

¹All-Cargo operations are 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 certified maximum gross landed weight of the aircraft as specified by the aircraft manufacturer.

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

³Limited to airports with an aggregate landed weight in excess of 45,380 metric tonnes (50,000 short tons) annually.

Note: 1 short ton = 0.91 metric tonne.



TABLE 2-9M. TOP 25 AIRPORTS BY LANDED WEIGHT OF ALL-CARGO OPERATIONS

Source: U.S. Department of Transportation, Federal Aviation Administration, ACAIS Database Report F5, CY 2003 and CY 2001, available at <http://www.faa.gov/arp/planning/stats> as of June 27, 2005.

Table 2-10M. U.S. Hazardous Materials Shipments by Transportation Mode: 2002

Transportation mode	Value		Metric tonnes		Tonne-kilometers		Average kilometers per shipment
	\$ Billion	Percent	(Millions)	Percent	(Billions)	Percent	
TOTAL all modes	660.2	100.0	1,988.1	100.0	477.0	100.0	219
Single modes, total	644.5	97.6	1,958.2	98.5	455.4	95.5	169
Truck ¹	419.6	63.6	1,051.9	52.9	160.8	33.7	138
For-hire	189.8	28.8	407.8	20.5	95.1	19.9	459
Private ²	226.7	34.3	637.0	32.0	64.4	13.5	61
Rail	31.3	4.7	99.2	5.0	105.2	22.1	1,118
Water	46.9	7.1	207.0	10.4	103.1	21.6	S
Air	1.6	0.2	0.1	0.003	0.1	0.03	3,347
Pipeline ³	145.0	22.0	600.0	30.2	S	S	S
Multiple modes, total	9.6	1.5	17.0	0.9	18.2	3.8	1,366
Parcel, U.S. Postal Service or courier	4.3	0.6	0.2	0.01	0.2	0.04	1,347
Other	5.4	0.8	16.8	0.8	18.1	3.8	2,206
Unknown and other modes, total	6.1	0.9	12.9	0.6	3.4	0.7	92

Key: S = data are not published because of high sampling variability or other reasons.

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.

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

Table 2-11M. U.S. Hazardous Materials Shipments by Hazard Class: 2002

Hazard Class	Description	Value		Metric tonnes		Tonne-kilometers	
		\$ Billions	Percent	Millions	Percent	Billions	Percent
Class 1	Explosives	7.9	1.2	4.5	0.2	2.3	0.5
Class 2	Gases	73.9	11.2	193.6	9.7	54.4	11.4
Class 3	Flammable liquids	490.2	74.3	1,622.9	81.6	319.1	66.9
Class 4	Flammable solids	6.6	1.0	10.3	0.5	6.4	1.3
Class 5	Oxidizers and organic peroxides	5.5	0.8	11.5	0.6	6.2	1.3
Class 6	Toxics	8.3	1.3	7.7	0.4	6.2	1.3
Class 7	Radioactive materials	5.9	0.9	0.1	0.003	0.1	0.01
Class 8	Corrosive materials	38.3	5.8	82.3	4.1	52.9	11.1
Class 9	Miscellaneous dangerous goods	23.6	3.6	55.4	2.8	29.4	6.2
Total		660.2	100.0	1,988.1	100.0	477.0	100.0

Key: Z = zero or less than 1 unit of measure.

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

TABLE 2-10M. U.S. HAZARDOUS MATERIALS SHIPMENTS BY TRANSPORTATION MODE: 2002

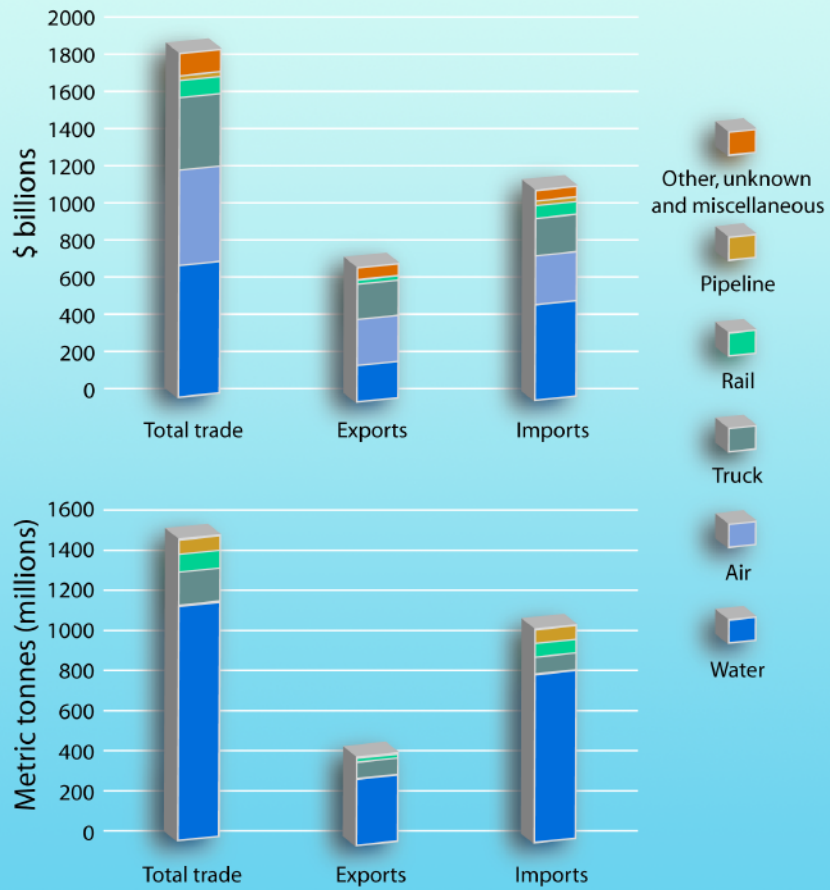
Source: U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, *2002 Economic Census, Transportation, 2002 Commodity Flow Survey, Hazardous Materials* (Washington, DC: December 2004), table 1a.

TABLE 2-11M. U.S. HAZARDOUS MATERIALS SHIPMENTS BY HAZARD CLASS: 2002

Source: U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, *2002 Economic Census, Transportation, 2002 Commodity Flow Survey, Hazardous Materials* (Washington, DC: December 2004), table 2a.



Figure 2-5M. U.S. International Merchandise Trade by Transportation Mode: 2001



Note: 1 short ton = 1 metric tonne.



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 Transportation Mode

	1980	1990	2000	2003	Percent change, 1980-2003
Public roads, route kilometers	6,211,806	6,223,214	6,358,681	6,421,036	3.4
National Highway System (NHS)	N	N	259,409	260,393	N
Interstates	66,176	72,540	75,113	75,267	13.7
Other NHS	N	N	184,296	185,126	N
Freight Intermodal connectors ¹	N	N	N	2,982	NA
Other	N	N	6,099,272	6,160,644	N
Strategic Highway Corridor Network (STRAHNET)	N	N	99,886	100,706	N
Interstate	N	N	75,116	75,274	N
Non-interstate	N	N	24,766	25,432	N
Railroad	294,634 ²	283,098	274,412	226,819	-23.0
Class I	NA	214,347	194,082	159,235	NA
Regional	NA	29,572	33,761	25,183	NA
Local	NA	39,167	46,570	42,401	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	258,892	-26.3
Gas	1,692,666	(R) 1,913,832	(R) 2,203,675	2,292,028	35.4

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

¹Excludes Class III railroads.

²Note: 1 mile = 1.61 kilometers.

TABLE 3-1M. KILOMETERS OF INFRASTRUCTURE BY TRANSPORTATION MODE

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

Freight 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/hap10/nhs/intermodalconnectors/index.html> as of July 5, 2005.

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 July 6, 2006.

Oil pipelines: 1980-2000: ENO Transportation Foundation, *Transportation in America, 2002* (Washington, DC: 2002). 2003: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety, *Pipelines Statistics*, Internet site <http://ops.dot.gov/stats/lpo.htm> as of July 5, 2005.

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



Table 3-3M. Truck Kilometers by Products Carried: 2002¹

Products carried	Millions of kilometers
Total²	233,632
Animals and fish, live	1,182
Animal feed and products of animal origin	3,360
Grains, cereal	2,202
All other agricultural products	4,283
Basic chemicals	1,410
Fertilizers and fertilizer materials	2,681
Pharmaceutical products	491
All other chemical products and preparations	2,174
Alcoholic beverages	1,808
Bakery and milled grain products	5,717
Meat, seafood, and their preparations	4,918
Tobacco products	717
All other products foodstuff	11,954
Logs and other wood in the rough	1,849
Paper or paperboard articles	5,053
Printed products	1,231
Pulp, newsprint, paper, paperboard	3,115
Wood products	5,731
Articles of base metal	5,301
Base metal in primary or semifinished forms	4,637
Nonmetallic mineral products	4,906
Tools, nonpowered	12,487
Tools, powered	10,425
Electronic and other electrical equipment	4,866
Furniture, mattresses, lamps, etc.	3,288
Machinery	5,190
Miscellaneous manufactured products	6,449
Precision instruments and apparatus	1,181
Textile, leather, and related articles	2,475
Vehicles, including parts	6,186
All other transportation equipment	1,024
Coal	484
Crude petroleum	212
Gravel or crushed stone	4,490
Metallic ores and concentrates	73
Monumental or building stone	744
Natural sands	1,753
All other nonmetallic minerals	802
Fuel oils	1,983
Gasoline and aviation turbine fuel	1,366
Plastic and rubber	3,851
All other coal and refined petroleum products	1,886
Hazardous waste (EPA manifest)	306
All other waste and scrape (non-EPA manifest)	4,261
Recyclable products	1,484
Mail and courier parcels	7,660
Empty shipping containers	1,278
Passengers	440
Mixed freight	23,591
Products, equipment, or materials not elsewhere classified	426
Products not specified	10,232
Not applicable ³	241
No product carried	46,634

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

²Detail lines may not add to total because multiple products/hazardous materials may be carried at the same time.

³Vehicles not in use. When the respondent had partial-year ownership of the vehicle, annual miles were adjusted to reflect miles traveled when not owned by the respondent.

Note: 1 mile = 1.61 kilometers.

**TABLE 3-3M. TRUCK
KILOMETERS BY PRODUCTS
CARRIED: 2002**

Source: U.S. Department of Commerce, Census Bureau, *Vehicle Inventory and Use Survey 2002: United States* (Washington, DC: 2004), available at <http://www.census.gov/svsd/www/02vehinv.html> as of July 6, 2005.

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		2002		Percent change, 1987-2002	
	Number (thousands)	VKT (millions)	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	237,983	5,415	234,359	49	62
Light-heavy	1,030	17,329	1,259	22,551	1,436	31,890	1,914	42,254	86	144
4,536 to 6,350	525	8,754	694	12,875	819	18,510	1,142	24,440	118	179
6,351 to 7,257	242	4,407	282	4,791	316	6,359	396	9,508	64	116
7,258 to 8,845	263	4,168	282	4,885	301	7,021	376	8,306	43	99
Medium-heavy	766	12,200	732	13,104	729	16,302	910	18,935	19	55
8,846 to 11,793	766	12,200	732	13,104	729	16,302	910	18,935	19	55
Heavy-heavy	1,829	115,266	2,017	133,305	2,536	189,791	2,591	173,169	42	50
11,794 to 14,969	377	8,708	387	9,163	428	11,414	437	9,407	16	8
14,969 to 18,144	209	6,619	233	8,505	257	10,612	229	6,067	10	-8
18,144 to 22,680	292	12,271	339	15,485	400	21,047	318	10,779	9	-12
22,680 to 27,216	188	11,518	227	13,999	311	20,362	327	14,404	74	25
27,216 to 36,287	723	73,127	781	82,147	1,070	120,256	1,179	124,707	63	71
36,288 to 45,359	28	2,018	33	2,460	46	3,906	69	4,747	144	135
45,360 to 58,967	8	708	12	1,181	18	1,691	26	2,528	238	257
58,967 or more	4	298	5	365	6	502	6	530	43	78

¹Excludes trucks with an average weight of 10,000 pounds 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	2003
Highway				
Gasoline, diesel and other fuels (million litres)	435,171	494,962	615,338	642,099
Truck, total	75,557	92,705	133,356	142,276
Single-unit 2-axle 6-tire or more truck	26,206	31,635	36,200	40,467
Combination truck	49,350	61,070	97,156	101,809
Truck (percent of total)	17.4	18.7	21.7	22.2
Rail, Class I (in freight service)				
Distillate / diesel fuel (million litres)	14,778	11,792	14,006	14,483
Water				
Residual fuel oil (million litres)	33,887	23,947	24,264	14,665
Distillate / diesel fuel oil (million litres)	5,595	7,817	8,559	8,392
Gasoline (million litres)	3,982	4,921	4,255	4,192
Pipeline				
Natural gas (million cubic meters)	17,970	18,684	18,185	18,830

Notes: 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

Sources: U.S. Department of Commerce, Census Bureau, *2002 Vehicle Inventory and Use Survey: United States* (Washington, DC: 2004), available at <http://www.census.gov/svsd/www/02vehinv.html> as of July 1, 2005; U.S. Department of Commerce, 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* (Washington, DC: October 2004), 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 2003*, DOE/EIA-0131(02) (Washington, DC: January 2005), 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	2003
Number registered (thousands)	4,374	4,487	5,926	5,667
Vehicle kilometers (millions)	64,073	83,527	113,459	124,824
Fuel consumed (million litres)	26,206	31,635	36,200	40,466
Average kilometers traveled per vehicle	14,649	18,615	19,146	22,027
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	7,141

Notes: 1 mile = 1.61 kilometers; 1 gallon = 3.8 litres.

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

	1980	1990	2000	2003
Number registered (thousands)	1,417	1,709	2,097	2,245
Vehicle kilometers traveled (millions)	110,527	151,827	217,294	222,608
Fuel consumed (million litres)	49,350	61,070	97,155	101,809
Average kilometers traveled per vehicle	78,008	88,845	103,640	99,153
Average kilometers traveled per gallon	2.2	2.5	2.2	2.2
Average fuel consumed per vehicle (litres)	34,831	35,737	46,339	45,347

Notes: 1 mile = 1.61 kilometers; 1 gallon = 3.8 litres.



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).