

II. FREIGHT TO BE MOVED AND TRADING PARTNERS

The American economy stretches across a continent with links to the world, drawing natural resources and manufactured products from many locations to serve markets at home and abroad. More freight is moving greater distances as part of far flung supply chains among distant trading partners.

TABLE 2-1. WEIGHT OF SHIPMENTS BY MODE: 2002, 2006, 2035 (MILLIONS OF TONS)

	2002				2006				2035			
	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³
Total	(R) 19,328	17,670	(R) 525	1,133	20,974	18,985	620	1,369	(R) 37,212	33,668	(R) 1,112	(R) 2,432
Truck	11,539	11,336	106	97	12,659	12,389	169	101	22,814	22,231	262	320
Rail	1,879	1,769	32	78	2,040	1,905	41	95	3,525	3,292	57	176
Water	701	595	62	44	688	582	48	58	1,041	874	114	54
Air, air & truck	(R) 11	3	3	(R) 5	15	5	4	6	(R) 61	10	(R) 13	(R) 38
Intermodal¹	1,292	196	317	780	1,503	194	353	956	2,598	334	660	1,604
Pipeline & unknown²	3,905	3,772	4	130	4,068	3,909	6	153	7,172	6,926	5	240

Key: R = revised.

¹Intermodal includes U.S. Postal Service and courier shipments and all intermodal combinations, except air and truck.

²Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain.

³Data do not include imports and exports that pass through the United States from a foreign origin to a foreign destination by any mode.

Note: Numbers may not add to totals due to rounding.

The U.S. transportation system moved, on average, 53 million tons of freight worth \$36 billion each day in 2002. The Freight Analysis Framework (FAF) forecasts that tons transported will almost double by 2035 with international shipments growing somewhat faster than domestic shipments. The provisional estimate of tons moved in 2006 are consistent with annual growth rates in the FAF forecast for all modes except water, which declined slightly, and air and intermodal, which grew at faster rates.

TABLE 2-1. WEIGHT OF SHIPMENTS BY MODE: 2002, 2006, 2035 (MILLIONS OF TONS)

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, Version 2.2, 2007.

TABLE 2-2. VALUE OF SHIPMENTS BY MODE: 2002, 2006, 2035 (BILLIONS OF DOLLARS)

	2002				2006				2035			
	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³
Total	(R) 13,228	11,083	(R) 778	(R) 1,367	14,935	12,104	1,128	1,703	(R) 41,869	29,592	(R) 3,392	(R) 8,884
Truck	8,856	8,447	201	208	9,765	9,069	428	267	23,767	21,655	806	1,306
Rail	382	288	26	68	430	319	33	77	702	483	63	156
Water	103	76	13	13	102	75	10	17	151	103	31	18
Air, air & truck	(R) 771	162	(R) 269	(R) 340	1,048	271	351	426	(R) 5,925	721	(R) 1,548	(R) 3,655
Intermodal¹	1,967	983	268	716	2,096	904	304	888	8,966	4,315	943	3,708
Pipeline and unknown²	1,149	1,127	1	22	1,494	1,466	1	28	2,357	2,315	1	41

Key: R = revised.

¹Intermodal includes U.S. Postal Service and courier shipments and all intermodal combinations, except air and truck.

²Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain.

³Data do not include imports and exports that pass through the United States from a foreign origin to a foreign destination by any mode.

Note: Numbers may not add to totals due to rounding.

The value of freight moved on the U.S. transportation system is increasing faster than tons transported, even when calculated in 2002 prices. The FAF 2006 provisional estimate and 2035 forecast expect the value of shipments to increase between 3.1 percent and 3.5 percent per year while tonnage is predicted to grow between 2.0 percent and 2.1 percent per year.

TABLE 2-3. TOP COMMODITIES: 2002

	Tons (millions)		Value (\$ billions)	
	Total	19,326	Total	13,120
Natural gas & related ¹	2,687		Machinery	(R) 1,866
Gravel	2,048		Electronics	(R) 948
Cereal grains	1,330		Mixed freight	(R) 944
Crude petroleum	1,284		Motorized vehicles	(R) 855
Coal	1,261		Natural gas & related ¹	729
Nonmetal min. prods. ²	1,138		Textiles/leather	(R) 545
Gasoline	1,090		Pharmaceuticals	(R) 519
Waste/scrap	926		Unknown	458
Fuel oils	560		Chemical prods.	(R) 444
Natural sands	557		Misc. mfg. prods.	(R) 411

¹Natural gas, selected coal products, and products of petroleum refining, excluding gasoline, aviation fuel, and fuel oil.

²Nonmetallic mineral products.

Bulk products comprise nearly two-thirds of the tonnage but only one-fifth of the value of goods moved in 2002. Motor vehicles, machinery, pharmaceuticals, and other manufactured goods comprise over two-

thirds of commodity movements by value but only 15 percent of the tonnage.

TABLE 2-2. VALUE OF SHIPMENTS BY MODE: 2002, 2006, 2035 (BILLIONS OF DOLLARS)

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, Version 2.2, 2007.

TABLE 2-3. TOP COMMODITIES: 2002

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, Version 2.2, 2007.

TABLE 2-4. HAZARDOUS MATERIALS SHIPMENTS BY TRANSPORTATION MODE: 2002

Transportation mode	Value		Tons		Ton-miles		Average miles per shipment
	\$ Billion	Percent	Millions	Percent	Billions	Percent	
All modes, total	660.2	100.0	2,191.5	100.0	326.7	100.0	136
Single modes, total	644.5	97.6	2,158.5	98.5	311.9	95.5	105
Truck ¹	419.6	63.6	1,159.5	52.9	110.2	33.7	86
For-hire	189.8	28.8	449.5	20.5	65.1	19.9	285
Private ²	226.7	34.3	702.2	32.0	44.1	13.5	38
Rail	31.3	4.7	109.4	5.0	72.1	22.1	695
Water	46.9	7.1	228.2	10.4	70.6	21.6	S
Air	1.6	0.2	0.1	0.003	0.1	0.03	2,080
Pipeline ³	145.0	22.0	661.4	30.2	S	S	S
Multiple modes, total	9.6	1.5	18.7	0.9	12.5	3.8	849
Parcel, U.S. Postal Service or Courier	4.3	0.6	0.2	0.01	0.1	0.04	837
Other	5.4	0.8	18.5	0.8	12.4	3.8	1,371
Unknown and other modes, total	6.1	0.9	14.2	0.6	2.3	0.7	57

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

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

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

³ Excludes most shipments of crude oil.

Trucks move more than one-half of all hazardous materials shipped from within the United States. However, truck ton-miles of hazardous shipments account for a much smaller share, about one-third of all ton-miles, because such shipments travel relatively short distances. By contrast, rail accounts for only 5 percent of shipments by weight but 22 percent of ton-miles.

TABLE 2-5. HAZARDOUS MATERIALS SHIPMENTS BY HAZARD CLASS: 2002

Hazard class	Description	Value		Tons		Ton-miles	
		\$ Billions	Percent	Millions	Percent	Billions	Percent
Class 1	Explosives	7.9	1.2	5.0	0.2	1.6	0.5
Class 2	Gases	73.9	11.2	213.4	9.7	37.3	11.4
Class 3	Flammable liquids	490.2	74.3	1,789.0	81.6	218.6	66.9
Class 4	Flammable solids	6.6	1.0	11.3	0.5	4.4	1.3
Class 5	Oxidizers and organic peroxides	5.5	0.8	12.7	0.6	4.2	1.3
Class 6	Toxic (poison)	8.3	1.3	8.5	0.4	4.3	1.3
Class 7	Radioactive materials	5.9	0.9	0.1	0.003	0.04	0.01
Class 8	Corrosive materials	38.3	5.8	90.7	4.1	36.3	11.1
Class 9	Miscellaneous dangerous goods	23.6	3.6	61.0	2.8	20.2	6.2
Total		660.2	100.0	2,191.5	100.0	326.7	100.0

TABLE 2-4. HAZARDOUS MATERIALS SHIPMENTS BY TRANSPORTATION MODE: 2002

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

TABLE 2-5. 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.

Flammable liquids, especially gasoline, are the predominant hazardous material transported in the United States. In terms of ton-miles, flammable liquids account for about 67 percent of total ton-miles of hazardous materials shipments. The next largest class of hazardous materials in terms of ton-miles is gases at about 11 percent.

TABLE 2-6 NEW. DOMESTIC MODE OF EXPORTS AND IMPORTS BY WEIGHT AND VALUE: 2002 AND 2035

	Tons (millions)		Value (\$ billions)	
	2002	2035	2002	2035
Total	(R) 1,658	(R) 3,544	(R) 2,145	(R) 12,277
Truck¹	797	2,116	1,198	6,193
Rail	200	397	114	275
Water	106	168	26	49
Air & truck²	(R) 9	(R) 54	(R) 614	5,242
Intermodal³	22	50	52	281
Pipeline & unknown⁴	524	760	141	238

Key: R = revised.

¹Excludes truck moves to and from airports.

²Includes truck moves to and from airports.

³Intermodal includes U.S. Postal Service and courier shipments and all intermodal combinations, except air and truck.

⁴Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain.

Notes: TABLE 2-6 NEW WAS UPDATED IN FEBRUARY 2008. IT DIFFERS FROM THE PRINT VERSION PUBLISHED IN NOVEMBER 2007. Numbers may not add to totals due to rounding.

International trade is growing rapidly and is placing demands on the domestic transportation network and on all modes. Trucks are the most common mode used to move imports and exports between international gateways and inland locations.

Foreign trade has had a major impact on all U.S. borders and coasts. Since 1950, the value of merchandise trade has increased sixteen-fold in inflation-adjusted terms.

In 2006, ports and airports on the Atlantic Coast remain the most important, but the land borders and other coasts are catching up.

FIGURE 2-1. VALUE OF MERCHANDISE TRADE BY COASTS AND BORDERS: 1950-2006

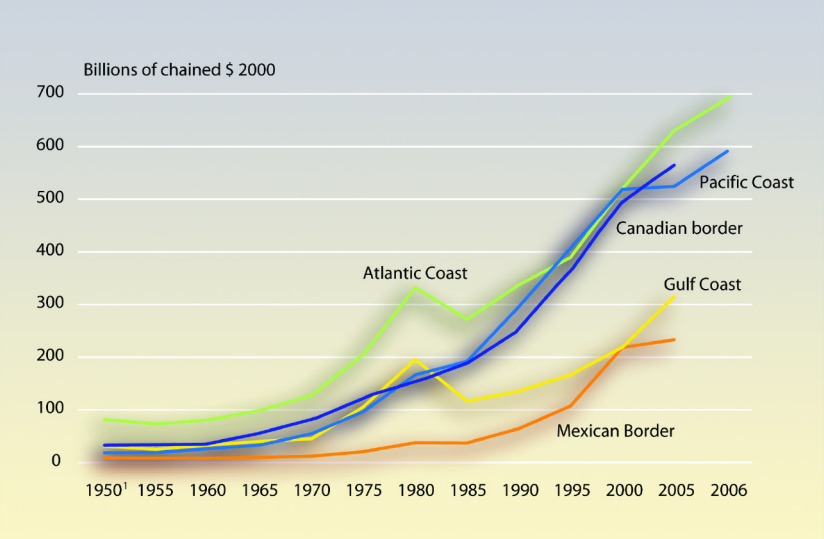
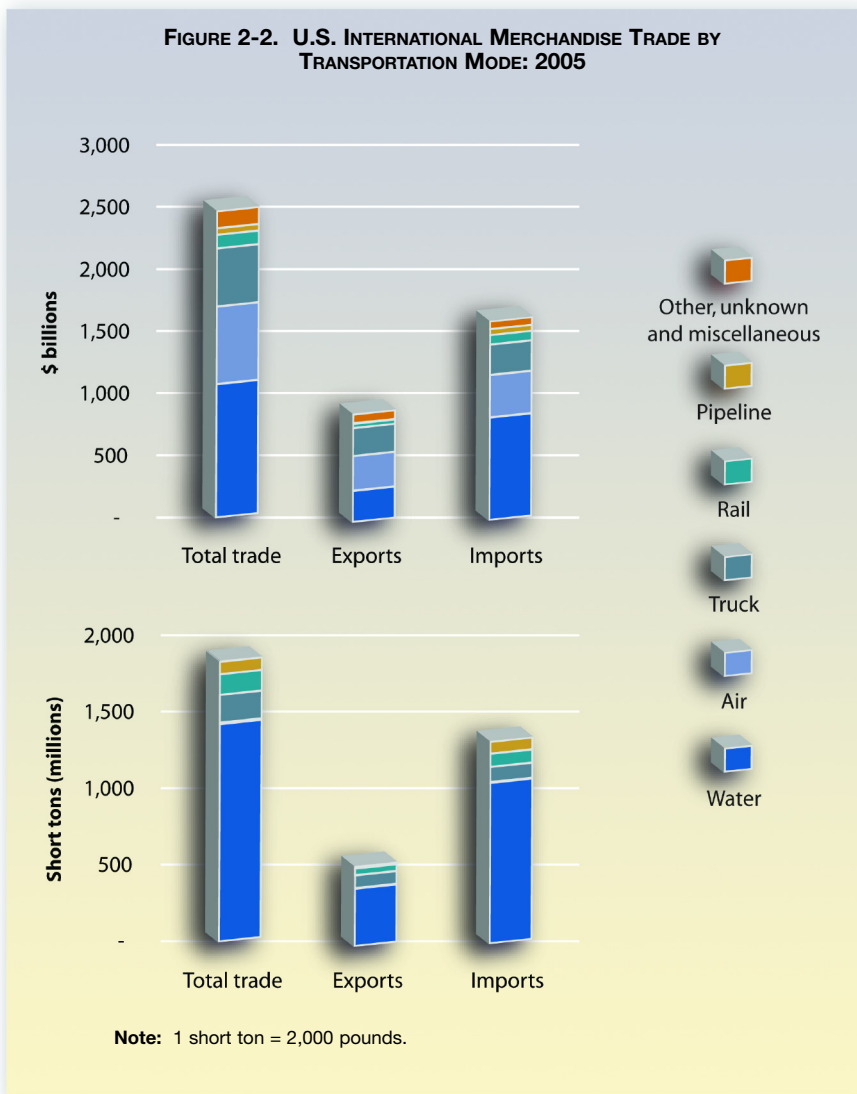


TABLE 2-6 NEW. DOMESTIC MODE OF EXPORTS AND IMPORTS BY WEIGHT AND VALUE: 2002 AND 2035

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, Version 2.2, 2008.

FIGURE 2-1. VALUE OF MERCHANDISE TRADE BY COASTS AND BORDERS: 1950-2006

Sources: 1950-1970: U.S. Census Bureau, *Historical Statistics of the United States, Colonial Times to 1970*, Bicentennial Edition (Washington, DC: 1975); 1975: U.S. Census Bureau, *Statistical Abstract of the United States: 1977* (Washington, DC: 1977); 1980-1985: U.S. Census Bureau, *Statistical Abstract of the United States: 1987* (Washington, DC: 1986); 1990-2000: U.S. Census Bureau, *Statistical Abstract of the United States: 2006* (Washington, DC: 2005); 2005-2006: U.S. Census Bureau, Foreign Trade Division, FT920 - U.S. Merchandise Trade: Selected Highlights (Washington, DC: December 2006) as of September 6, 2007; **Implicit GDP Deflator:** U.S. Department of Commerce, Bureau of Economic Analysis, Current-Dollar and "Real" Gross Domestic Product, available at www.bea.gov as of September 6, 2007.



Nearly 80 percent of freight tons in U.S. foreign trade are transported by ship. Although the vast majority of freight tonnage in U.S. foreign trade moves by water, air and truck transportation are nearly as important when freight value is considered. By value, the water share drops to 44 percent, with air and truck accounting for 25 percent and 19 percent respectively. Rail and pipeline account for the balance.

FIGURE 2-2. U.S. INTERNATIONAL MERCHANDISE TRADE BY TRANSPORTATION MODE: 2005
Source: Compiled by U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics (BTS), August 2006. **Water and air data**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, U.S. Exports of Merchandise and U.S. Imports of Merchandise, December 2005. **Total, truck, rail, pipeline, other and unknown data**—USDOT, RITA, BTS, Transborder Freight Data 2005; and special calculation, August 2006.

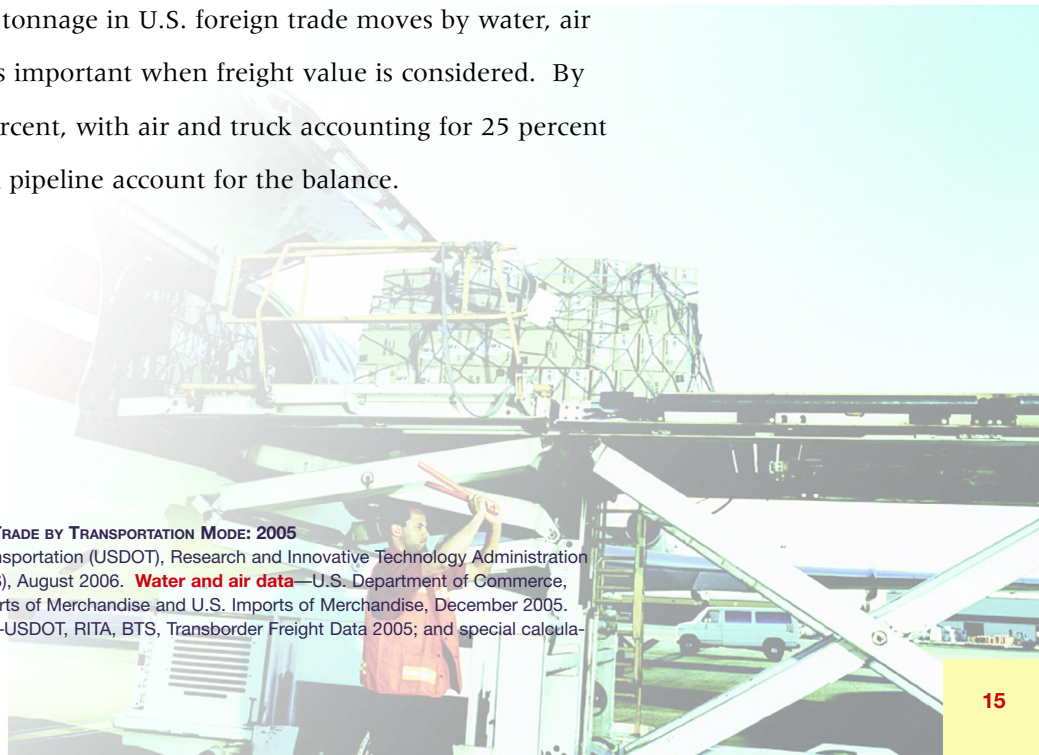
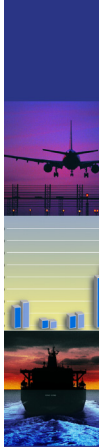


TABLE 2-7. TOP 25 TRADING PARTNERS OF THE UNITED STATES IN MERCHANDISE: 1998-2006 (CURRENT \$ BILLIONS)

Partner	2006 Rank	1998	2000	2002	2004	2006
Canada	1	329.0	405.6	371.4	445.0	533.7
China	2	85.4	116.3	147.2	231.4	343.0
Mexico	3	173.7	247.6	232.3	266.6	332.4
Japan	4	179.9	211.8	172.9	184.0	207.7
Germany	5	76.5	88.0	89.1	108.6	130.4
United Kingdom	6	73.9	85.0	74.1	82.4	98.8
South Korea	7	40.5	68.2	58.2	72.5	78.3
France	8	41.8	50.0	47.4	53.1	61.4
Taiwan	9	51.3	64.9	50.6	56.3	61.2
Malaysia	10	28.0	36.6	34.4	39.1	49.1
Netherlands	11	26.6	31.7	28.2	36.9	48.4
Venezuela	12	15.8	24.2	19.6	29.7	46.2
Brazil	13	25.3	29.2	28.2	35.0	45.6
Italy	14	30.0	36.0	34.4	38.8	45.2
Singapore	15	34.0	37.0	31.0	34.9	42.5
Saudi Arabia	16	16.9	20.4	17.9	26.2	39.5
Ireland	17	14.0	24.1	29.1	35.6	37.2
Belgium	18	22.3	23.9	23.2	29.3	35.8
India	19	11.8	14.3	15.9	21.7	31.9
Thailand	20	18.7	23.0	19.7	23.9	30.6
Nigeria	21	5.0	11.3	7.0	17.8	30.1
Israel	22	15.6	20.7	19.5	23.7	30.1
Switzerland	23	15.9	20.1	17.2	20.9	28.6
Australia	24	17.3	18.9	19.6	21.8	26.0
Hong Kong	25	23.5	26.1	21.9	25.1	25.7
Top 25 total¹		1,386.3	1,746.7	1,621.2	1,960.5	2,439.5
U.S. total trade		1,594.4	1,997.3	1,856.8	2,287.6	2,892.3
Top 25 as % of total		87	87	87	86	84

¹Represents the top 25 trading partners in the reference year, not necessarily the top 25 partners in previous years.

By a wide margin, Canada is this country's top trading partner followed by China and Mexico. China's share of trade with the United States more than doubled between 1998 and 2006, from 5 percent of total merchandise trade to nearly 12 percent.

Trade with Canada and Mexico has grown rapidly over the past decade. Trucks carry almost two-thirds of the value of goods traded with these

TABLE 2-8. VALUE AND WEIGHT OF U.S. MERCHANDISE TRADE WITH CANADA AND MEXICO BY TRANSPORTATION MODE: 1998-2006

Mode	1998		2000		2005 ¹		2006	
	Value (current \$ billions)	Weight (millions of short tons)	Value (current \$ billions)	Weight (millions of short tons)	Value (current \$ billions)	Weight (millions short tons)	Value (current \$ billions)	Weight (millions short tons)
Truck	350	NA	429	NA	491	191	534	NA
Rail	68	NA	94	NA	116	141	129	NA
Air	30	<1	45	1	33	<1	36	<1
Water	21	183	33	194	58	256	70	251
Pipeline	11	NA	24	NA	52	86	57	NA
Other	23	NA	29	NA	39	5	40	NA
Total	503	NA	653	526	790	679	865	NA

Key: NA = not available.

¹2005 data are from the U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, North American Freight Transportation (Washington, DC: 2003), tables A-1 and A-2, available at www.bts.gov as of August 12, 2006.

Notes: Individual modal totals may not sum to exact totals due to rounding. 1 short ton = 2,000 pounds. For value, "Other" is the difference between the total and the sum of the individual modes.

TABLE 2-7. TOP 25 TRADING PARTNERS OF THE UNITED STATES IN MERCHANDISE: 1998-2006 (\$ BILLIONS)

Source: U.S. Department of Commerce, International Trade Administration, TradeStats Express, available at <http://www.ita.doc.gov/> as of June 12, 2007.

TABLE 2-8. VALUE AND WEIGHT OF U.S. MERCHANDISE TRADE WITH CANADA AND MEXICO BY TRANSPORTATION MODE: 1998-2006

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data, September 2007.

countries. By weight, the water and truck modes carry the largest share of goods traded. Trucks carried the dominant share by value.

TABLE 2-9. U.S. LAND EXPORTS TO AND IMPORTS FROM CANADA AND MEXICO BY TRANSPORTATION MODE: 1998-2006 (CURRENT \$ MILLIONS)

	1998	2000	2005	2006
Exports to Canada, total	137,745.4	154,847.4	192,907.5	209,283.2
Truck	114,806.1	129,825.3	151,221.7	164,318.1
Rail	12,279.6	12,946.5	19,321.9	22,477.8
Pipeline	93.4	161.6	2,393.9	2,180.0
Other ¹	10,559.5	11,913.4	19,933.1	20,263.4
Mail	6.8	0.6	36.9	43.8
Exports to Mexico, total	70,173.8	97,158.9	104,276.5	116,749.2
Truck	60,432.1	82,389.2	83,341.2	92,991.6
Rail	6,188.8	10,495.8	15,747.7	17,271.2
Pipeline	73.4	301.8	543.3	707.0
Other ¹	3,470.0	3,972.0	4,622.7	5,779.1
Mail	0.1	(R) <0.1	(R) 2.2	0.3
Imports from Canada, total	162,105.7	210,270.5	265,402.1	278,889.2
Truck	108,856.7	127,816.3	143,695.6	149,884.0
Rail	37,374.1	49,699.2	60,606.3	63,258.4
Pipeline	11,120.1	23,117.1	48,766.5	53,865.2
Other ¹	4,575.1	9,571.0	12,184.4	11,736.0
Mail	1.7	4.1	0.1	0.2
FTZ ²	177.9	62.8	149.3	145.5
Imports from Mexico, total	84,102.9	113,436.5	135,400.5	155,205.1
Truck	65,883.7	88,668.7	112,267.6	126,463.6
Rail	12,029.7	21,056.1	20,782.2	25,863.5
Pipeline	2.4	11.5	0.0	55.4
Other ¹	917.8	1,573.9	1,990.2	2,399.2
Mail	0.2	0.6	(R) <0.1	(R) <0.1
FTZ ²	2,886.7	2,125.7	360.4	423.3

Key: R = revised.

¹"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.

²Foreign Trade Zones (FTZs) were added as a mode of transport for land import shipments beginning in April 1995. Although FTZs are 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.

Note: Numbers may not add to totals due to rounding.

Trade with Canada by land modes is much higher than trade with Mexico. Both have been growing rapidly over the past few years. Imports from and exports to Mexico measured by value grew by 85 percent and 66 percent respectively between 1998 and 2006. Imports from and exports to Canada grew by 72 percent and 52 percent respectively over the same period.