

II. FREIGHT TO BE MOVED AND TRADING PARTNERS

The American economy stretches across a continent with links to the world, drawing on 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	2-1. Weigh	t of Ship	ments by 1	Transport	tation Mod	le: 2002, 2	2008, and 2	2035 (mil	lions of to	ns)	
		20	002			200	08			203	35	
	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³
Total	19,328	17,670	525	1,133	21,496	19,387	868	1,242	37,211	33,667	1,112	2,432
Truck	11,539	11,336	106	97	13,243	13,040	114	88	22,813	22,230	262	320
Rail	1,879	1,769	32	78	2,007	1,861	61	85	3,525	3,292	57	176
Water	701	595	62	44	632	520	62	50	1,041	874	114	54
Air, air & truck	11	3	3	5	13	3	5	5	61	10	13	38
Intermodal ¹	1,292	196	317	780	1,661	175	618	869	2,598	334	660	1,604
Pipeline & unknow	1 ² 3,905	3,772	4	130	3,940	3,787	8	145	7,172	6,926	5	240

¹Intermodal includes U.S. Postal Service and courier shipments and all intermodal combinations, except air and truck. Intermodal also includes oceangoing exports and imports that move between ports and interior domestic locations by modes other than water.

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

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

Notes: The 2008 data are provisional estimates, which are based on selected modal and economic trend data. Methods used to develop these estimates have improved over time, and as a consequence, previously released annual provisional estimates are superseded by the 2008 estimates in this table. Numbers may not add to totals due to rounding.

The U.S. transportation system moved, on average, 53 million tons worth \$36 billion each day in 2002. The Freight Analysis Framework (FAF) estimates that tonnage increased by 11.2 percent by 2008, reaching 58.9 million tons per day. Nearly 10 percent of this tonnage is imports and exports. Growth between 2002 and the FAF provisional estimate for 2008 is slightly lower than the forecasted growth rates through 2035.

 TABLE 2-1.
 WEIGHT OF SHIPMENTS BY TRANSPORTATION MODE: 2002, 2008, AND 2035

 Source:
 2002 and 2035:
 U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007; 2008:
 U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007; 2008:
 U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, 2008



Table 2-2. Value of Shipments by Transportation Mode: 2002, 2008, and 2035 (billions of 2002 dollars)

		20	02			20	08			203	5	
	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³	Total	Domestic	Exports ³	Imports ³
Total	13,228	11,083	778	1,367	16,767	14,217	1,011	1,539	41,867	29,590	3,392	8,884
Truck	8,856	8,447	201	208	11,193	10,719	233	241	23,767	21,654	806	1,306
Rail	382	288	26	68	466	352	42	73	702	483	63	156
Water	103	76	13	13	44	27	7	10	151	103	31	18
Air, air & truck	771	162	269	340	1,022	206	387	428	5,925	721	1,548	3,655
Intermodal ¹	1,967	983	268	716	1,881	779	340	762	8,966	4,315	943	3,708
Pipeline and unknown	² 1,149	1,127	1	22	2,161	2,134	2	25	2,357	2,315	1	41

Intermodal includes U.S. Postal Service and courier shipments and all intermodal combinations, except air and truck. Intermodal also includes oceangoing exports and imports that move between ports and interior domestic locations by modes other than water.

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

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

Notes: The 2008 data are provisional estimates, which are based on selected modal and economic trend data. Methods used to develop these estimates have improved over time, and as a consequence, previously released annual provisional estimates are superseded by the 2008 estimates in this table. 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. Growth in value between 2002 and 2008 is 26.8 percent, compared to 11.2 percent in tons. Imports and exports also account for a larger share of value than tons, accounting for 15.2 percent of the value in 2008.

Millions of Tons		Billions of Dollars				
Total, all commodities	19,328	Total, all commodities	13,228			
Natural gas & related ¹	2,687	Machinery	(R) 2,015			
Gravel	2,048	Electronics	(R) 1,112			
Cereal grains	1,330	Mixed freight	(R) 968			
Crude petroleum	1,284	Motorized vehicles	(R) 859			
Coal	1,261	Natural gas & related ¹	729			
Nonmetallic mineral products	1,138	Textiles/leather	(R) 570			
Gasoline	1,090	Pharmaceuticals	(R) 549			
Waste/scrap	926	Miscellaneous manufactured products	(R) 471			
Fuel oils	560	Chemical products	(R) 455			
Natural sands	557	Other prepared foodstuffs	(R) 391			

'Natural gas, selected coal products, and products of petroleum refining, excluding gasoline,

Bulk products comprise nearly twothirds 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.

aviation fuel, and fuel oil.

TABLE 2-2. VALUE OF SHIPMENTS BY TRANSPORTATION MODE: 2002, 2008, AND 2035

Source: 2002 and 2035: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007; 2008: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, 2008 provisional estimates, 2009.

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.





	Valu	Je	To	ns	Ton n	niles	Miles
Transportation mode	\$ Billions	Percent	Millions	Percent	Billions	Percent	Average distance per shipment
All modes, total	660	100.0	2,192	100.0	327	100.0	136
Single modes, total	644	97.6	2,159	98.5	312	95.5	105
Truck ¹	420	63.6	1,160	52.9	110	33.7	86
For-hire	190	28.8	450	20.5	65	19.9	285
Private ²	227	34.3	702	32.0	44	13.5	38
Rail	31	4.7	109	5.0	72	22.1	695
Water	47	7.1	228	10.4	71	21.6	S
Air	2	0.2	<1	<.1	<1	<.1	2,080
Pipeline ³	145	22.0	661	30.2	S	S	S
Multiple modes, total	10	1.5	19	0.9	12	3.8	849
Parcel, U.S. Postal Service, or Courier	4	0.6	<1	<.1	<1	<.1	837
Other multiple modes	5	0.8	19	0.8	12	3.8	1,371
Unknown and other modes, total	6	0.9	14	0.6	2	0.7	57

 Table 2-4. Hazardous Materials Shipments by Transportation Mode: 2002

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: Numbers and percents may not add to totals due to rounding.

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.

		Valu	e	Tor	IS	Ton n	niles
Hazard class	Description	\$ Billions	Percent	Millions	Percent	Billions	Percent
Class 1	Explosives	8	1.2	5	0.2	2	0.5
Class 2	Gases	74	11.2	213	9.7	37	11.4
Class 3	Flammable liquids	490	74.3	1,789	81.6	219	66.9
Class 4	Flammable solids	7	1.0	11	0.5	4	1.3
Class 5	Oxidizers and organic peroxides	5	0.8	13	0.6	4	1.3
Class 6	Toxic (poison)	8	1.3	8	0.4	4	1.3
Class 7	Radioactive materials	6	0.9	<1	<.1	<1	<.1
Class 8	Corrosive materials	38	5.8	91	4.1	36	11.1
Class 9	Miscellaneous dangerous goods	24	3.6	61	2.8	20	6.2
Total		660	100.0	2,191	100.0	326	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 and U.S. Department of Commerce, Census Bureau, 2002 Commodity Flow Survey, Hazardous Materials (Washington, DC: December 2004), table 1a, available at

www.bts.gov/publications/commodity_flow_survey/2002/united_states/ as of March 30, 2009.

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

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, 2002 Commodity Flow Survey, Hazardous Materials (Washington, DC: December 2004), table 2a, available at www.bts.gov/publications/commodity_flow_survey/2002/united_states/ as of March 30, 2009.



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. Domestic Mode of Exports and Imports by Tonnage and Value: 2002 and 2035

	Millions	of Tons	Billions of 20	02 Dollars
	2002	2035	2002	2035
Total	1,658	3,544	2,145	12,277
Truck ¹	797	2,116	1,198	6,193
Rail	200	397	114	275
Water	106	168	26	49
Air, air & truck ²	9	54	614	5,242
Intermodal ³	22	50	52	281
Pipeline & unknown ⁴	524	760	141	238

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. In this table, oceangoing exports and imports that move between ports and domestic locations by single modes are classified by the domestic mode rather than intermodal.

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

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

International trade has grown rapidly and is placing pressure 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 1951, the value of merchandise trade has grown by nineteenfold in inflation-adjusted terms. However, overall growth has been affected by short-term downturns, such as between 1981 and 1985.



 TABLE 2-6. DOMESTIC MODE OF EXPORTS AND IMPORTS BY TONNAGE 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, 2007.

FIGURE 2-1. VALUE OF MERCHANDISE TRADE BY COASTS AND BORDERS: 1951-2008

Sources: 1951-1970: U.S. Department of Commerce, Census Bureau, *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition* (Washington, DC: 1975); 1970-2000: U.S. Department of Commerce, Census Bureau, *Statistical Abstract of the United States* (Washington, DC: annual issues); 2000-2008: U.S. Department of Commerce, Census Bureau, Foreign Trade Division, FT920 - U.S. Merchandise Trade: Selected Highlights (Washington, DC: annual issues). 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 August 15, 2009.



In 2008, ports and airports on the Atlantic Coast remain the most important, but the land borders and other coasts are catching up. While the recent economic downturn started in 2007, the value of trade continued to grow in part due to short-term increases in the price of imported oil.

Nearly 80 percent of freight tonnage in U.S. foreign trade moves by water, but air and truck transportation are nearly as important when freight value is considered. By value, the water share drops to 48 percent, with air and truck accounting for 24 percent and 16 percent respectively. Rail and pipeline account for the balance.

FIGURE 2-2. U.S. INTERNATIONAL MERCHANDISE TRADE BY TRANSPORTATION MODE: 2008 Sources: Total, water and air data: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, U.S.

Imports of Merchandise and U.S Experience DVD's, December 2008. Truck, rail, and pipeline data: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data, available at www.bts.gov/transborder as of August 20, 2009. Other, unknown and miscellaneous data: special tabulation, August 2009.





Table 2-7.	Top 25	Trading Partners of the Unite	d States in
Merchandise	Trade:	1998-2008 (billions of current	t U.S. dollars

	2008						
Partner	Rank	1998	2000	2002	2004	2006	2008
Canada	1	330	410	370	446	534	596
China	2	85	116	147	231	343	409
Mexico	3	173	247	232	267	332	367
Japan	4	180	211	173	184	208	206
Germany	5	76	88	89	109	130	152
United Kingdom	6	74	85	74	82	99	112
South Korea	7	40	68	58	73	78	83
France	8	42	50	47	53	61	73
Saudi Arabia	9	17	21	18	26	39	67
Venezuela	10	16	24	20	30	46	64
Brazil	11	25	29	28	35	46	63
Taiwan	12	51	65	51	56	61	62
Netherlands	13	27	32	28	37	48	61
Italy	14	30	36	34	39	45	52
Belgium	15	22	24	23	29	36	46
Singapore	16	34	37	31	35	42	45
India	17	12	14	16	22	32	44
Malaysia	18	28	37	34	39	49	44
Nigeria	19	5	11	7	18	30	42
Ireland	20	14	24	29	36	37	40
Switzerland	21	16	20	17	21	29	40
Israel	22	16	21	19	24	30	37
Russian Federation	23	9	10	9	15	25	36
Australia	24	17	19	20	22	26	33
Thailand	25	19	23	20	24	31	33
Top 25 total ¹		1,386	1,747	1,621	1,960	2,438	2,809
U.S. total trade		1,594	2,000	1,854	2,288	2,892	3,400
Top 25 as % of total		87.0	87.3	87.4	85.7	84.3	82.6

top trading partner followed by China and Mexico. China's share of trade with the United States more than doubled between 1998 and 2008, from 5 percent of total merchandise trade to 12 percent.

By a wide margin,

Canada is this country's

Trade with Canada and Mexico has grown rapidly over the past decade. Trucks carry about 58 percent of the value of goods traded

¹Top 25 trading partners change each year. Totals represent the top 25 trading partners for each year, not necessarily the top 25 trading partners listed here for 2008. **Note:** Numbers may not add to totals due to rounding.

Table 2-8. Value and Tonnage of U.S. Merchandise Trade with Canada and Mexico by Transportation Mode: 1998-2008 (billions of current U.S. dollars and millions of short tons)

	199	98	200	00	2007		2008	
Mode	Value	Weight	Value	Weight	Value	Weight	Value	Weight
Truck ¹	350	NA	429	NA	555	192	554	182
Rail ¹	68	NA	94	NA	138	154	140	148
Air	30	<1	45	<1	38	<1	41	<1
Water	21	183	33	194	74	241	93	232
Pipeline ¹	11	NA	24	NA	59	95	88	99
Other ¹	23	NA	29	NA	45	7	47	7
Total ¹	503	NA	653	NA	909	691	964	668

Key: NA = not available.

¹The Bureau of Transportation Statistics estimated the weight of exports for truck, rail, pipeline, and other modes using weight-to-value ratios derived from imported commodities that vary by country, mode, and commodity.

Notes: 1 short ton = 2,000 pounds. Mode "Other" includes shipments transported by mail, other and unknown modes, and shipments through Foreign Trade Zones. Totals for the most recent year differ slightly from the Freight Analysis Framework due to variations in coverage and FAF conversion of values to constant dollars. Numbers may not add to totals due to rounding.



 TABLE 2-7. TOP 25 TRADING PARTNERS OF THE UNITED STATES IN MERCHANDISE TRADE: 1998-2008

 Source:
 U.S. Department of Commerce, International Trade Administration, TradeStats Express, available at www.ita.doc.gov/ as of June 15, 2009.

 TABLE 2-8.
 VALUE AND TONNAGE OF U.S. MERCHANDISE TRADE WITH CANADA AND MEXICO BY TRANSPORTATION MODE: 1998-2008
 Source:
 U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation
 Statistics, Transborder Freight Data, available at www.bts.gov/transborder as of September 2009.

with these countries. Rail is the second largest mover of freight for the United States with Canada and Mexico.

	1998	2000	2007	2008
Exports to Canada, total	137,745	154,847	226,058	235,681
Truck	114,806	129,825	174,343	178,593
Rail	12,280	12,947	25,497	29,438
Pipeline	93	162	3,334	4,313
Other ¹	10,560	11,913	22,834	23,294
Mail	7	<1	50	43
Exports to Mexico, total	70,174	97,159	118,758	129,587
Truck	60,432	82,389	93,047	100,264
Rail	6,189	10,496	19,340	21,965
Pipeline	73	302	787	1,250
Other ¹	3,470	3,972	5,581	6,107
Mail	<1	<1	3	<1
Imports from Canada, total	162,106	210,270	284,773	301,128
Truck	108,857	127,816	150,404	141,353
Rail	37,374	49,699	65,962	63,757
Pipeline	11,120	23,117	55,016	82,018
Other ¹	4,575	9,571	12,957	13,555
Mail	1.74	4.05	<1	<1
FTZ ²	178	63	434	445
Imports from Mexico, total	84,103	113,437	167,713	163,478
Truck	65,884	88,669	137,037	134,224
Rail	12,030	21,056	27,060	25,265
Pipeline	2	12	169	193
Other ¹	918	1,574	2,696	2,717
Mail	<1	<1	0	<1
FTZ ²	2,887	2,126	751	1,079

"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 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.

In addition to total trade with Canada and Mexico, trucks and railroads carry most of the trade in each direction across both borders. Pipelines also carry a significant volume



TABLE 2-9. VALUE OF U.S. EXPORTS TO AND IMPORTS FROM CANADA AND MEXICO BY LAND MODE OF TRANSPORTATION: 1998-2008 Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data, available at www.bts.gov/transborder as of June 8, 2009.

