FREIGHT FACTS AND FIGURES 2013

U.S. Department of Transportation
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U.S. Department of Transportation
Bureau of Transportation Statistics

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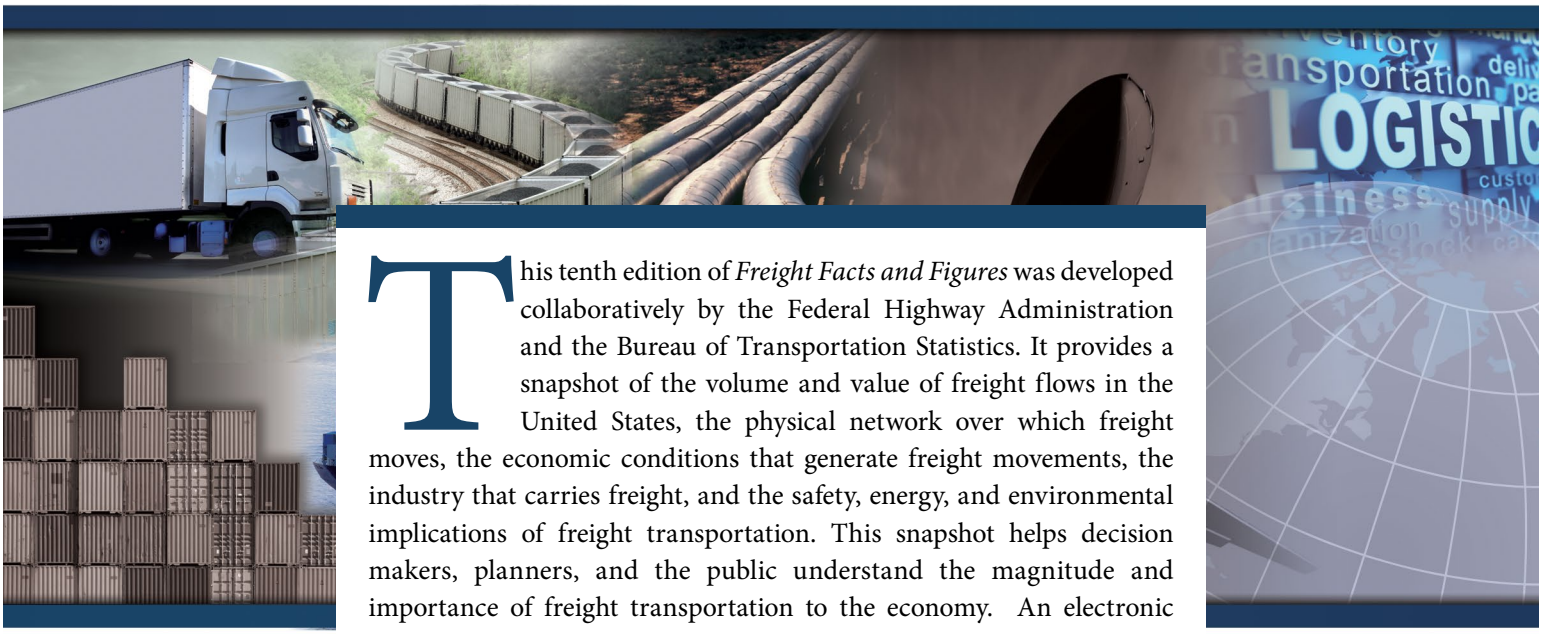


This tenth edition of *Freight Facts and Figures* was developed collaboratively by the Federal Highway Administration and the Bureau of Transportation Statistics. It provides a snapshot of the volume and value of freight flows in the United States, the physical network over which freight moves, the economic conditions that generate freight movements, the industry that carries freight, and the safety, energy, and environmental implications of freight transportation. This snapshot helps decision makers, planners, and the public understand the magnitude and importance of freight transportation to the economy. An electronic version of this publication is available at *freight.dot.gov*.

Chapter 1 summarizes the basic demographic and economic characteristics of the United States that contribute to the demand for raw materials, intermediate goods, and finished products. Chapter 2 identifies the freight that is moved and highlights international trade. Chapter 3 describes the freight transportation system; volumes of freight moving over the system; the amount of highway, air, rail, port, and pipeline activities required to move the freight; and the performance of the system. Chapter 4 focuses on the economic characteristics of the transportation industry that operates the system. Chapter 5 covers the safety aspects, energy consumption, and environmental implications of freight transportation.

Several of the tables and figures in this report are based on the Economic Census, which is conducted once every five years. The most recently published data are for 2007, except for the Vehicle Inventory and Use Survey, which was last conducted in 2002.

Many of the tables and figures are based on the Freight Analysis Framework (FAF), version 3, which builds on the Commodity Flow Survey to estimate all freight flows to, from, and within the United States except shipments between foreign countries that are transported through the United States. Shipments to and from Puerto Rico are counted with Latin America.

The FAF covers all modes of transportation. The truck, rail, water, and pipeline categories include shipments transported by only one mode. Air includes shipments weighing more than 100 pounds moved by air or by air and truck. The multiple modes and mail category includes all other shipments transported by more than one mode, such as bulk products moved by rail and water and mixed cargo hauled by truck and rail. The multiple modes and mail category also includes small shipments sent via postal and courier services. The other and unknown category is primarily unidentified modes but includes miscellaneous categories, such as aircraft delivered to customers and shipments through foreign trade zones. Please visit *www.ops.fhwa.dot.gov/freight/freight_analysis/faf* for FAF data and documentation.

TABLE OF CONTENTS

CHAPTER I. THE NATION SERVED BY FREIGHT

TABLES

Table 1-1. Economic and Social Characteristics of the United States: 1990, 2000, and 2009-2011 1

Table 1-2. Population and Gross Domestic Product (GDP) by Region: 1990, 2000, and 2010-2012 2

CHAPTER II. FREIGHT MOVED IN DOMESTIC AND INTERNATIONAL TRADE

TABLES

Table 2-1. Weight of Shipments by Transportation Mode: 2007, 2012, and 2040 3

Table 2-2. Value of Shipments by Transportation Mode: 2007, 2012, and 2040 4

Table 2-3. Total Freight Moved by Distance Band: 2007 4

Table 2-4. Top Commodities: 2012 8

Table 2-5. Hazardous Materials Shipments by Transportation Mode: 2007 8

Table 2-6. Hazardous Materials Shipments by Hazard Class: 2007 9

Table 2-7. Domestic Mode of Exports and Imports by Tonnage and Value: 2007 and 2040 9

Table 2-8. Top 25 Trading Partners of the United States in Merchandise Trade: 2000, 2005, 2011, and 2012 12

Table 2-9. Value and Tonnage of U.S. Merchandise Trade with Canada and Mexico: 2000, 2005, 2011, and 2012 13

Table 2-10. Value of U.S. Exports to and Imports from Canada and Mexico by Land Transportation Mode: 2000, 2005, 2011, and 2012 14

FIGURES

Figure 2-1a. Mode Share of Freight Value by Distance Band: 2007 5

Figure 2-1b. Total Freight Value by Distance Band: 2007 5

Figure 2-2a. Mode Share of Freight Tonnage by Distance Band: 2007 6

Figure 2-2b. Total Freight Tonnage by Distance Band: 2007 6

Figure 2-3a. Mode Share of Freight Ton-Miles by Distance Band: 2007 7

Figure 2-3b. Total Freight Ton-Miles by Distance Band: 2007 7

Figure 2-4. Value of Merchandise Trade by Coasts and Borders: 1951-2012 10

Figure 2-5. U.S. International Merchandise Trade by Transportation Mode: 2012 11

CHAPTER III. THE FREIGHT TRANSPORTATION SYSTEM

TABLES

Table 3-1. Miles of Infrastructure by Transportation Mode: 1990, 2000, and 2008-2011 15

Table 3-2. Freight Intermodal Connectors on the National Highway System by State: 2013 16

Table 3-3. Number of Trucks, Locomotives, Rail Cars, and Vessels: 1990, 2000, and 2008-2011 17

Table 3-4. Containership Calls at U.S. Ports by Vessel Size and Number of Vessels: 2006-2011 22

Table 3-5. Number of Vessel Calls at U.S. Ports: 2006-2011 24

Table 3-6. Average Vessel Size per Call at U.S. Ports: 2006-2011 24

Table 3-7. Top 25 Airports by Landed Weight of All-Cargo Operations: 2000 and 2009-2012 25

Table 3-8. Trucks and Truck Miles by Average Weight: 1987, 1992, 1997, and 2002 30
Table 3-9. Commercial Vehicle Weight Enforcement Activities: 2006-2012 31
Table 3-10. Annual Vehicle Distance Traveled by Highway Category and Vehicle Type: 2011 31
Table 3-11. Trucks, Truck Miles, and Average Distance by Range of Operations and Jurisdictions: 2002 34
Table 3-12. Truck Miles by Products Carried: 2002 35
Table 3-13. Performance Measurements for Selected Corridors: July–December 2012 44
Table 3-14. Top 25 Congested Freight-Significant Locations: 2012 46
Table 3-15. Largest Improvements in Average Speed for Congested Freight Highway Locations: 2012 47
Table 3-16. Maximum Posted Speed Limits on Rural Interstates: 2013 48
Table 3-17. Average Truck Speeds on Selected Metropolitan Area Roadways: 2012 49
Table 3-18. Truck Trip Reliability as Indicated by Minimum and Maximum Travel Times Between Selected City-Pairs: 2012 50
Table 3-19. Number of Incoming Trucks, Trains and Loaded Containers Crossing the U.S.-Mexico and U.S.-Canada Borders: 2000, 2005, and 2009-2012 51
Table 3-20. Average Time for Commercial Vehicles to Travel One Mile At Selected U.S.-Canada Border Crossings: 2012 52
Table 3-21. Average Truck Transit Times at Selected U.S.-Mexico Border Crossings: 2012 53

FIGURES

Figure 3-1. Freight Flows by Highway, Railroad, and Waterway: 2010 18
Figure 3-2. Top 25 U.S.-International Trade Freight Gateways by Value of Shipments: 2011 19
Figure 3-3. Tonnage of Trailer-on-Flatcar and Container-on-Flatcar Rail Intermodal Moves: 2011 20
Figure 3-4. Top 25 Water Ports by Containerized Cargo: 2011 21
Figure 3-5. Top 25 Water Ports by Tonnage: 2011 23
Figure 3-6. Crude Oil Production by State: 2011 26
Figure 3-7. Interstate Movements of Crude Oil by Pipeline: 2011 27
Figure 3-8. Interstate Movements of Natural Gas by Pipeline: 2011 28
Figure 3-9. Share of Highway Vehicle-Miles Traveled by Vehicle Type: 2011 29
Figure 3-10. National Network for Conventional Combination Trucks: 2013 32
Figure 3-11. Permitted Longer Combination Vehicles on the National Highway System: 2011 33
Figure 3-12. Average Daily Long-Haul Truck Traffic on the National Highway System: 2011 36
Figure 3-13. Average Daily Long-Haul Truck Traffic on the National Highway System: 2040 37
Figure 3-14. Major Truck Routes on the National Highway System: 2011 38
Figure 3-15. Major Truck Routes on the National Highway System: 2040 39
Figure 3-16. Peak-Period Congestion on the National Highway System: 2011 40
Figure 3-17. Peak-Period Congestion on the National Highway System: 2040 41
Figure 3-18. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2011 42
Figure 3-19. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2040 43
Figure 3-20. Intensity of Truck Freight Congestion on Selected Interstate Highways: 2012 45

CHAPTER IV. ECONOMIC CHARACTERISTICS OF THE FREIGHT TRANSPORTATION INDUSTRY

TABLES

Table 4-1. Transportation Fixed Assets: 2000, 2005, and 2010-2012 55

Table 4-2. Economic Characteristics of Transportation and Warehousing Establishments in Freight-Dominated Modes: 2002 and 2007 57

Table 4-3. Economic Characteristics of Freight Railroads: 2000 and 2011 57

Table 4-4. Employment in For-Hire Transportation Establishments Primarily Serving Freight: 1990, 2000, and 2010-2012 59

Table 4-5. Employment in Selected Freight Transportation and Freight Transportation-Related Occupations: 2000 and 2010-2012 60

Table 4-6. Producer Price Indices for Selected Transportation Services: 1990, 2000, 2003, and 2007-2011 61

FIGURES

Figure 4-1. For-hire Transportation Services Contribution to U.S. Gross Domestic Product by Mode: 2011 56

Figure 4-2. Productivity in Selected Transportation Industries: 1987-2011 58

Figure 4-3. Monthly Diesel Prices: January 1999 - July 2013 62

CHAPTER V. SAFETY, ENERGY, AND ENVIRONMENTAL IMPLICATIONS OF FREIGHT TRANSPORTATION

TABLES

Table 5-1. Fatalities by Freight Transportation Mode: 1990, 2000, and 2010-2012 63

Table 5-2. Injuries by Freight Transportation Mode: 1990, 2000, and 2010-2012 64

Table 5-3. Crashes, Accidents, and Incidents by Freight Transportation Mode: 1990, 2000, and 2010-2012 65

Table 5-4. Hazardous Materials Transportation Incidents: 1990, 2000, 2010-2012 66

Table 5-5a. Commercial Motor Carrier Compliance Reviews by Safety Rating: 2012 67

Table 5-5b. Commercial Motor Carrier Compliance Reviews by Type: 2009-2012 67

Table 5-6. Roadside Safety Inspection Activity Summary by Inspection Type: 2000 and 2010-2012 68

Table 5-7. Fuel Consumption by Transportation Mode: 2007-2011 69

Table 5-8. Energy Consumption by Selected Freight Transportation Mode: 2007-2011 69

Table 5-9. Single-Unit Truck Fuel Consumption and Travel: 2007-2011 70

Table 5-10. Combination Truck Fuel Consumption and Travel: 2007-2011 70

Table 5-11. Energy Intensities of Selected Domestic Freight Transportation Modes: 2007-2011 71

Table 5-12. Estimated National Average Vehicle Emissions Rates: 2000, 2005, 2011, and 2012 72

Table 5-13. Freight Nitrogen Oxides (NO_x) and Particulate Matter (PM-10) Emissions by Single-Unit and Combination Trucks: 2000, 2002, 2005, 2012, 2020, and 2030 73

Table 5-14. U.S. Greenhouse Gas Emissions by Economic End-Use Sector: 1990, 2005, and 2008-2011 73

Table 5-15. U.S. Transportation Sector CO_2 Emissions from Fossil Fuel Combustion by Fuel Type: 1990, 2005, and 2008-2011 74

Table 5-16. U.S. Greenhouse Gas Emissions from Domestic Freight Transportation: 1990, 2005, and 2008-2011 75
Table 5-17. Medium- and Heavy-duty Truck Greenhouse Gas Emissions: 1990, 2005, and 2008-2011 76
Table 5-18. Number and Volume of Oil Spills In and Around U.S. Waterways: 1990, 2000, and 2009-2011 77

APPENDIX. SELECTED METRIC DATA

Table 2-1M. Weight of Shipments by Transportation Mode: 2007, 2012, and 2040 79
Table 2-4M. Top Commodities: 2012 79
Table 2-5M. Hazardous Materials Shipments by Transportation Mode: 2007 80
Table 2-6M. Hazardous Materials Shipments by Hazard Class: 2007 80
Table 2-7M. Domestic Mode of Exports and Imports by Tonnage and Value: 2007 and 2040 81
Table 2-9M. Value and Tonnage of U.S. Merchandise Trade with Canada and Mexico: 2000, 2005, 2011, and 2012 81
Table 3-1M. Kilometers of Infrastructure by Transportation Mode: 1990, 2000, and 2008-2011 83
Table 3-7M. Top 25 Airports by Landed Weight of All-Cargo Operations: 2000 and 2009-2012 84
Table 3-8M. Trucks and Truck Kilometers by Average Weight: 1987, 1992, 1997, and 2002 85
Table 3-11M. Trucks, Truck Kilometers, and Average Distance by Range of Operations and Jurisdictions: 2002 86
Table 3-12M. Truck Kilometers by Products Carried: 2002 87
Table 5-7M. Fuel Consumption by Transportation Mode: 2007-2011 88
Table 5-9M. Single-Unit Truck Fuel Consumption and Travel: 2007-2011 88
Table 5-10M. Combination Truck Fuel Consumption and Travel: 2007-2011 89

FIGURES

Figure 2-5M. U.S. International Merchandise Trade by Transportation Mode: 2012 82

I. THE NATION SERVED BY FREIGHT

The Nation's 118.7 million households, 7.4 million business establishments, and 89,004 governmental units are part of an economy that demands the efficient movement of freight. While the U.S. economy has been affected by an economic downturn, it is recovering and will continue to grow. Long-term economic growth will result in even greater demand for freight transportation.

Table 1-1. Economic and Social Characteristics of the United States: 1990, 2000, and 2009-2011

	1990	2000	2009	2010	2011	Percent change, 1990 to 2011
Resident population (thousands)	248,791	282,172	307,007	(R) 309,326	311,588	25.2
Households (thousands)	93,347	104,705	117,181	117,538	118,682	27.1
Median household income (2009 $)	(R) 47,637	(R) 52,301	(R) 49,777	(R) 48,476	47,735	0.2
Civilian labor force (thousands)	125,840	142,583	(R) 153,120	(R) 153,649	153,945	22.3
Employed[1] (thousands)	118,793	136,891	(R) 138,025	(R) 139,295	140,896	18.6
Agriculture, forestry, fishing, and hunting (percent)	1.9	1.8	1.5	1.6	1.6	-15.5
Mining	0.5	0.3	0.5	0.5	0.6	7.7
Construction	6.9	7.3	6.9	6.5	6.5	-5.9
Manufacturing	16.8	14.4	10.2	10.1	10.2	-39.0
Wholesale and retail trade	14.7	14.6	14.1	14.2	14.1	-4.1
Transportation and utilities	5.1	5.4	5.2	5.1	5.1	0.0
Information	2.9	3.0	2.3	2.3	2.3	-22.7
Financial activities	7.1	6.8	6.9	6.7	6.7	-5.3
Professional and business services	9.4	10.0	10.7	11.0	11.3	20.0
Education and health services	17.5	19.1	22.7	23.1	22.8	30.0
Leisure and hospitality	8.0	8.2	9.1	9.0	9.1	12.8
Other services	4.3	4.7	5.0	4.9	4.8	11.7
Public administration	4.7	4.5	4.9	5.0	4.9	3.3
Business establishments (thousands)	6,176	7,070	7,433	7,397	7,354	19.1
Governments[2]	85,006[3]	87,576[4]	NA	NA	89,004[5]	53.0
Gross domestic product (millions of 2009 $)	(R) 8,945,400	(R) 12,565,200	(R) 14,417,900	(R) 14,779,400	15,052,400	68.3
Foreign trade (millions of 2009 $)	(R) 1,364,100	(R) 3,027,500	(R) 3,559,800	(R) 3,993,700	4,226,900	209.9
Goods (percent)	NA	(R) 77.8	(R) 74.5	(R) 76.3	76.4	NA
Services (percent)	NA	(R) 22.0	(R) 25.5	(R) 23.7	23.6	NA

Key: NA = not available; R = revised.

[1] Based on the 2002 Census Industry Classification system. Data for 1990 do not appear in the source document; they are estimated using the Bureau of Labor Statistics crosswalk from the 1990 Census Industry Classification system to the 2002 Census Industry Classification system.

[2] Data for governmental units come from the Census of Governments, which is collected every five years.

[3] 1992

[4] 2002

[5] 2012

Freight transportation has grown over time with the expansion of population and economic activity within the United States and with the increasing interdependence of economies across the globe. The U.S. population grew by 25 percent between 1990 and 2011, climbing to 311.6 million in 2011. The U.S. economy, measured by gross domestic product (GDP), increased by 68 percent in real terms (inflation adjusted), while household income, another indicator of economic growth, remained the same between 1990 and 2011. Foreign trade grew faster than the overall economy, doubling in real value over the same period, reflecting unprecedented global interconnectivity.

Table 1-1. Economic and Social Characteristics of the United States: 1990, 2000, 2009-2011

Source: Population: U.S. Department of Commerce, Census Bureau, Population Profile of the United States, available at *www.census.gov/population/www/pop-profile/profile.html* as of September 20, 2013. **Households:** U.S. Department of Commerce, Census Bureau, Families and Living Arrangements, table HH-1, available at *www.census.gov/population/www/socdemo/hh-fam.html* as of September 20, 2013. **Civilian Labor Force and Employment:** U.S. Department of Labor, Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, available at **www.bls.gov/data** as of September 20, 2013. **Median household income:** U.S. Department of Commerce, Census Bureau, Historical Income Tables, table H-6, available at *www.census.gov/hhes/www/income/data/historical/household/index.html* as of September 20, 2013. **Business establishments:** U.S. Department of Commerce, Census Bureau, County Business Patterns, available at *www.census.gov/econ/cbp/* as of September 20, 2013. **Governmental units:** U.S. Department of Commerce, Census Bureau, Census of Governments, available at *www.census.gov/govs* as of September 20, 2013. **Gross domestic product and foreign trade:** U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Table, tables 1.1.5, available at *www.bea.gov/national/FA2004/index.asp* as of September 20, 2013.

Table 1-2. Population and Gross Domestic Product (GDP) by Region: 1990, 2000, and 2010-2012

	1990	2000	(R) 2010	2011	2012	Percent change, 1990 to 2012
Resident Population (thousands)	**248,789**	**282,172**	**309,326**	**311,588**	**313,914**	**26.2**
Northeast	50,828	53,668	55,377	55,598	55,761	9.7
Midwest	59,670	64,494	66,972	67,145	67,316	12.8
South	85,454	100,560	114,854	116,022	117,257	37.2
West	52,837	63,451	72,123	72,823	73,579	39.3
GDP (millions of chained 2005 $)[1]	**7,883,332**	**11,223,130**	**12,897,088**	**13,108,318**	**13,430,576**	**70.4**
Northeast	1,808,010	2,344,250	2,643,262	2,672,595	2,709,385	49.9
Midwest	1,766,102	2,490,900	2,617,099	2,676,825	2,739,673	55.1
South	2,503,020	3,763,080	4,524,803	4,601,219	4,728,538	88.9
West	1,806,199	2,622,605	3,109,710	3,156,139	3,252,097	80.1
GDP per capita (chained 2005 $)[1]	**31,687**	**39,774**	**41,694**	**42,069**	**42,784**	**35.0**
Northeast	35,571	43,681	47,732	48,070	48,589	36.6
Midwest	29,598	38,622	39,077	39,866	40,699	37.5
South	29,291	37,421	39,396	39,658	40,326	37.7
West	34,184	41,333	43,117	43,340	44,198	29.3

Key: R = revised.

[1] As of October 26, 2006, the Bureau of Economic Analysis renamed the gross state product (GSP) series to gross domestic product (GDP) by state.

Notes: Chained dollars are not additive, especially for periods farther away from the base year of 2005. Thus, GDP for all regions is not equal to total GDP. Numbers may not add to totals due to rounding.

Although freight moves throughout the United States, the demand for freight transportation is driven primarily by the geographic distribution of population and economic activity. Both population and economic activity have grown faster in the West and South than in the Northeast and Midwest, but the Northeast has the highest economic activity per capita.

Table 1-2. Population and Gross Domestic Product (GDP) by Region: 1990, 2000, and 2010-2012
Source: Population: 1990: U.S. Department of Commerce, Census Bureau, Statistical Abstract of the United States: 2004-2005 (Washington, DC: 2005); **2000-2012:** U.S. Department of Commerce, Census Bureau, Population Division, Annual Population Estimates, table 8, available at *www.census.gov/popest/data/index.html* as of October 18, 2013. **Gross Domestic Product:** U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Accounts, available at *www.bea.gov/regional/* as of October 18, 2013.

II. FREIGHT MOVED IN DOMESTIC AND INTERNATIONAL TRADE

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 2-1. Weight of Shipments by Transportation Mode: 2007, 2012, and 2040[1]
(millions of tons)

	2007				2012				2040			
	Total	Domestic	Exports[2]	Imports[2]	Total	Domestic	Exports[2]	Imports[2]	Total	Domestic	Exports[2]	Imports[2]
Total	**18,879**	**16,851**	**655**	**1,372**	**19,662**	**17,523**	**901**	**1,238**	**28,520**	**23,095**	**2,632**	**2,794**
Truck	12,778	12,587	95	97	13,182	12,973	118	92	18,786	18,083	368	335
Rail	1,900	1,745	61	93	2,018	1,855	82	82	2,770	2,182	388	201
Water	950	504	65	381	975	542	95	338	1,070	559	164	347
Air, air & truck	13	3	4	6	15	3	5	7	53	6	20	27
Multiple modes & mail[1]	1,429	433	389	606	1,588	453	540	595	3,575	645	1,546	1,383
Pipeline[1]	1,493	1,314	4	175	1,546	1,421	13	112	1,740	1,257	17	467
Other & unknown	316	266	36	14	338	277	47	14	526	362	130	34

[1] 2007 total and domestic numbers for the multiple modes & mail and the pipeline categories were revised as a result of Freight Analysis Framework database improvements.

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

Notes: Numbers may not add to totals due to rounding. The 2012 data are provisional estimates that are based on selected modal and economic trend data. All truck, rail, water, and pipeline movements that involve more than one mode, including exports and imports that change mode at international gateways, are included in multiple modes & mail to avoid double counting. As a consequence, rail and water totals in this table are less than other published sources.

In 2012 the U.S. transportation system moved a daily average of about 54 million tons of freight valued at nearly $48 billion. After back-to-back declines in 2008 and 2009, the tonnage and value of freight moved in 2012 surpassed the previous highs reached in 2007, by just over 4 percent each.

Table 2-1. Weight of Shipments by Transportation Mode: 2007, 2012, and 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2014.

Table 2-2. Value of Shipments by Transportation Mode: 2007, 2012, and 2040[1]
(billions of 2007 dollars)

	2007				2012				2040			
	Total	Domestic	Exports[2]	Imports[2]	Total	Domestic	Exports[2]	Imports[2]	Total	Domestic	Exports[2]	Imports[2]
Total	**16,651**	**13,457**	**1,196**	**1,997**	**17,352**	**13,927**	**1,392**	**2,033**	**39,265**	**27,131**	**5,303**	**6,831**
Truck	10,780	10,225	267	287	11,130	10,531	309	289	21,465	19,315	985	1,166
Rail	512	374	45	93	551	400	55	96	898	555	148	195
Water	340	158	15	167	339	170	21	148	337	138	46	153
Air, air & truck	1,077	151	422	505	1,182	163	470	549	5,043	834	1,997	2,212
Multiple modes & mail[1]	2,884	1,646	394	844	3,023	1,697	478	848	9,925	5,203	1,911	2,811
Pipeline[1]	716	651	4	61	768	699	9	61	776	605	17	154
Other & unknown	341	252	48	41	359	267	51	41	821	482	199	139

[1] 2007 total and domestic numbers for the multiple modes & mail and the pipeline categories were revised as a result of Freight Analysis Framework database improvements.

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

Notes: Numbers may not add to totals due to rounding. The 2012 data are provisional estimates that are based on selected modal and economic trend data. All truck, rail, water, and pipeline movements that involve more than one mode, including exports and imports that change mode at international gateways, are included in multiple modes & mail to avoid double counting. As a consequence, rail and water totals in this table are less than other published sources.

The value of freight moved is expected to increase faster than the weight, rising from $882 per ton in 2007 to $1,377 per ton in 2040 when controlling for inflation. Exports at $1,826 per ton and imports at $1,456 per ton are higher than domestic shipments at $799 per ton in 2007. Exports and imports accounted for 11 percent of the tons and 19 percent of the value in 2007 and are forecast to make up an even greater share of freight moving throughout the United States in the future, reaching 19 percent of the tons and 31 percent of the value by 2040.

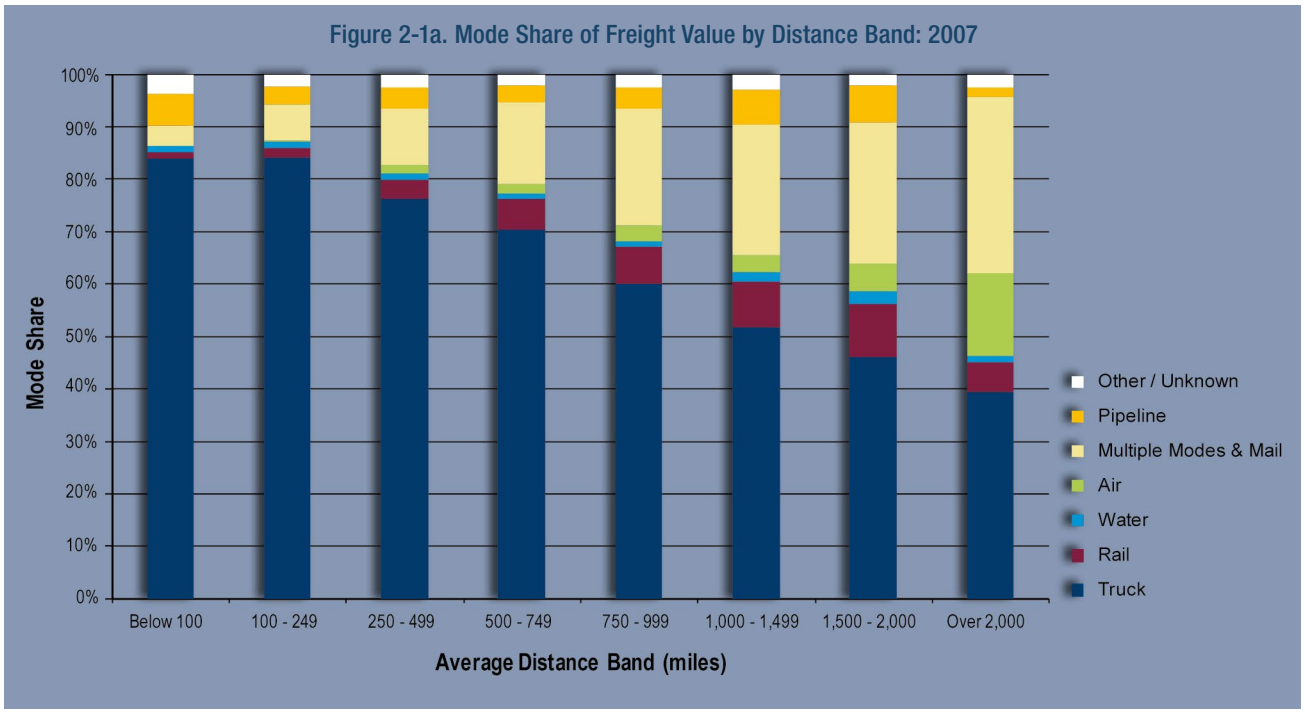
Table 2-3. Total Freight Moved by Distance Band: 2007

	Value		Weight		Ton-Miles	
Distance Band (miles)	Percent	Cumulative Percent	Percent	Cumulative Percent	Percent	Cumulative Percent
Below 100	40	40	51	51	7	7
100 - 249	16	56	19	71	10	17
250 - 499	13	69	11	82	13	29
500 - 749	7	76	5	87	9	39
750 - 999	6	82	4	90	10	49
1,000 - 1,499	7	89	6	96	22	71
1,500 - 2,000	4	93	2	98	14	85
Over 2,000	7	100	2	100	15	100

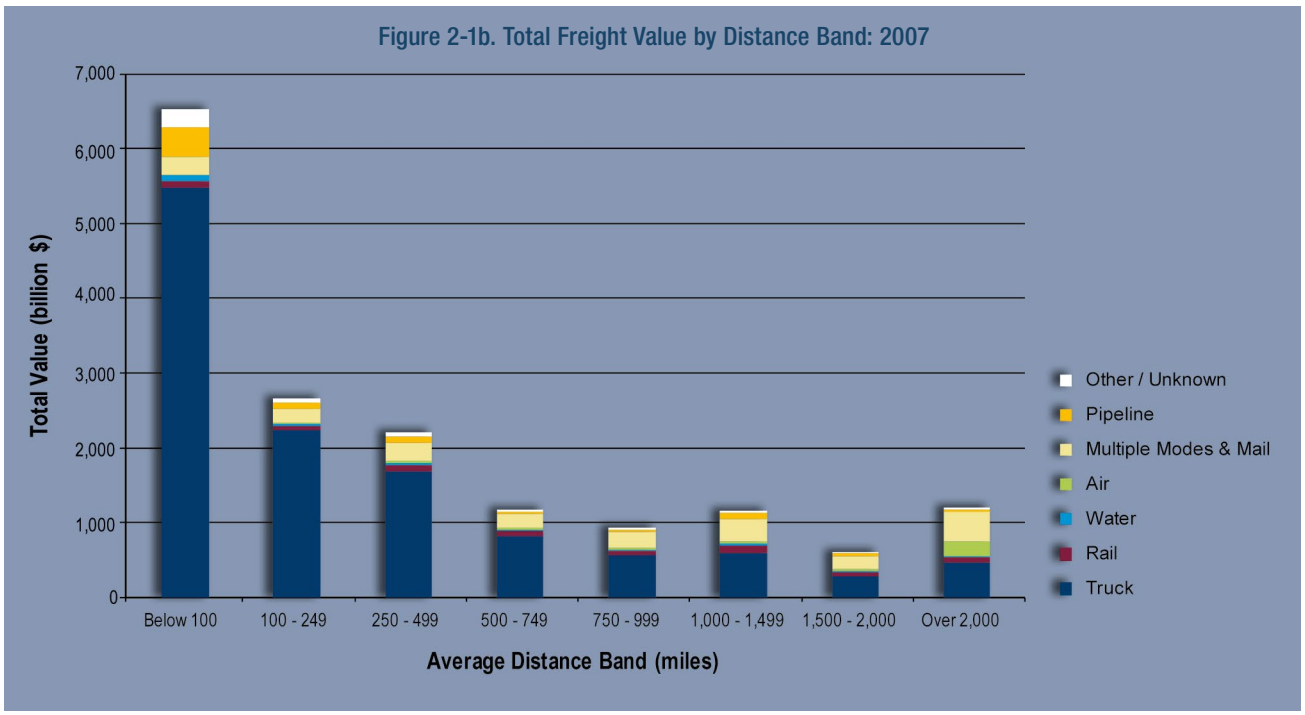
The largest percentage of goods movement occurs close to home. Approximately 50 percent of the weight and 40 percent of the value of goods were moved less than 100 miles between origin and destination in 2007. Less than 10 percent of the weight and 18 percent of the value of goods were moved more than 1,000 miles. Distance, as used in this publication, refers to the Great Circle Distance, which is commonly called "as-the-crow-flies."

Table 2-2. Value of Shipments by Transportation Mode: 2007, 2012, and 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2014.

Table 2-3. Total Freight Moved by Distance Band: 2007
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.



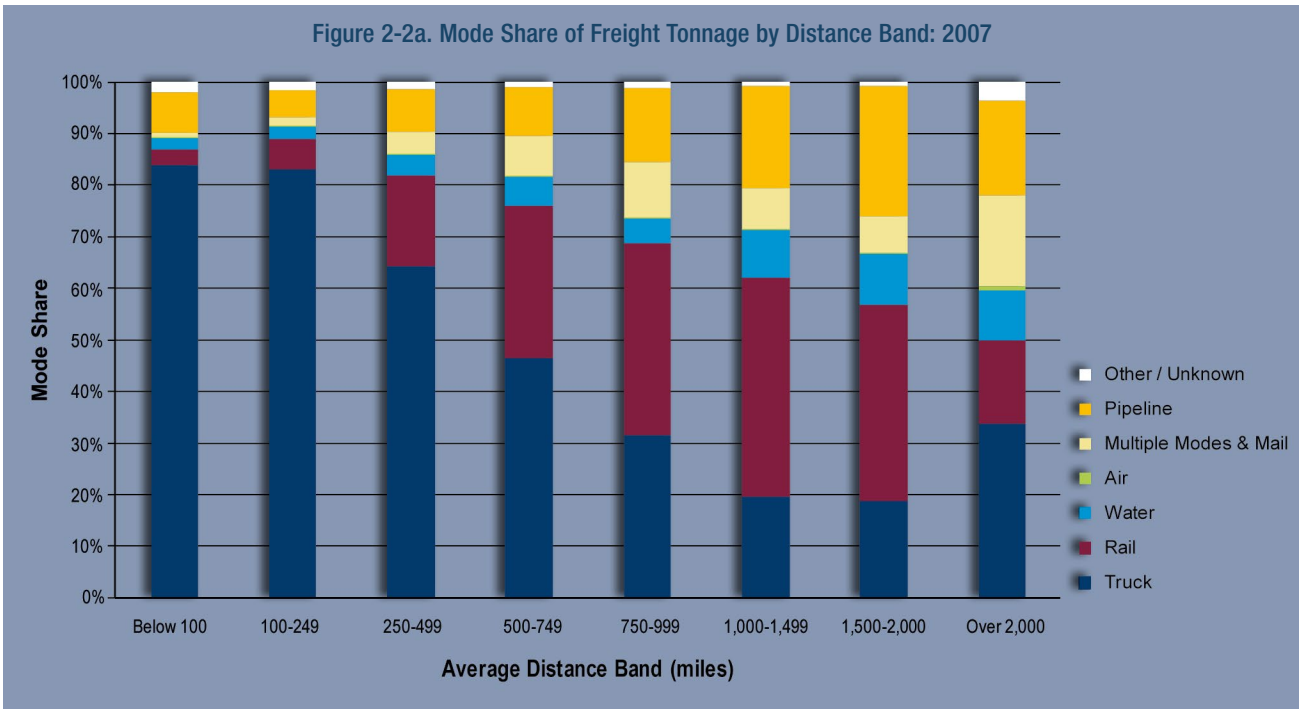
By value, trucks move the largest percentage of goods across all distance bands, with the largest share, 84 percent, occurring at the shortest distances (less than 750 miles). With increasing distance, the multiple modes and mail category's share increases from 4 percent for local travel to a high of 34 percent for the longest distance band. Air transportation moved 16 percent of the value of freight over distances more than 2,000 miles.



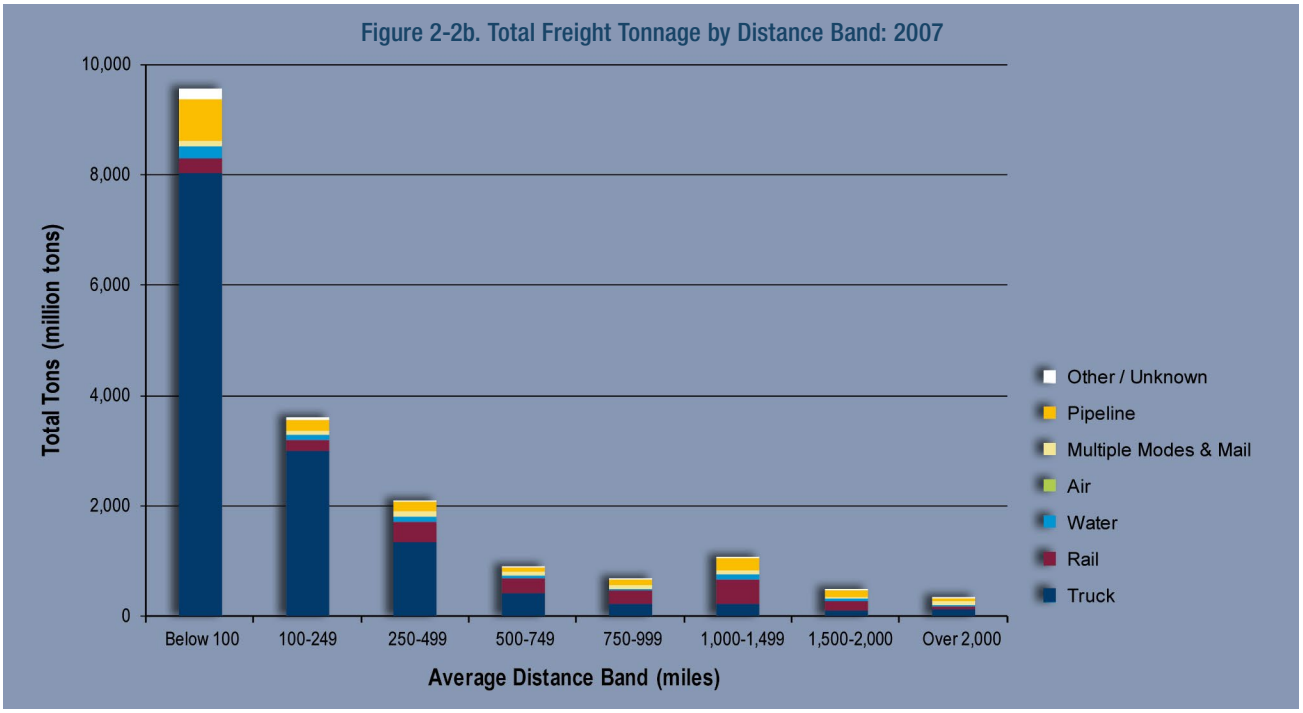
Nearly 40 percent of the total value of goods are moved less than 100 miles while long-distance moves (2,000 or more miles) accounted for 7 percent of the total value of shipments.

Figure 2-1a. Mode Share of Freight Value by Distance Band: 2007
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.

Figure 2-1b. Total Freight Value by Distance Band: 2007
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.



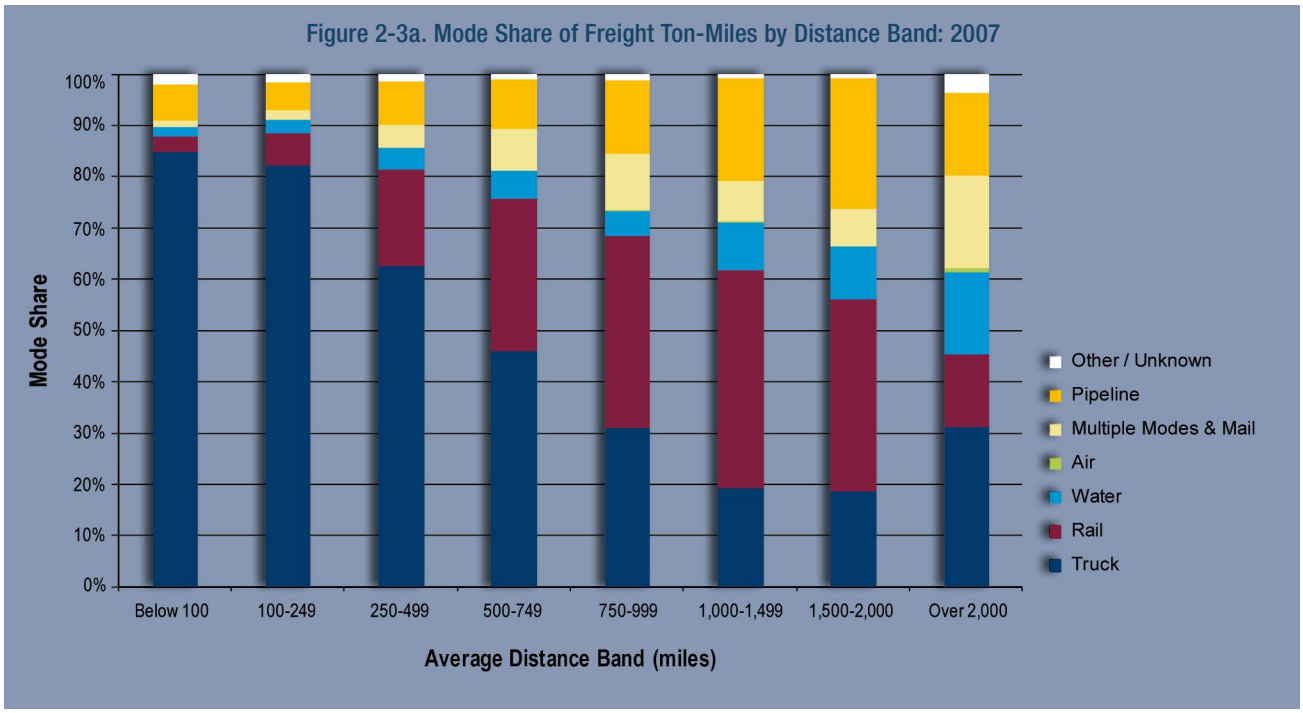
Trucks carry the largest share of goods by weight for distances less than 750 miles and more than 2,000 miles. Rail is the dominant mode for goods moved over distances greater than 750 miles and less than 2,000 miles, accounting for 37 percent of total tons moved.



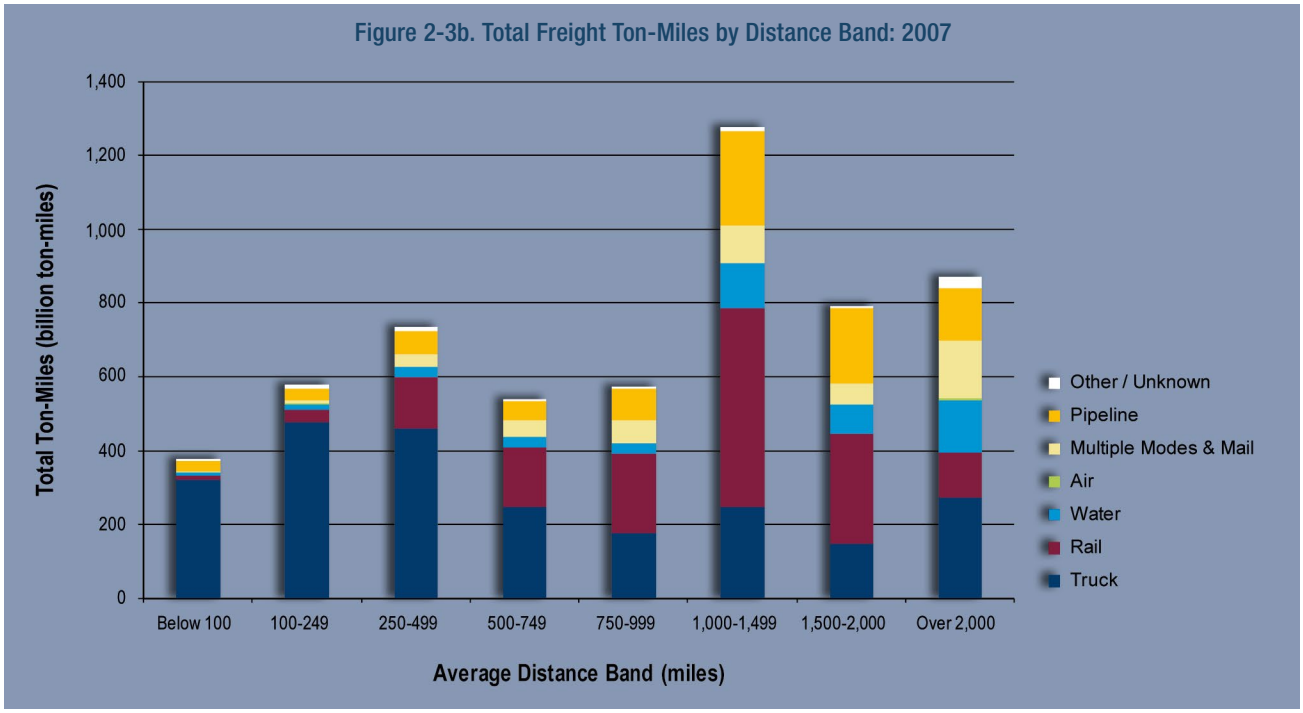
The vast majority of freight tonnage (87 percent) is moved over distances less than 750 miles. Freight transported more than 2,000 miles accounted for less than two percent of total tonnage.

Figure 2-2a. Mode Share of Freight Tonnage by Distance Band: 2007
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.

Figure 2-2b. Total Freight Tonnage by Distance Band: 2007
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.



The modal distribution for ton-miles is similar to that for tons, with the exception of long-distance water moves. Rail moved nearly two-thirds of total ton-miles while pipelines accounted for 70 percent of ton-miles for distances more than 1,000 miles.



Nearly one-fourth of all ton-miles occur at distances between 1,000-1,499 miles. FAF estimated the freight industry moved goods over 5.7 trillion ton-miles in 2007.

Figure 2-3a. Mode Share of Freight Ton-Miles by Distance Band: 2007
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.

Figure 2-3b. Total Freight Ton-Miles by Distance Band: 2007
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.

Table 2-4. Top Commodities: 2012

Millions of Tons		Billions of 2007 Dollars	
Total, all commodities	**19,662**	**Total, all commodities**	**17,352**
Gravel	2,319	Machinery	1,836
Cereal grains	1,595	Electronics	1,492
Coal	1,527	Motorized vehicles	1,348
Natural gas, coke, asphalt[1]	1,442	Mixed freight	1,090
Non-metallic mineral products	1,442	Pharmaceuticals	909
Waste/scrap	1,368	Miscellaneous manufactured products	717
Gasoline	1,030	Textiles/leather	710
Crude petroleum	783	Gasoline	705
Fuel oils	765	Plastics/rubber	601
Natural Sands	585	Articles of base metal	588

[1] This group includes coal and petroleum products not elsewhere classified such as liquefied natural gas, coke, asphalt, and other products of coal and petroleum refining, excluding gasoline, aviation fuel, and fuel oil.

The top 10 commodities by weight are comprised entirely of bulk products and accounted for 65 percent of total tonnage but only 16 percent of the value of goods moved in 2012. The top 10 commodities by value accounted for 58 percent of total value and 13 percent of all tons. The leading commodities by weight are bulk goods including gravel, cereal grains, and coal. The leading commodities by value are high value-per-ton goods requiring more rapid delivery, including machinery, electronics, and motorized vehicles.

Table 2-5. Hazardous Materials Shipments by Transportation Mode: 2007

	Value		Tons		Ton-miles[1]		Miles
Transportation mode	**$ Billions**	**Percent**	**Millions**	**Percent**	**Billions**	**Percent**	**Average distance per shipment**
All modes, total	**1,448**	**100.0**	**2,231**	**100.0**	**323**	**100.0**	**96**
Single modes, total	**1,371**	**94.6**	**2,112**	**94.6**	**279**	**86.3**	**65**
Truck[2]	837	57.8	1,203	53.9	104	32.2	59
For-hire	359	24.8	495	22.2	63	19.6	214
Private	478	33.0	708	31.7	41	12.6	32
Rail	69	4.8	130	5.8	92	28.5	578
Water	69	4.8	150	6.7	37	11.5	383
Air	2	0.1	S	S	S	S	1,095
Pipeline[3]	393	27.2	629	28.2	S	S	S
Multiple modes, total	**71**	**4.9**	**111**	**5.0**	**43**	**13.3**	**834**
Truck and rail	7	0.5	12	0.5	10	3.1	779
Truck and water	23	1.6	37	1.6	12	3.8	1,010
Rail and water	5	0.4	6	0.3	3	0.9	1,506
Parcel, U.S. Postal Service, or Courier	8	0.5	<1	<0.1	<1	<0.1	836
Other multiple modes	28	1.9	57	2.5	17	5.3	233
Unknown and other modes, total	**7**	**0.5**	**8**	**0.4**	**1**	**0.5**	**58**

Key: S = data are not published because of high sampling variability or other reasons.
[1] Ton-miles estimates are based on estimated distances traveled along a modeled transportation network.
[2] Truck as a single mode includes shipments that went by private truck only, for-hire truck only, or a combination of both.
[3] Excludes crude oil shipments.
Note: Value-of-shipment estimates are reported in $ 2007 dollars. Numbers and percents may not add to totals due to rounding.

As measured by the Bureau of Transportation Statistics (BTS), the Commodity Flow Survey indicates that trucks moved more than one-half of all hazardous materials shipped from within the United States. However, truck ton-miles of hazardous materials shipments accounted for a much smaller share, about one-third of all ton-miles, because such shipments travel relatively short distances. By contrast, rail accounted for only six percent of hazardous materials shipments by weight but nearly 29 percent of ton-miles.

Table 2-4. Top Commodities: 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2014.

Table 2-5. Hazardous Materials Shipments by Transportation Mode: 2007
Source: U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, 2007 Commodity Flow Survey, Hazardous Materials (Washington, DC: July 2010), table 1a, available at *www.bts.gov/publications/commodity_flow_survey/* as of September 20, 2013.

Table 2-6. Hazardous Materials Shipments by Hazard Class: 2007

Hazard class	Description	Value		Tons		Ton-miles[1]		Miles
		$ Billions	Percent	Millions	Percent	Billions	Percent	Average distance per shipment
Class 1	Explosives	12	0.8	3	0.1	<1	<0.1	738
Class 2	Gases	132	9.1	251	11.2	55	17.1	51
Class 3	Flammable liquids	1,170	80.8	1,753	78.6	182	56.1	91
Class 4	Flammable solids	4	0.3	20	0.9	6	1.7	309
Class 5	Oxidizers and organic peroxides	7	0.5	15	0.7	7	2.2	361
Class 6	Toxic (poison)	21	1.5	11	0.5	6	1.8	467
Class 7	Radioactive materials	21	1.4	<1	<0.1	<1	<0.1	S
Class 8	Corrosive materials	51	3.6	114	5.1	44	13.7	208
Class 9	Miscellaneous dangerous goods	30	2.1	63	2.8	23	7.1	484
Total		**1,448**	**100.0**	**2,231**	**100.0**	**323**	**100.0**	**96**

Key: S = data are not published because of high sampling variability or other reasons.
[1] Ton-miles estimates are based on estimated distances traveled along a modeled transportation network.
Note: Numbers and percents may not add to totals due to rounding.

Flammable liquids, especially gasoline, are the predominant hazardous materials transported in the United States. In terms of ton-miles, flammable liquids account for about 56 percent of hazardous materials shipments. The next largest class of hazardous materials, in terms of ton-miles, is gases at about 17 percent.

Table 2-7. Domestic Mode of Exports and Imports by Tonnage and Value: 2007 and 2040

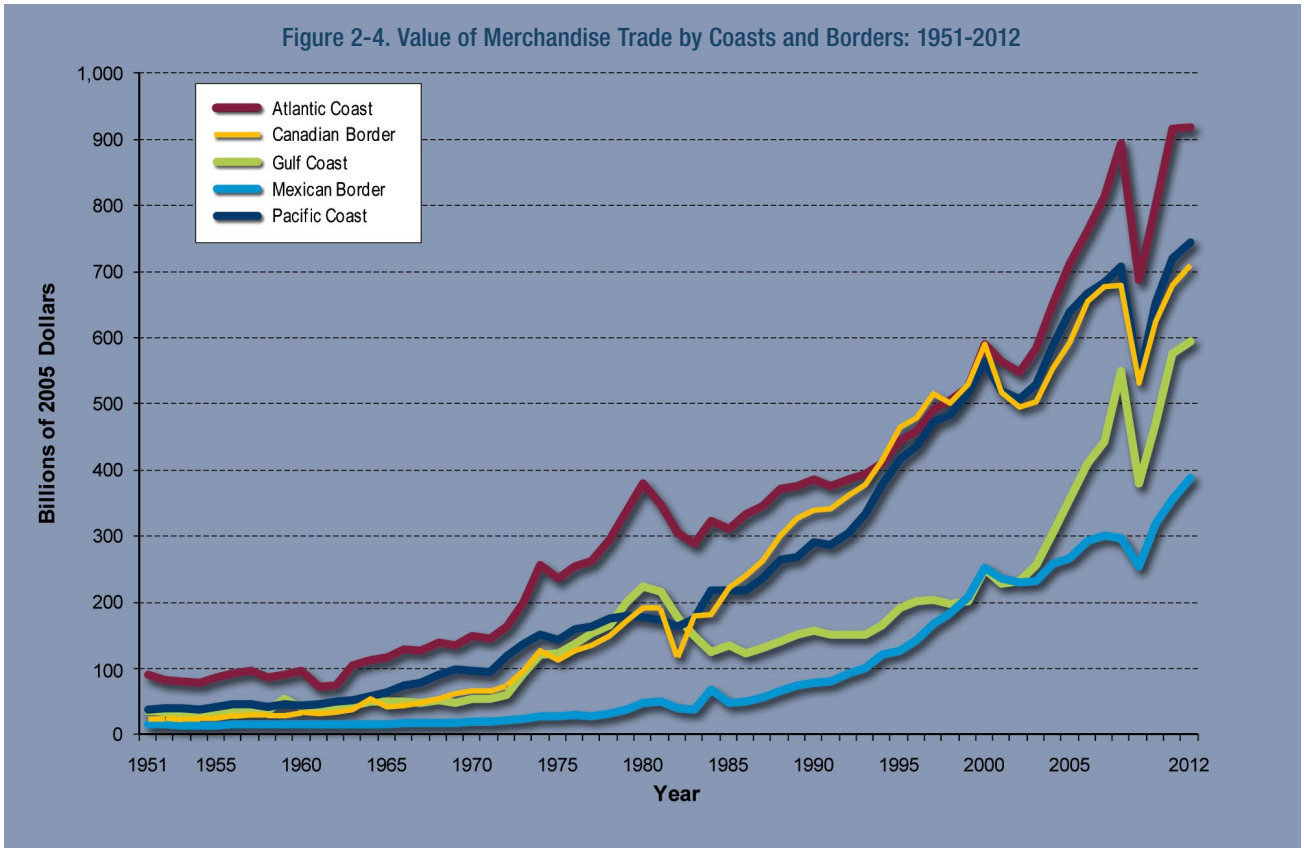
	Millions of Tons		Billions of 2007 Dollars	
	2007	2040	2007	2040
Total	**2,027**	**5,426**	**3,193**	**12,134**
Truck[1]	749	2,365	1,968	7,852
Rail	279	957	200	573
Water	151	268	54	94
Air, air & truck[2]	2	10	206	892
Multiple modes & mail[3]	149	509	278	1,250
Pipeline	346	899	137	350
Other & unknown	51	168	220	1,016
No domestic mode[4]	300	250	130	108

[1] Excludes truck moves to and from airports.
[2] Includes truck moves to and from airports.
[3] Multiple modes & mail includes U.S. Postal Service, courier shipments, and all intermodal combinations, except air and truck. In this table, oceangoing export and import shipments that move between ports and domestic locations by single modes are classified by the domestic mode rather than by multiple modes & mail.
[4] No domestic mode includes waterborne import shipments of crude petroleum off-loaded directly at the domestic destination (refineries) with no domestic mode of transportation.
Note: Numbers may not add to totals due to rounding.

International trade has grown considerably and the movement of these goods within the United States 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. This trend is expected to continue with tonnage of international trade forecast to grow at a rate of 3.4 percent per year between 2007 and 2040.

Table 2-6. Hazardous Materials Shipments by Hazard Class: 2007
Source: U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, 2007 Commodity Flow Survey, Hazardous Materials (Washington, DC: July 2010), table 2a, available at www.bts.gov/publications/commodity_flow_survey/ as of September 30, 2013.

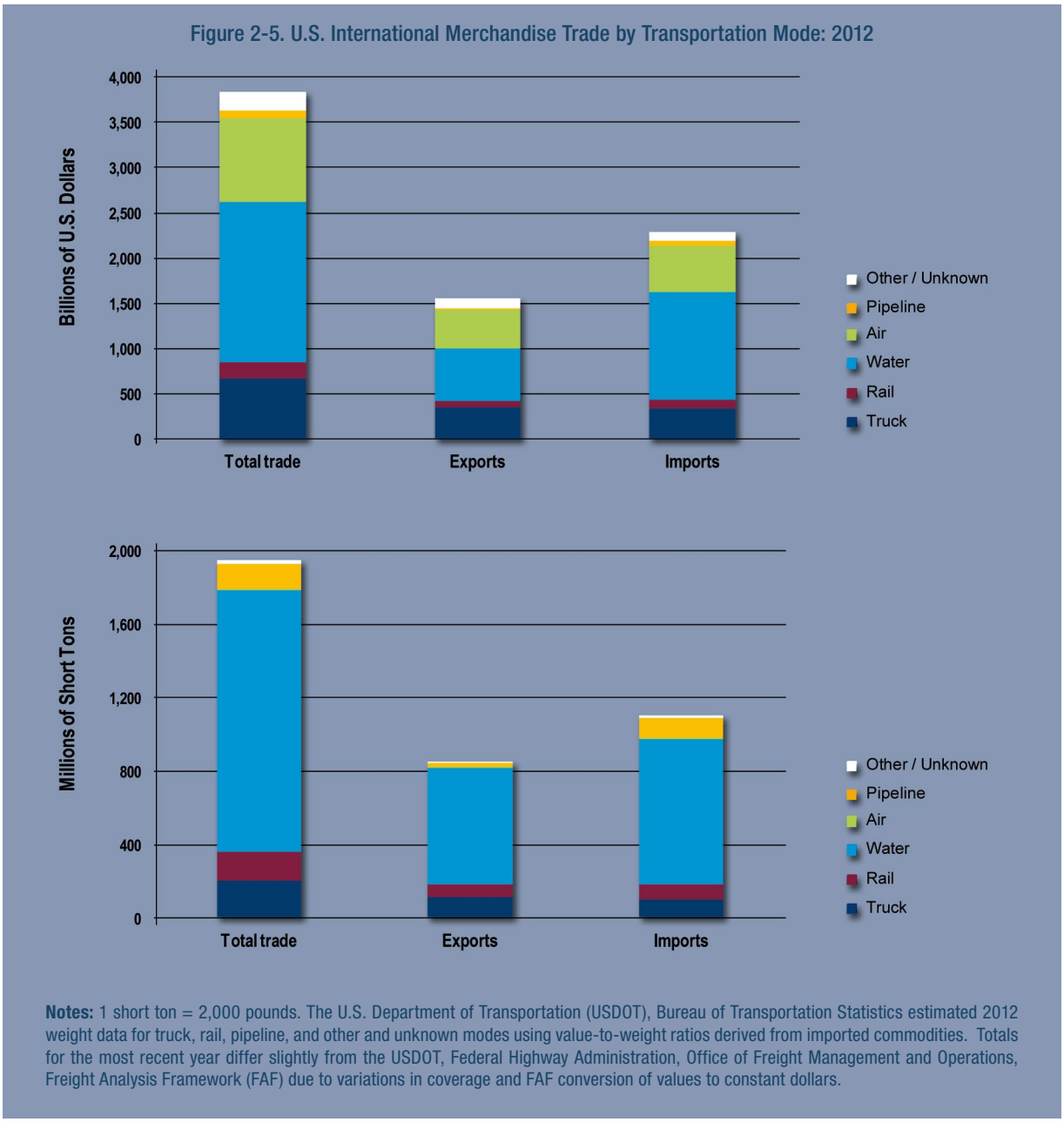
Table 2-7. Domestic Mode of Exports and Imports by Tonnage and Value: 2007 and 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.



Foreign trade has had a major impact on all U.S. borders and coasts. Since 1951, the value of merchandise trade has grown by twenty-fold in inflation-adjusted terms. In 2012, ports and airports on the Atlantic Coast account for the largest share (27 percent) in terms of the value of trade.

Figure 2-4. Value of Merchandise Trade by Coasts and Borders: 1951-2012

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); **1971-1999:** U.S. Department of Commerce, Census Bureau, Statistical Abstract of the United States (Washington, DC: annual issues); **2000-2012:** 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 September 18, 2013.



Notes: 1 short ton = 2,000 pounds. The U.S. Department of Transportation (USDOT), Bureau of Transportation Statistics estimated 2012 weight data for truck, rail, pipeline, and other and unknown modes using value-to-weight ratios derived from imported commodities. Totals for the most recent year differ slightly from the USDOT, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework (FAF) due to variations in coverage and FAF conversion of values to constant dollars.

Approximately 75 percent of freight tons in U.S. foreign trade moved by water in 2012, but air and truck transportation are also important when the value of goods traded is considered. By value, the water share dropped to about 49 percent, with air and truck accounting for nearly 26 percent and 18 percent, respectively. Together, rail and pipeline accounted for about 7 percent of the total.

Figure 2-5. U.S. International Merchandise Trade by Transportation Mode: 2012
Source: Total, water and air data: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, FT920 - U.S. Merchandise Trade: Selected Highlights (Washington, DC: February 2013). **Truck, rail, pipeline, and other and unknown data:** U.S. Department of Transportation, Bureau of Transportation Statistics, North American Transborder Freight Data, available at *http://transborder.bts.gov/programs/international/transborder/* as of October 17, 2013.

Table 2-8. Top 25 Trading Partners of the United States in Merchandise Trade: 2000, 2005, 2011, and 2012 (billions of current U.S. dollars)

Partner	2012 Rank	2000	2005	2011	2012
Canada	1	406	499	596	616
China	2	116	285	503	536
Mexico	3	248	290	461	494
Japan	4	212	194	195	216
Germany	5	88	119	148	158
United Kingdom	6	85	90	107	110
South Korea	7	68	71	100	101
Brazil	8	29	40	75	76
Saudi Arabia	9	20	34	61	74
France	10	50	56	68	73
Taiwan	11	65	57	67	63
Netherlands	12	32	41	66	63
India	13	14	27	58	63
Venezuela	14	24	40	56	56
Italy	15	36	43	50	53
Switzerland	16	20	24	49	52
Singapore	17	37	36	50	51
Belgium	18	24	32	47	47
Hong Kong	19	26	25	41	43
Colombia	20	11	14	37	41
Ireland	21	24	38	47	41
Australia	22	19	23	38	41
Russian Federation	23	10	19	43	40
Malaysia	24	37	44	40	39
Thailand	25	23	27	36	37
Top 25 total[1]		**1,747**	**2,188**	**3,042**	**3,182**
U.S. total trade		**1,997**	**2,575**	**3,688**	**3,821**
Top 25 as % of total		**87.5**	**84.9**	**82.5**	**83.3**

[1] Top 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 2012.

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

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 2000 and 2012, from about 6 percent in 2000 to 14 percent in 2012.

Table 2-8. Top 25 Trading Partners of the United States in Merchandise Trade: 2000, 2005, 2011, and 2012
Source: U.S. Department of Commerce, International Trade Administration, TradeStats Express, available at *http://tse.export.gov/TSE/TSEhome.aspx* as of September 17, 2013.

Table 2-9. Value and Tonnage of U.S. Merchandise Trade with Canada and Mexico: 2000, 2005, 2011, and 2012 (billions of current U.S. dollars and millions of short tons)

	2000		2005		2011		2012	
Mode	**Value**	**Weight**	**Value**	**Weight**	**Value**	**Weight**	**Value**	**Weight**
Total[1]	**653**	**NA**	**790**	**679**	**1,058**	**675**	**1,110**	**703**
Truck[1]	429	NA	491	191	626	208	665	196
Rail[1]	94	NA	116	141	152	142	168	154
Air	45	<1	33	<1	46	<1	44	<1
Water	33	194	58	256	108	208	106	196
Pipeline[1]	24	NA	52	86	81	123	77	136
Other[1]	29	NA	39	5	46	13	50	21

Key: NA = not available.

[1] The U.S. Department of Transportation, 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.

Notes: 1 short ton = 2,000 pounds. "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 (FAF) due to variations in coverage and FAF conversion of values to constant dollars. Numbers may not add to totals due to rounding.

Trade with both Canada and Mexico has grown rapidly since 2000. Trucks carried 60 percent of the value of goods traded with these countries in 2012.

Table 2-9. Value and Tonnage of U.S. Merchandise Trade with Canada and Mexico: 2000, 2005, 2011, and 2012
Source: Truck, Rail, Pipeline, and Other: U.S. Department of Transportation Bureau of Transportation Statistics, North American Transborder Freight Data, available at *www.bts.gov/transborder* as of October 15, 2013; **Air and Water:** U.S. Department of Commerce, Census Bureau, Foreign Trade Division, FT920 - U.S. Merchandise Trade: Selected Highlights (Washington, DC: annual issues).

Table 2-10. Value of U.S. Exports to and Imports from Canada and Mexico by Land Transportation Mode: 2000, 2005, 2011, and 2012 (millions of current U.S. dollars)

	2000	2005	2011	2012
Exports to Canada, total	**154,847**	**192,907**	**254,450**	**266,120**
Truck	129,825	151,222	195,126	202,542
Rail	12,947	19,322	29,569	33,068
Pipeline	162	2,394	6,211	6,071
Other[1]	11,913	19,933	23,488	24,382
Mail	<1	37	55	57
Exports to Mexico, total	**97,159**	**104,277**	**163,021**	**180,320**
Truck	82,389	83,341	127,720	140,846
Rail	10,496	15,748	24,862	27,611
Pipeline	302	543	3,492	3,241
Other[1]	3,972	4,623	6,946	8,442
Mail	<1	22	2	<1
Imports from Canada, total	**210,270**	**265,402**	**282,582**	**290,096**
Truck	127,816	143,696	135,528	138,948
Rail	49,699	60,606	65,118	69,914
Pipeline	23,117	48,766	70,743	67,733
Other[1]	9,571	12,184	7,039	6,636
Mail	4	<1	<1	<1
FTZ[2]	63	149	4,153	6,865
Imports from Mexico, total	**113,437**	**135,400**	**204,080**	**223,599**
Truck	88,669	112,268	167,483	182,403
Rail	21,056	20,782	32,303	36,912
Pipeline	12	<1	281	214
Other[1]	1,574	1,990	1,892	1,783
Mail	<1	<1	<1	<1
FTZ[2]	2,126	360	2,120	2,287

[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.

[2] Foreign 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 North American 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 trucks transporting the largest share of total trade value with Canada and Mexico, rail is the second largest mover of bidirectional freight moving across both U.S. land borders. Pipelines also carry a large volume of imports from Canada.

Table 2-10. Value of U.S. Exports to and Imports from Canada and Mexico by Land Transportation Mode: 2000, 2005, 2011, and 2012

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, North American Transborder Freight Data, available at *www.bts.gov/transborder* as of September 11, 2013.

III. THE FREIGHT TRANSPORTATION SYSTEM

Freight travels over an extensive network of highways, railroads, waterways, pipelines, and airways. Existing and anticipated increases in the number of freight vehicles, vessels, and other conveyances on both public and private infrastructure are stressing the system as more segments of the network approach or reach capacity, increasing maintenance requirements, and affecting performance.

Table 3-1. Miles of Infrastructure by Transportation Mode: 1990, 2000, and 2008-2011

	1990	2000	2008	2009	2010	2011
Public roads, route miles	3,866,926	3,951,101	4,059,343	NA	NA	3,929,425
National Highway System (NHS)	N	161,189	164,096	NA	NA	163,741
Interstates	45,074	46,673	47,013	NA	NA	46,960
Other NHS	N	114,516	117,083	NA	NA	116,781
Other	N	3,789,912	3,895,246	NA	NA	3,765,684
Strategic Highway Corridor Network (STRAHNET)[1]	N	62,066	62,253	NA	NA	63,887
Interstate	N	46,675	47,013	NA	NA	46,960
Non-Interstate	N	15,389	15,240	NA	NA	16,927
Railroad[2]	175,909	170,512	139,326	139,118	138,576	138,518
Class I	133,189	120,597	94,082	93,921	95,573	95,387
Regional	18,375	20,978	16,690	12,804	10,407	10,355
Local	24,337	28,937	28,554	32,393	32,596	32,776
Inland waterways						
Navigable channels	11,000	11,000	11,000	11,000	11,000	11,000
Great Lakes-St. Lawrence Seaway	2,342	2,342	2,342	2,342	2,342	2,342
Pipelines						
Oil	208,752	176,996	(R) 169,586	(R) 171,773	177,509	178,809
Gas	(R) 1,270,295	(R) 1,377,320	(R) 1,532,787	(R) 1,545,320	1,553,580	1,563,527

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

[1] The Strategic Highway Corridor Network (STRAHNET) is the total minimum public highway network necessary to support deployment needs of the U.S. Department of Defense.

[2] Class I railroads have annual carrier operating revenue of $433.2 million or more. Regional (Class II) railroads have annual carrier operating revenue greater than $20.5 million and less than $433.2 million. Local (Class III) railroads have annual carrier operating revenue below $20.5 million.

Since 1990, road infrastructure increased slowly despite a large increase in the volume of traffic. Over the same period, rail miles declined by 21 percent while gas pipeline mileage increased by 23 percent.

Table 3-1. Miles of Infrastructure by Transportation Mode: 1990, 2000, and 2008-2011

Source: ***Public Roads:*** U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), tables HM-16 and HM-49, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of October 5, 2013. **Rail:** Association of American Railroads, Railroad Facts (Washington, DC: annual issues). **Navigable channels:** U.S. Army Corps of Engineers, A Citizen's Guide to the USACE, available at *www.corpsreform.org/sitepages/downloads/CitzGuideChptr1.pdf* as of October 5, 2013. **Great Lakes-St. Lawrence Seaway:** The St. Lawrence Seaway Development Corporation, "The Seaway," available at *www.greatlakes-seaway.com/en/seaway/facts/index.html* as of October 5, 2013. **Pipelines:** U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety, Pipeline Statistics, available at *www.phmsa.dot.gov/pipeline/library/data-stats* as of October 5, 2013.

Table 3-2. Freight Intermodal Connectors on the National Highway System by State: 2013

State	Port Terminal	Truck/ Rail Facility	Airport	Truck/ Pipeline Terminal
Total	323	267	262	67
Alabama	5	4	4	1
Alaska	8	0	9	0
Arizona	0	2	3	0
Arkansas	3	7	4	3
California	17	15	14	3
Colorado	0	5	6	4
Connecticut	3	0	1	0
Delaware	1	0	1	0
District of Columbia	0	0	0	0
Florida	14	12	24	0
Georgia	5	13	4	7
Hawaii	10	0	5	0
Idaho	1	0	2	1
Illinois	9	42	4	0
Indiana	8	2	5	0
Iowa	6	1	3	3
Kansas	0	4	1	2
Kentucky	4	7	3	3
Louisiana	9	9	8	0
Maine	3	4	5	0
Maryland	8	3	1	3
Massachusetts	5	10	12	0
Michigan	14	8	11	0
Minnesota	1	1	3	0
Mississippi	20	2	3	0
Missouri	4	8	3	0
Montana	0	0	1	0
Nebraska	0	2	1	1
Nevada	0	0	2	0
New Hampshire	1	0	3	0
New Jersey	5	5	2	0
New Mexico	0	0	1	0
New York	8	16	16	0
North Carolina	2	4	9	5
North Dakota	0	0	2	0
Ohio	29	19	8	5
Oklahoma	3	1	2	1
Oregon	15	5	6	1
Pennsylvania	8	7	4	2
Rhode Island	2	0	1	0
South Carolina	4	2	4	0
South Dakota	0	2	3	0
Tennessee	5	8	4	2
Texas	43	20	23	18
Utah	0	2	1	2
Vermont	0	2	2	0
Virginia	6	3	7	0
Washington	13	6	14	0
West Virginia	2	0	2	0
Wisconsin	19	4	5	0
Wyoming	0	0	0	0

Intermodal connectors are important components of the highway network. They provide access between major intermodal facilities, such as ports and truck/pipeline terminals, and the National Highway System (NHS). Although intermodal connectors account for about one-half of one percent of total NHS mileage (1,222 miles), they handle a large volume of trucks.

Table 3-2. Freight Intermodal Connectors on the National Highway System by State: 2013
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Planning, Environment, and Realty, Intermodal Connectors, available at *www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/* as of October 3, 2013.

Table 3-3. Number of Trucks, Locomotives, Rail Cars, and Vessels: 1990, 2000, and 2008-2011

	1990	2000	2008	2009	2010	2011
Highway (all vehicles)[1]	NA	NA	255,917,664	254,212,610	250,070,048	253,108,389
Truck, single-unit 2-axle 6-tire or more	NA	NA	8,288,046	8,356,097	8,217,189	7,819,055
Truck, combination	NA	NA	2,585,229	2,617,118	2,552,865	2,451,638
Truck, total	NA	NA	10,873,275	10,973,215	10,770,054	10,270,693
Trucks as percent of all highway vehicles	NA	NA	4.2	4.3	4.3	4.1
Rail						
Class I, locomotive	18,835	20,028	24,003	24,045	23,893	24,250
Class I, freight cars[2]	658,902	560,154	450,297	416,180	397,730	380,699
Nonclass I, freight cars[2]	103,527	132,448	109,487	108,233	101,755	95,972
Car companies and shippers freight cars[2]	449,832	688,194	833,188	839,020	809,544	806,554
Water	39,445	41,354	40,301	40,109	40,512	40,521
Nonself-propelled vessels[3]	31,209	33,152	31,238	31,008	31,412	31,498
Self-propelled vessels[4]	8,236	8,202	9,063	9,101	9,100	9,023

Key: NA = not available.

[1] Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

[2] Beginning with 2001 data, Canadian-owned U.S. railroads are excluded. Canadian-owned U.S. railroads accounted for over 46,000 freight cars in 2000.

[3] Nonself-propelled vessels include dry-cargo barges, tank barges, and railroad-car floats.

[4] Self-propelled vessels include dry cargo, passenger, off-shore support, tankers, and towboats.

A vast number of vehicles and vessels move goods over the transportation network. The number of highway vehicles has remained relatively stable in recent years, while the number of rail cars has continued to decline with improved utilization and the deployment of larger cars.

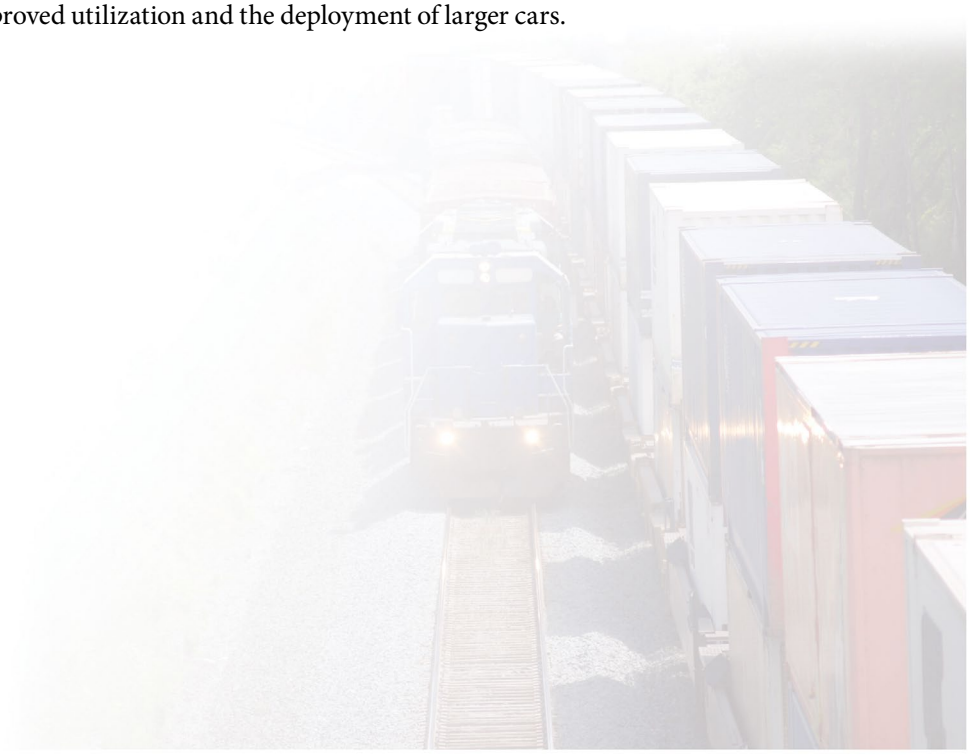
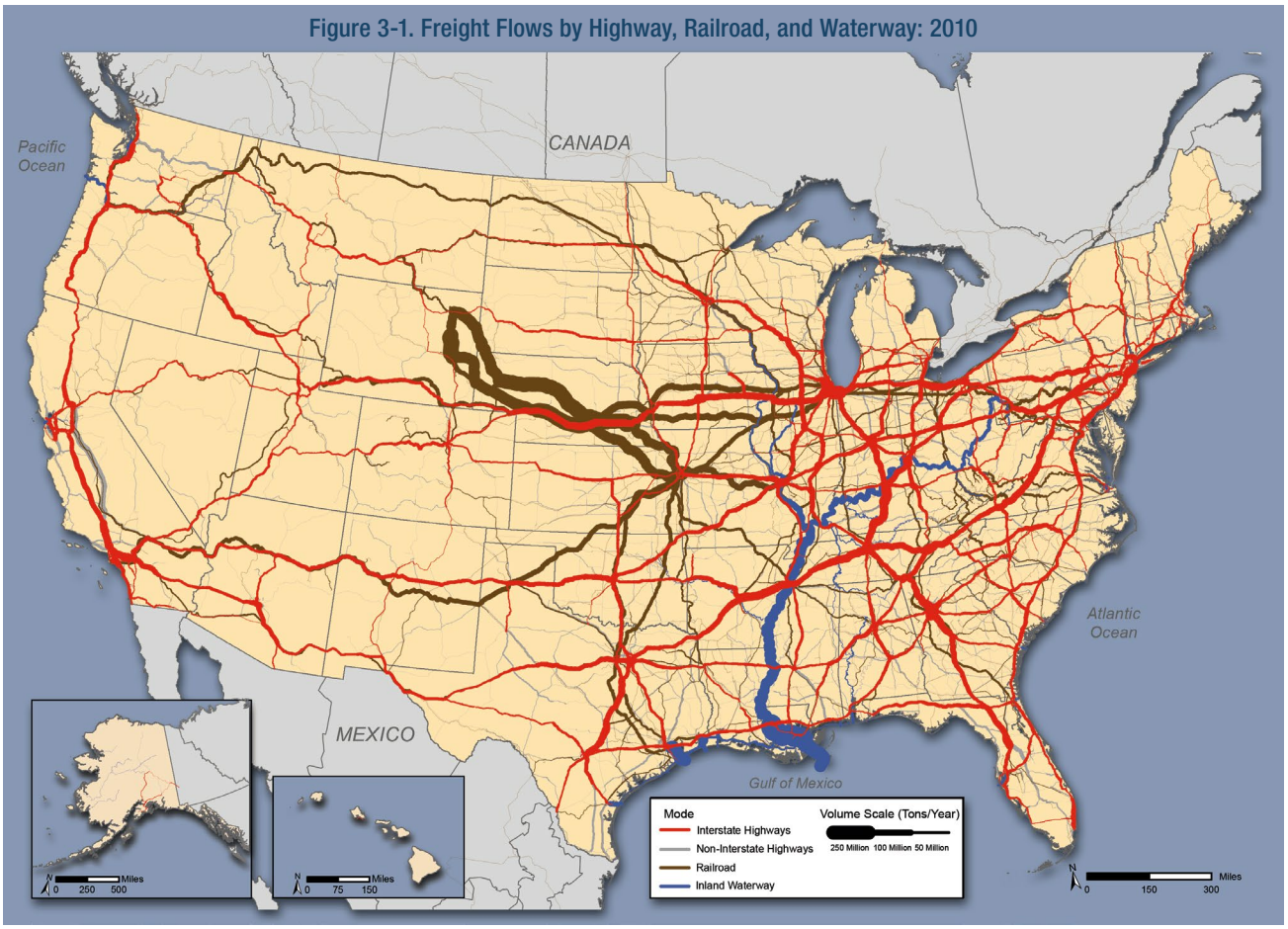


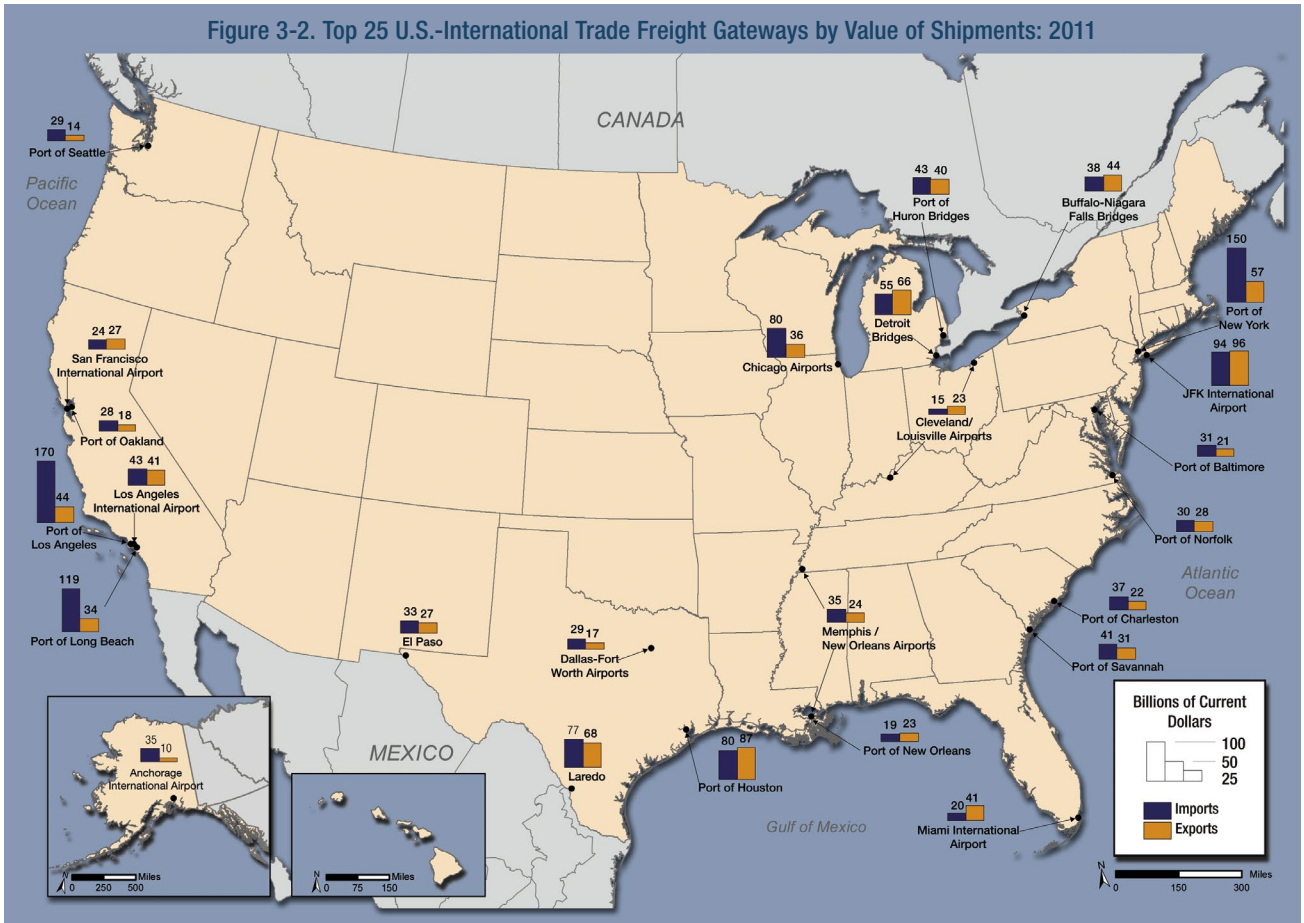
Table 3-3. Number of Trucks, Locomotives, Rail Cars, and Vessels: 1990, 2000, and 2008-2011

Source: Highway: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 11, 2013. **Rail:** Locomotive: Association of American Railroads, Railroad Facts (Washington, DC: annual issues). **Freight cars:** Association of American Railroads, Railroad Equipment Report (Washington, DC: annual issues). **Water:** U.S. Army Corps of Engineers, Institute for Water Resources, Waterborne Transportation Lines of the United States, Volume 1, National Summaries (New Orleans, LA: annual issues), available at *www.navigationdatacenter.us/veslchar/veslchar.htm* as of September 24, 2013.



Trucks carry most of the tonnage and value of freight in the United States, but railroads and waterways carry significant volumes over long distances. Rail moves a large volume of coal between the Powder River Basin in Wyoming and the Midwest, while the principal inland waterways movement, by freight volume, occurs along the Lower Mississippi River.

Figure 3-1. Freight Flows by Highway, Railroad, and Waterway: 2010
Source: Highways: U.S. Department of Transportation, Federal Highway Administration, Freight Analysis Framework, Version 3.4, 2013; **Rail:** Based on Surface Transportation Board, Annual Carload Waybill Sample and rail freight flow assignments done by Oak Ridge National Laboratory; **Inland Waterways:** U.S. Army Corps of Engineers, Institute or Water Resources, Annual Vessel Operating Activity and Lock Performance Monitoring System data, 2013.



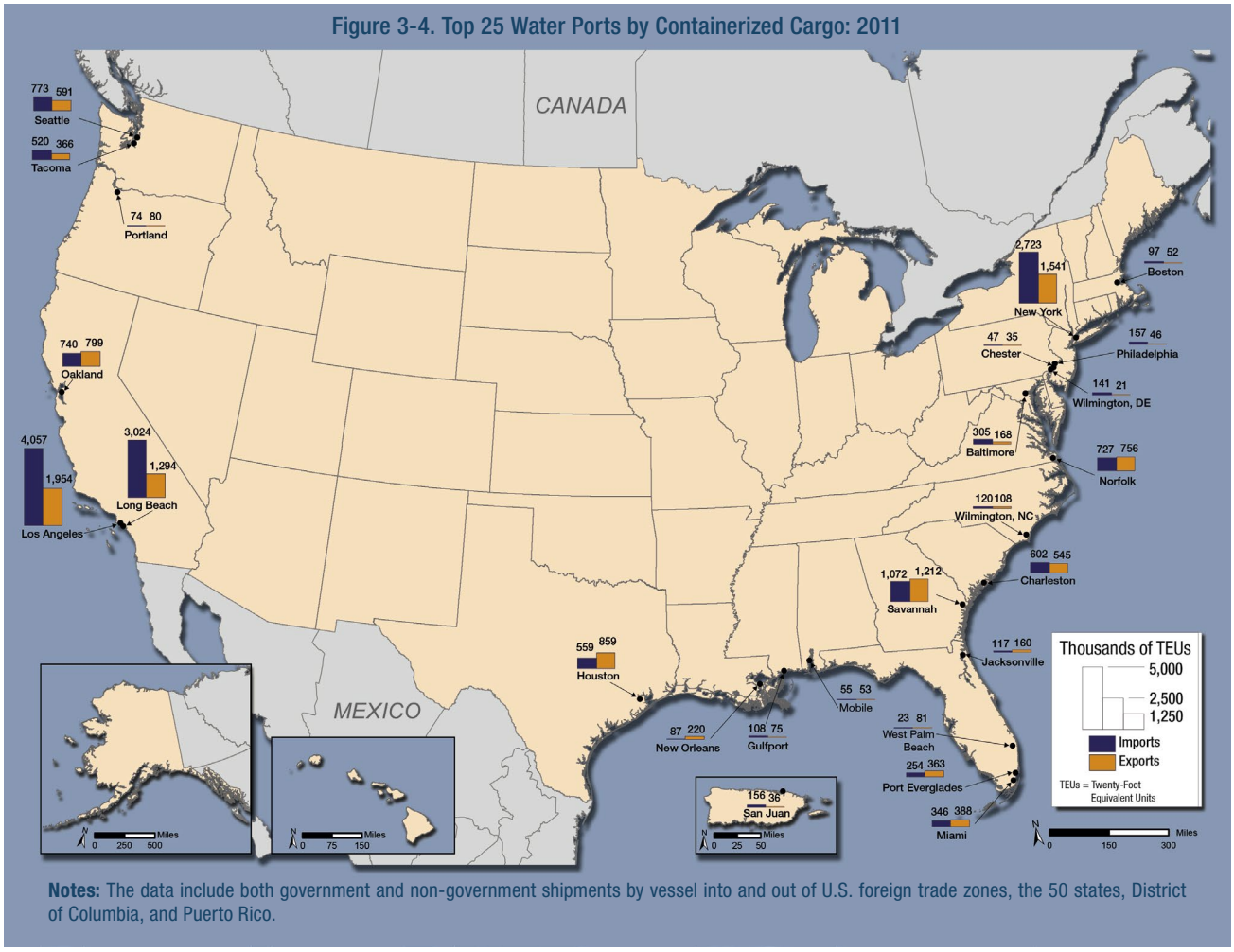
Notes: All data: Trade levels reflect the mode of transportation as a shipment enters or exits at a border port. Flows through individual ports are based on reported data collected from U.S. trade documents. Trade does not include low-value shipments. (In general, these are imports valued at less than $1,250 and exports that are valued at less than $2,500). **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 U.S. Census Bureau confidentiality regulations, data for courier operations are included in the airport totals for JFK International Airport, Cleveland, New Orleans, Los Angeles, Chicago, Miami, and Anchorage. To further protect data for individual couriers, data for Memphis is included with New Orleans and data for Louisville is included with Cleveland.

Transportation facilities that move international trade into and out of the United States demonstrate the importance of all modes and intermodal combinations to global connectivity. The top 25 foreign-trade gateways measured by value of shipments consist of 11 water ports, 5 land-border crossings, and 9 air gateways.

Figure 3-2. Top 25 U.S.-International Trade Freight Gateways by Value of Shipments: 2011
Sources: Air: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, special tabulation, October 2012; **Water:** U.S. Army Corps of Engineers, Institute for Water Resources, special tabulation, October 2012; **Land:** U.S. Department of Transportation, Bureau of Transportation Statistics, North American TransBorder Freight Data, special tabulation, available at *www.bts.gov/programs/international/transborder/* as of October 2012; as reported in U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics*, available at *www.rita.dot.gov/bts/publications as of October 8, 2013.*

Different modes of transportation frequently work together to move high-value, time-sensitive cargo. The classic forms of rail intermodal transportation are trailer-on-flatcar and container-on-flatcar, and these services are spread throughout the United States. The largest concentrations are on routes between Pacific Coast ports and Chicago, southern California and Texas, and Chicago and New York.

Figure 3-3. Tonnage of Trailer-on-Flatcar and Container-on-Flatcar Rail Intermodal Moves: 2011
Source: U.S. Department of Transportation, Federal Railroad Administration, special tabulation, September 2013.



Containerized cargo has grown rapidly in recent years and is concentrated at a few large water ports. The Ports of Los Angeles and Long Beach together handle about 37 percent of all container traffic at water ports in the United States. Container trade at these two ports increased by nearly 61 percent between 2000 and 2011, roughly equal to that reported for container cargo overall.

Figure 3-4. Top 25 Water Ports by Containerized Cargo: 2011

Source: U.S. Department of Transportation, Maritime Administration, U.S. Waterborne Container Trade by U.S. Custom Ports, based on data provided by Port Import/Export Reporting Service, available at *www.marad.dot.gov/library_landing_page/data_and_statistics/Data_and_Statistics.ht*m as of September 13, 2013.

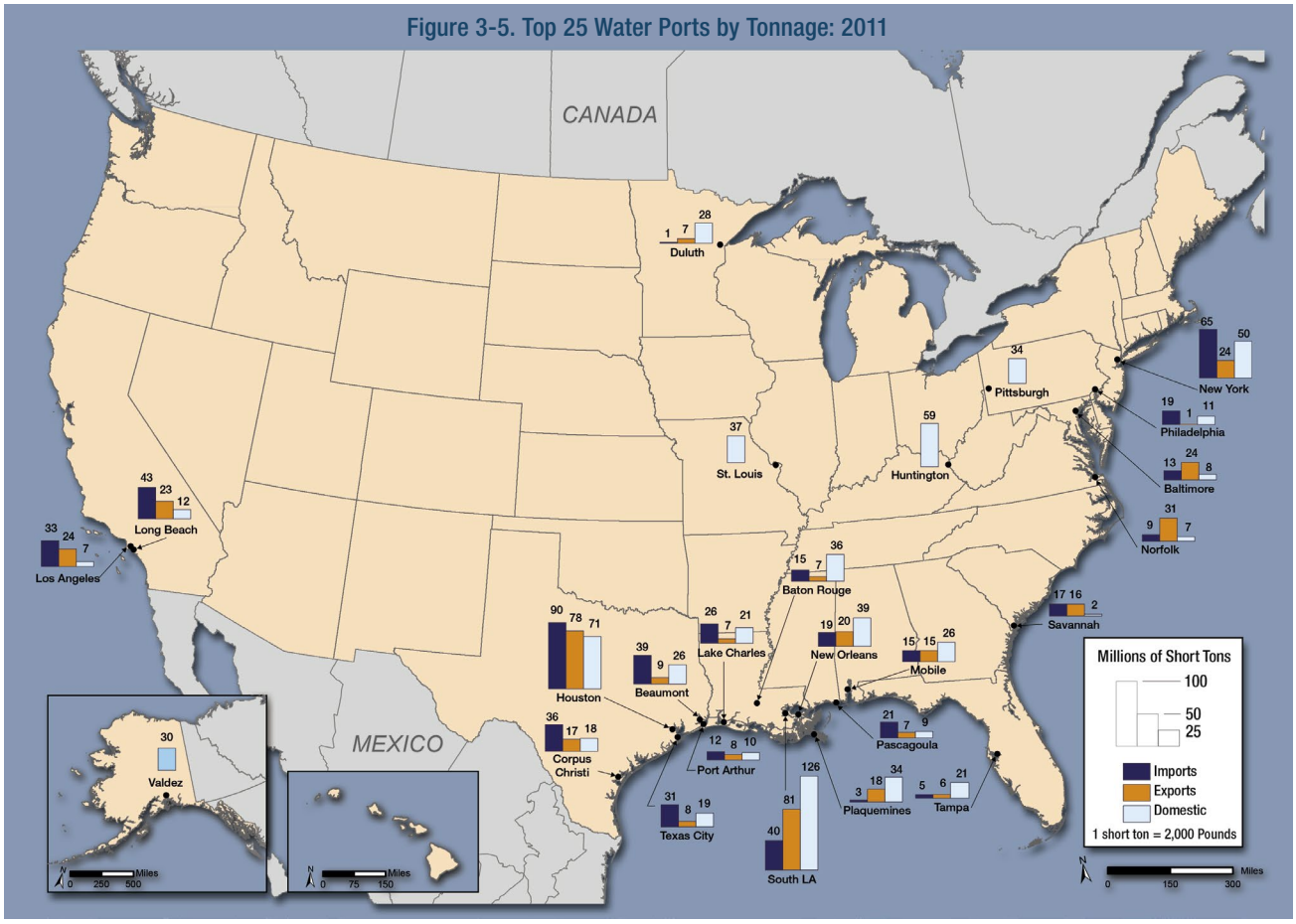
Table 3-4. Containership Calls at U.S. Ports by Vessel Size and Number of Vessels: 2006-2011

Vessel Size (TEUs)	2006	2007	2008	2009	2010	2011
Calls						
< 2,000	(R) 4,143	(R) 3,900	(R) 3,492	(R) 3,287	(R) 3,707	4,563
2,000-2,999	(R) 3,985	4,099	(R) 3,344	(R) 2,676	(R) 2,760	2,878
3,000-3,999	3,333	2,866	2,460	(R) 2,499	(R) 2,052	2,363
4,000-4,999	4,782	5,033	(R) 5,120	(R) 5,303	(R) 5,876	6,421
> 4,999	3,344	3,961	(R) 4,313	4,434	5,126	5,997
Total Calls	**(R) 19,587**	**(R) 19,859**	**(R) 18,729**	**(R) 18,199**	**(R) 19,521**	**22,222**
Vessels						
< 2,000	212	195	196	179	178	182
2,000-2,999	257	230	219	220	206	184
3,000-3,999	177	166	141	147	130	131
4,000-4,999	258	271	284	306	315	307
> 4,999	260	277	326	366	396	418
Total Vessels	**1,164**	**1,140**	**1,166**	**1,218**	**1,225**	**1,222**

Key: TEU = twenty-foot equivalent unit; R = revised.

From 2006 to 2011, the number of calls by containership with capacities of 5,000 TEUs or greater has increased by nearly 80 percent. These large container ships accounted for 27 percent of total containership calls at U.S. ports in 2011, up from 17 percent in 2006.

Table 3-4. Containership Calls at U.S. Ports by Vessel Size and Number of Vessels: 2006-2011
Sources: Lloyd's Marine Intelligence Unit, Vessel Movements Data Files, 2006-2011 (London: Lloyd's Marine Intelligence Unit, 2007-2012); Lloyd's Marine Intelligence Unit, Seasearcher (London: Lloyd's Marine Intelligence Unit, 2012); and Clarkson Research Studies, Clarkson's Vessel Registers (London: Clarkson Research Studies, January 2012); as reported in U.S. Department of Transportation, Maritime Administration, Vessel Calls Snapshot, 2011 (Washington, DC: 2013), available at www.marad.dot.gov/documents/Vessel_Calls_at_US_Ports_Snapshot.pdf as of September 25, 2013.



Although the top ports for containerized cargo are primarily on the Pacific and Atlantic Coasts, bulk cargo, such as coal, crude petroleum, and grain moves through ports on the Gulf Coast and inland waterway system. The top 25 water ports by tonnage handle more than two-thirds of the weight of all foreign and domestic goods moved by water.

Figure 3-5. Top 25 Water Ports by Tonnage: 2011

Source: U.S. Army Corps of Engineers, 2011 Waterborne Commerce of the United States, Part 5, National Summaries (Alexandria, VA: 2012), table 5-2, available at *www.navigationdatacenter.us/wcsc/* as of September 17, 2013.

Table 3-5. Number of Vessel Calls at U.S. Ports: 2006-2011 (Vessels Weighing 10,000 Deadweight Tons or Greater)

Type	(R) 2006	(R) 2007	(R) 2008	(R) 2009	(R) 2010	2011	Percent Change, 2006-2011
Tanker	20,391	20,699	20,096	18,991	20,832	23,678	16.1
Double hull	17,070	18,158	18,315	18,035	20,199	23,214	36.0
Product	12,746	12,671	12,182	11,413	12,537	14,677	15.1
Double hull	9,869	10,350	10,561	10,534	11,947	14,216	44.0
Crude	7,645	8,028	7,914	7,578	8,295	9,001	17.7
Double hull	7,201	7,808	7,754	7,501	8,252	8,998	25.0
Container	19,587	19,859	18,729	18,199	19,521	22,222	13.5
Dry Bulk	11,579	10,081	9,513	7,884	9,227	10,883	-6.0
Roll on/Roll off	6,315	6,074	5,962	4,947	5,842	6,172	-2.3
Vehicle	4,181	4,084	4,101	3,336	4,100	4,339	3.8
Gas	879	824	698	659	738	846	-3.8
Liquefied Natural Gas	213	202	171	201	202	157	-26.3
Combo	319	222	169	127	158	120	-62.4
General	3,983	3,844	3,584	3,274	3,553	4,008	0.6
All Types	**63,053**	**61,603**	**58,751**	**54,081**	**59,871**	**67,929**	**7.7**

Key: R = revised.

In 2011, 7,662 oceangoing vessels made 67,929 calls at U.S. ports, a 13 percent increase from the previous year. Tankers accounted for 35 percent of total calls, followed by containerships (33 percent) and dry bulk vessels (16 percent). Approximately 98 percent of all tankers calling at U.S. ports are double-hull vessels, a 14 percent increase from five years earlier.

Table 3-6. Average Vessel Size per Call at U.S. Ports: 2006-2011 (Deadweight Tons)

Type	(R) 2006	(R) 2007	(R) 2008	(R) 2009	(R) 2010	2011	Percent Change, 2006-2011
Tanker	72,340	72,741	72,660	72,483	71,748	70,749	-2.2
Double hull	76,306	76,898	75,358	74,012	72,689	71,375	-6.5
Product	37,765	36,766	36,672	37,363	37,373	37,572	-0.5
Double hull	37,972	37,048	36,909	37,305	37,291	37,520	-1.2
Crude	129,984	129,521	128,056	125,377	123,703	124,847	-4.0
Double hull	128,844	129,723	127,725	125,561	123,937	124,862	-3.1
Container	46,602	47,726	49,214	50,207	51,266	51,216	9.9
TEU	3,503	3,598	3,744	3,849	3,932	3,969	13.3
Dry Bulk	44,578	45,145	47,276	48,126	50,439	53,701	20.5
Roll on/Roll off	19,750	19,634	20,146	20,631	20,574	20,831	5.5
Vehicle	18,801	18,585	18,886	19,203	19,261	19,745	5.0
Gas	41,287	41,262	41,388	45,078	44,154	40,744	-1.3
Cubic meters	61,739	61,486	61,921	68,722	66,980	59,697	-3.3
Liquefied Natural Gas	70,962	73,703	70,097	74,465	74,445	81,363	14.7
Cubic meters	130,006	134,832	128,834	135,895	137,028	151,719	16.7
Combo	86,338	94,837	98,709	102,115	106,559	109,331	26.6
General	25,408	25,540	24,596	23,641	23,595	22,758	-10.4
All Types	**50,653**	**51,638**	**52,518**	**53,472**	**53,687**	**53,955**	**6.5**

Key: TEU = twenty-foot equivalent unit; R = revised.

The average vessel size per call at U.S. ports increased from 50,653 deadweight tons (DWT) in 2006 to 53,955 DWT in 2011, an increase of nearly 7 percent. The average size

Table 3-5. Number of Vessel Calls at U.S. Ports: 2006-2011 (Vessels Weighing 10,000 Deadweight Tons or Greater)
Sources: Lloyd's Marine Intelligence Unit, Vessel Movements Data Files, 2006-2011 (London: Lloyd's Marine Intelligence Unit, 2007-2012); Lloyd's Marine Intelligence Unit, Seasearcher (London: Lloyd's Marine Intelligence Unit, 2012); and Clarkson Research Studies, Clarkson's Vessel Registers (London: Clarkson Research Studies, January 2012); as reported in U.S. Department of Transportation, Maritime Administration, *Vessel Calls Snapshot, 2011* (Washington, DC: 2013), available at *www.marad.dot.gov/documents/Vessel_Calls_at_US_Ports_Snapshot.pdf* as of September 25, 2013.

Table 3-6. Average Vessel Size per Call at U.S. Ports: 2006-2011 (Deadweight Tons)
Sources: Lloyd's Marine Intelligence Unit, Vessel Movements Data Files, 2005-2011 (London: Lloyd's Marine Intelligence Unit, 2007-2012); Lloyd's Marine Intelligence Unit, Seasearcher (London: Lloyd's Marine Intelligence Unit, 2012); and Clarkson Research Studies, Clarkson's Vessel Registers (London: Clarkson Research Studies, January 2012); as reported in U.S. Department of Transportation, Maritime Administration, Vessel Calls Snapshot, 2011 (Washington, DC: 2013), available at *www.marad.dot.gov/documents/Vessel_Calls_at_US_Ports_Snapshot.pdf* as of September 25, 2013.

of containerships increased by 13 percent in terms of TEU capacity (10 percent in terms of DWT) as carriers expanded the deployment of post-panamax container ships in U.S. trades. Post-panamax refers to vessels that are larger than the width and length of the lock chambers in the Panama Canal.

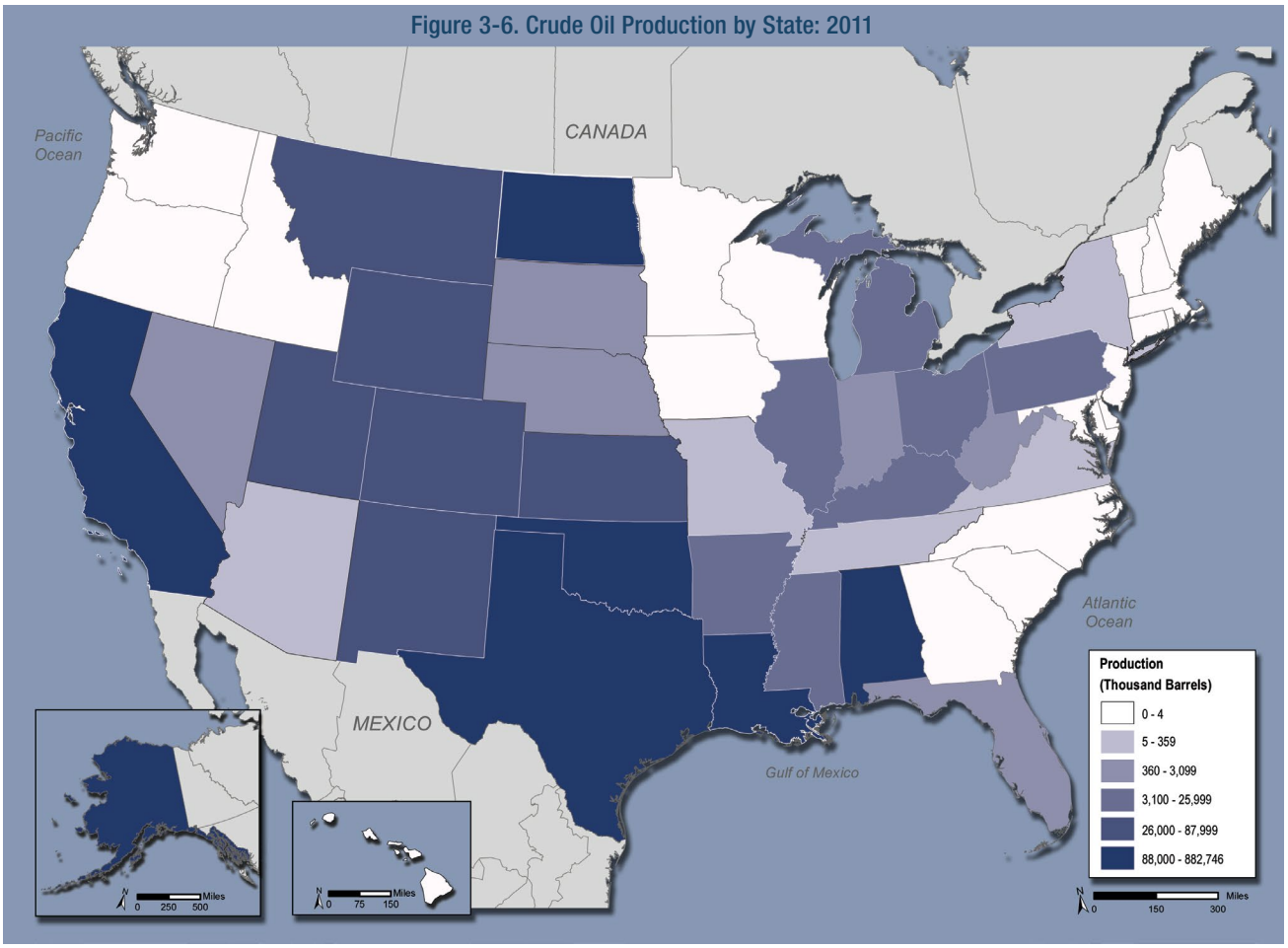
Table 3-7. Top 25 Airports by Landed Weight of All-Cargo Operations: 2000 and 2009-2012[1]

Airport	2012 Rank	Landed weight (thousands of short tons)				
		2000	2009	2010	2011	2012
Memphis, TN (Memphis International)	1	6,318	9,464	9,772	10,152	10,263
Anchorage, AK (Ted Stevens Anchorage International)[2]	2	8,084	7,762	9,732	8,887	8,261
Louisville, KY (Louisville International-Standiford Field)	3	3,987	5,139	5,319	5,491	5,462
Miami, FL (Miami International)	4	2,929	3,176	3,453	3,317	3,574
Indianapolis, IN (Indianapolis International)	5	2,884	2,288	2,359	2,407	2,470
Chicago, IL (O'Hare International)	6	2,062	1,750	2,448	2,184	2,278
Los Angeles, CA (Los Angeles International)	7	2,892	1,884	1,977	2,022	2,102
New York, NY (John F. Kennedy International)	8	2,793	1,591	1,962	1,972	1,747
Cincinnati, OH (Cincinnati /Northern Kentucky International)	9	912	564	1,216	1,410	1,594
Fort Worth, TX (Dallas/Fort Worth International)	10	1,691	1,436	1,516	1,532	1,544
Newark, NJ (Newark Liberty International)	11	1,961	1,464	1,489	1,525	1,427
Oakland, CA (Metropolitan Oakland International)	12	1,811	1,341	1,324	1,340	1,323
Ontario, CA (Ontario International)	13	1,220	1,168	1,121	1,157	1,181
Atlanta, GA (William B. Hartsfield International)	14	1,090	1,278	1,314	1,328	1,014
Honolulu, HI (Honolulu International)	15	692	1,021	1,062	1,057	988
Philadelphia, PA (Philadelphia International)	16	1,454	1,132	994	975	947
Houston, TX (George Bush Intercontinental)	17	480	784	763	808	784
Phoenix, AZ (Sky Harbor International)	18	920	610	607	620	650
Seattle, WA (Seattle-Tacoma International)	19	1,060	803	697	679	645
Denver, CO (Denver International)	20	900	624	619	605	602
San Francisco, CA (San Francisco International)	21	1,267	747	652	622	599
Portland, OR (Portland International)	22	882	545	531	567	581
Salt Lake City, UT (Salt Lake City International)	23	751	449	424	428	438
Minneapolis, MN (Minneapolis-St Paul International/Wold-Chamberlain)	24	622	474	512	484	438
San Juan, PR (Luis Munoz Marin International)	25	485	543	441	434	425
Top 25 airports[3]		**52,381**	**48,153**	**52,350**	**52,043**	**51,338**
United States, all airports[4]		**74,743**	**63,191**	**67,530**	**66,095**	**67,448**
Top 25 as % of U.S. total		**70.1**	**76.2**	**77.5**	**78.7**	**76.1**

[1] Dedicated to the exclusive transportation of cargo, all-cargo operations do not include aircraft carrying passengers that also may be carrying cargo. Aircraft landed weight is the certificated maximum gross landed weight of the aircraft as specified by the aircraft manufacturers.
[2] Anchorage includes a large share of all-cargo operations in-transit.
[3] Airport rankings change each year. Totals represent the top 25 airports for each year, not necessarily the top 25 airports listed here for 2012.
[4] Limited to airports with an aggregate landed weight in excess of 100 million pounds (50,000 short tons) annually.
Note: 1 short ton = 2,000 pounds.

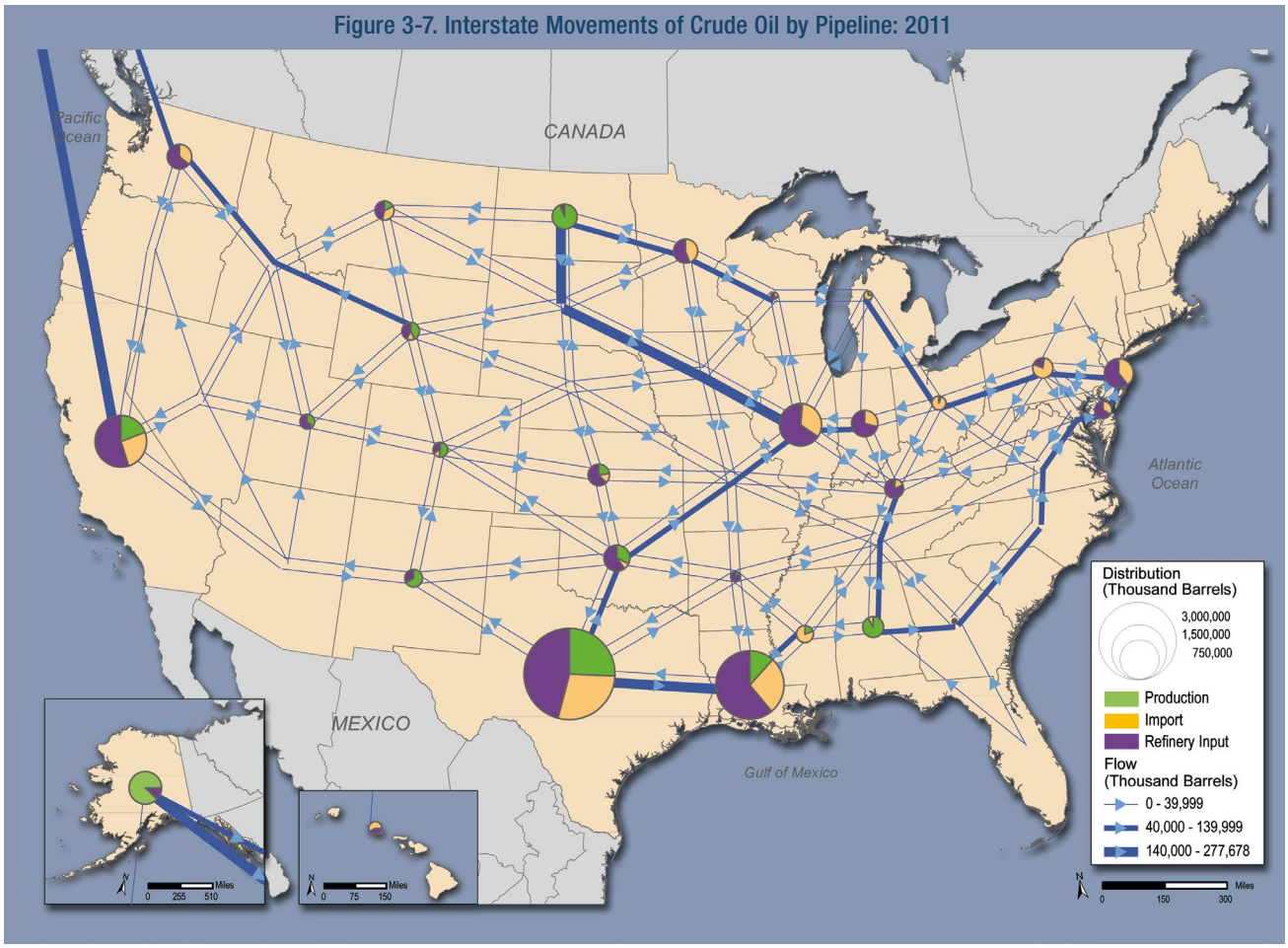
The three most important U.S. airports that handle all-cargo aircraft are Memphis, Anchorage, and Louisville. Memphis and Louisville are major hubs for FedEx and the United Parcel Service, respectively. Anchorage is a major international gateway for trade with Asia.

Table 3-7. Top 25 Airports by Landed Weight of All-Cargo Operations: 2000 and 2009-2012
Source: U.S. Department of Transportation, Federal Aviation Administration, Air Carrier Activity Information System (ACAIS) database, All-Cargo Data, available at *www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/* as of September 11, 2013.



A handful of states are responsible for the bulk of domestic production. Texas is the largest oil producing state while North Dakota, where the Bakken shale formation is located, has the distinction of being the fastest growing oil producer. Alaska and California also are major oil producing states.

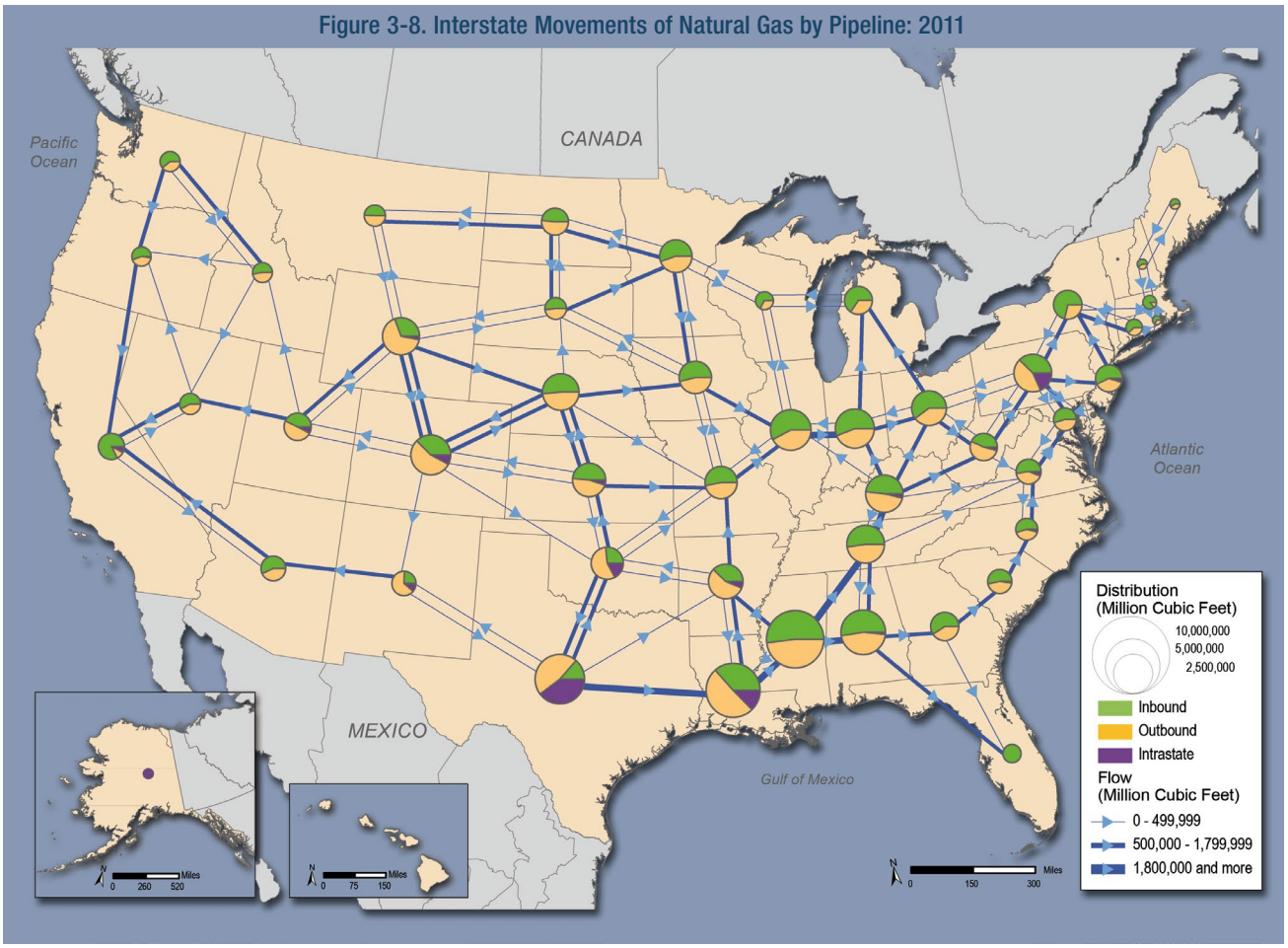
Figure 3-6. Crude Oil Production by State: 2011
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.



Pipelines move large volumes of crude oil and natural gas from producing fields to markets throughout the United States. Based on FAF data, the oil and gas pipeline system moved an estimated 1.9 billion tons valued at $1.2 trillion in 2011. Large volumes of crude oil were moved from producing fields in Texas and North Dakota.

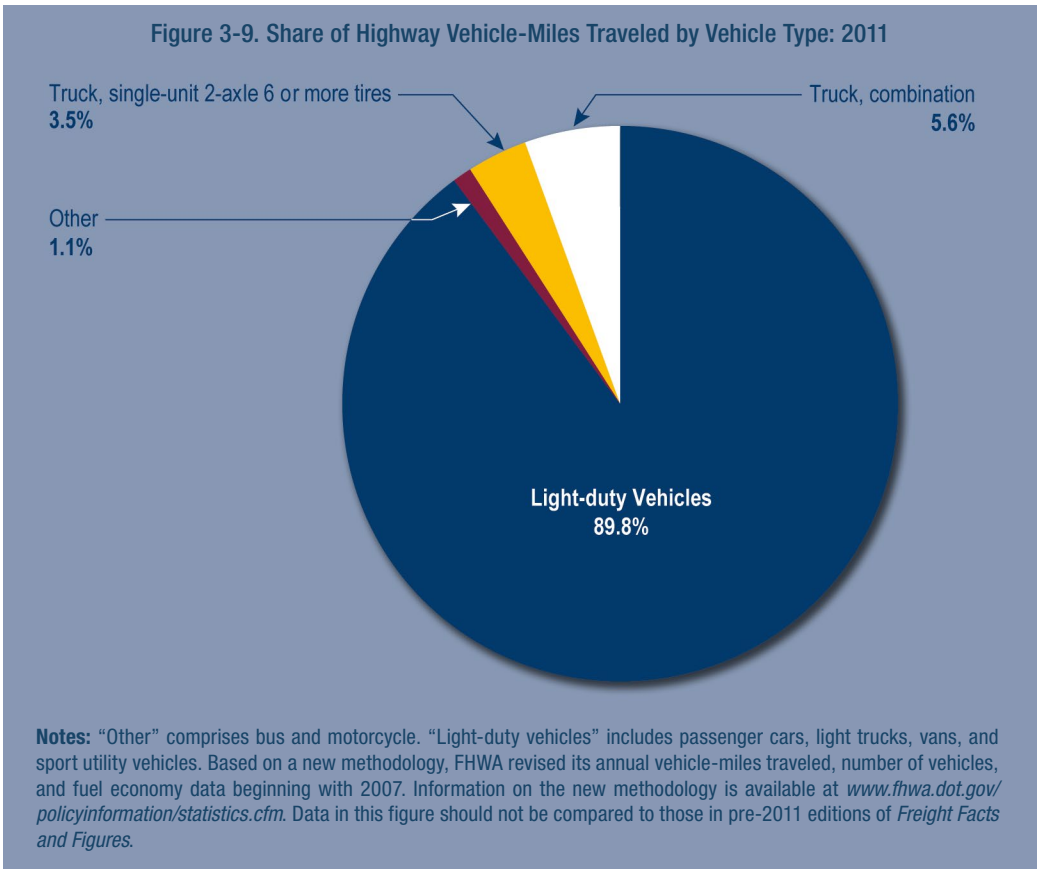
Figure 3-7. Interstate Movements of Crude Oil by Pipeline: 2011

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.



Natural gas is located in many of the same areas as crude oil. Gathering pipelines (or trunk lines) move the gas from the well to processing plants where impurities are removed. From the processing plants, natural gas is moved to areas of high natural gas demand via an extensive and complex system of interstate pipelines. The interstate pipeline network spans about 217,000 miles.

Figure 3-8. Interstate Movements of Natural Gas by Pipeline: 2011
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.



Despite doubling over the past two decades, truck traffic remains a relatively small share of highway traffic as a whole. In 2011, commercial trucks accounted for about 9 percent of highway vehicle-miles traveled. Truck tractors hauling semitrailers and other truck combinations accounted for approximately 63 percent of commercial truck travel, while single-unit trucks with six or more tires accounted for the remainder.

Figure 3-9. Share of Highway Vehicle-Miles Traveled by Vehicle Type: 2011

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 2, 2013.

Table 3-8. Trucks and Truck Miles by Average Weight: 1987, 1992, 1997, and 2002[1]

Average weight (pounds)	1987 Number (thousands)	1987 VMT (millions)	1992 Number (thousands)	1992 VMT (millions)	1997 Number (thousands)	1997 VMT (millions)	2002 Number (thousands)	2002 VMT (millions)	Percent Change, 1987 to 2002 Number	Percent Change, 1987 to 2002 VMT
Total	**3,624**	**89,972**	**4,008**	**104,987**	**4,701**	**147,876**	**5,415**	**145,624**	**49.4**	**61.9**
Light-heavy	**1,030**	**10,768**	**1,259**	**14,012**	**1,436**	**19,815**	**1,914**	**26,256**	**85.9**	**143.8**
10,001 to 14,000	525	5,440	694	8,000	819	11,502	1,142	15,186	117.6	179.2
14,001 to 16,000	242	2,738	282	2,977	316	3,951	396	5,908	63.6	115.8
16,001 to 19,500	263	2,590	282	3,035	301	4,362	376	5,161	43.2	99.3
Medium-heavy	**766**	**7,581**	**732**	**8,143**	**729**	**10,129**	**910**	**11,766**	**18.8**	**55.2**
19,501 to 26,000	766	7,581	732	8,143	729	10,129	910	11,766	18.8	55.2
Heavy-heavy	**1,829**	**71,623**	**2,017**	**82,832**	**2,536**	**117,931**	**2,591**	**107,602**	**41.7**	**50.2**
26,001 to 33,000	377	5,411	387	5,694	428	7,093	437	5,845	15.9	8.0
33,001 to 40,000	209	4,113	233	5,285	257	6,594	229	3,770	9.7	-8.4
40,001 to 50,000	292	7,625	339	9,622	400	13,078	318	6,698	9.0	-12.2
50,001 to 60,000	188	7,157	227	8,699	311	12,653	327	8,950	73.8	25.1
60,001 to 80,000	723	45,439	781	51,044	1,070	74,724	1,179	77,489	63.1	70.5
80,001 to 100,000	28	1,254	33	1,529	46	2,427	69	2,950	144.3	135.2
100,001 to 130,000	8	440	12	734	18	1,051	26	1,571	238.5	257.2
130,001 or more	4	185	5	227	6	312	6	329	43.2	77.9

Key: VMT = vehicle-miles traveled.

[1] Excludes trucks with an average weight of 10,000 pounds or less.

Note: Weight includes the empty weight of the vehicle plus the average weight of the load carried. Numbers may not add to totals due to rounding.

The nation's truck fleet has grown significantly in number and distance driven. Of trucks weighing more than 10,000 pounds registered to businesses, individuals, and organizations other than government, most growth has occurred at either end of the weight spectrum. Distance traveled more than doubled between 1987 and 2002 for trucks weighing between 10,000 pounds and 26,000 pounds and for trucks weighing over 80,000 pounds. Trucks between 60,000 pounds and 80,000 pounds form the largest category in both number of trucks and vehicle-miles traveled because in most cases 80,000 pounds is the maximum weight allowed on the highway system without special permits.

Table 3-8. Trucks and Truck Miles by Average Weight: 1987, 1992, 1997, and 2002
Source: U.S. Department of Commerce, Census Bureau, 2002 Vehicle Inventory and Use Survey: United States, EC02TV-US (Washington, DC: 2004), available at *www.census.gov/prod/ec02/ec02tv-us.pdf* as of September 20, 2013; U.S. Department of Commerce, Census Bureau, 1992 Truck Inventory and Use Survey: United States, TC92-T-52 (Washington, DC: 1995), available at *www.census.gov/prod/ec97/97tv-us.pdf* as of September 20, 2013.

Table 3-9. Commercial Vehicle Weight Enforcement Activities: 2006-2012

	2006	2007	2008	2009	2010	2011	2012
All Weighs	**229,450,656**	**217,444,117**	**200,419,382**	**182,256,996**	**198,564,690**	**185,498,220**	**189,743,150**
Weigh-in-Motion	142,598,736	132,257,618	119,826,305	116,176,399	118,025,789	119,718,032	116,640,351
Static Weighs[1]	86,851,920	85,186,499	80,593,077	66,080,597	80,538,901	65,780,188	73,102,799
Semiportable Scales	422,860	425,731	357,502	373,073	285,484	323,936	278,308
Fixed Scales	85,900,007	84,213,507	79,644,702	65,182,174	79,703,573	64,922,321	72,258,822
Portable Scales	529,053	547,261	590,873	525,350	549,844	533,931	565,669
Violations[2]	**621,391**	**530,350**	**555,168**	**489,975**	**478,576**	**415,545**	**408,492**
Axle Weight Violations	269,758	233,563	248,813	220,631	216,735	178,209	179,774
Gross Weight Violations	149,561	126,761	120,384	116,291	114,171	84,490	91,006
Bridge Weight Violations	202,072	170,026	185,971	153,053	147,670	152,846	137,712
Permits[3]	**4,598,227**	**4,827,668**	**5,215,724**	**4,528,654**	**4,838,663**	**4,944,334**	**4,918,118**
Non-Divisible Trip Permits	3,399,435	3,743,323	3,693,248	3,285,801	3,510,301	3,762,553	3,878,031
Non-Divisible Annual Permits	250,505	332,148	322,288	298,805	303,230	320,767	296,870
Divisible Trip Permits	426,381	398,003	489,712	369,906	341,737	334,650	201,633
Divisible Annual Permits	521,906	354,194	710,476	574,142	683,395	526,364	541,584

[1] Static weighs include the total number of vehicles weighed from semiportable, portable, and fixed scales.

[2] Violations include those from axle, gross, and bridge formula weight limits.

[3] Permits issued are for divisible and non-divisible loads on a trip or on an annual basis, as well as for the over-width movement of a divisible load.

Note: Incomplete data from District of Columbia (2008), Hawaii (2008, 2009, 2010, and 2011), Massachusetts (2010), New Hampshire (2011) Pennsylvania (2006), South Dakota (2006 and 2007), and Vermont (2011).

Federal and state governments are concerned about truck weight because of the damage that heavy trucks can do to roads and bridges. To monitor truck weight, more than 189 million weighs were made in 2012, about 61 percent of which were weigh-in-motion, and 39 percent were static. Approximately 2 percent of commercial vehicle weighs discover violations.

Table 3-10. Annual Vehicle Distance Traveled by Highway Category and Vehicle Type: 2011

	Combination Trucks	Single-Unit Trucks[1]	Other[2]	Light-duty Vehicles[3]	Total, All Motor Vehicles
Interstate vehicle-miles (millions)	81,431	23,621	7,159	608,081	720,291
Interstate percent	49.7	22.8	22.2	23.0	24.4
Non-Interstate vehicle-miles (millions)	82,260	79,894	25,123	2,038,560	2,225,839
Non-Interstate percent	50.3	77.2	77.8	77.0	75.6
Total vehicle-miles, all roadways	**163,692**	**103,515**	**32,283**	**2,646,641**	**2,946,131**

[1] Trucks on a single frame with at least two axles and six tires

[2] Includes buses and motorcycles.

[3] Includes passenger cars, light trucks, vans and sport utility vehicles with a wheelbase equal to or less than 121 inches and large passenger cars, vans, light trucks, and sport utility vehicles with a wheelbase larger than 121 inches.

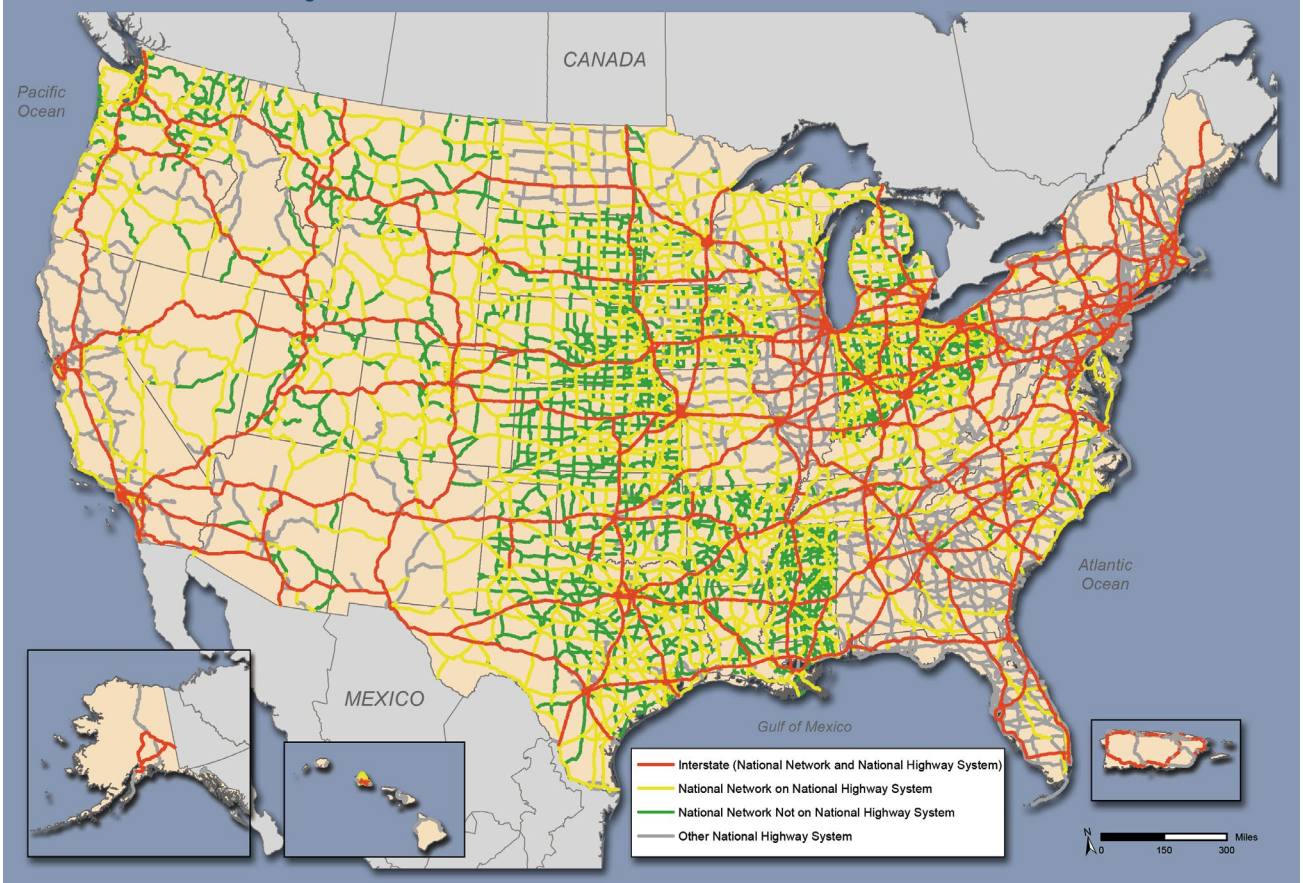
Notes: Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at www.fhwa.dot.gov/policyinformation/statistics.cfm. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*. Numbers may not add to totals due to rounding.

Freight moving in combination trucks depends heavily on the Interstate System. Although only one-fourth of the distance traveled by all traffic is on the Interstate System, nearly one-half of combination-truck vehicle miles of travel are on Interstate highways.

Table 3-9. Commercial Vehicle Weight Enforcement Activities: 2006-2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Annual State Certifications of Size and Weight Enforcement on Federal-aid Highways, as prescribed under CFR Part 657, October 5, 2013.

Table 3-10. Annual Vehicle Distance Traveled by Highway Category and Vehicle Type: 2011
Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics, Table VM-1, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September, 2, 2013.

Figure 3-10. National Network for Conventional Combination Trucks: 2013



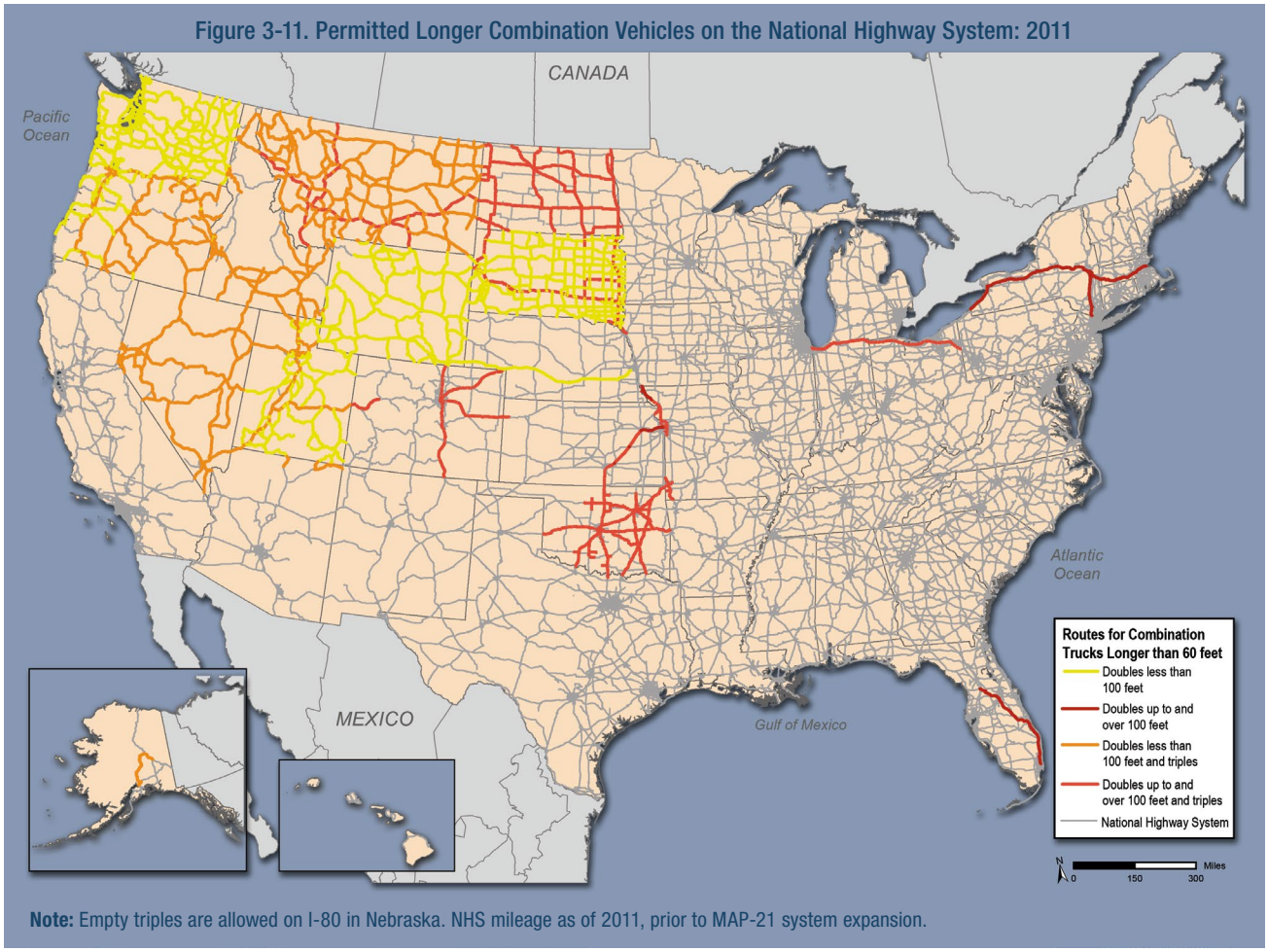
Notes: This map should not be interpreted as the official National Network and should not be used for truck size and weight enforcement purposes. The National Network and the National Highway System (NHS) are approximately 200,000 miles in length, but the National Network includes 65,000 miles of highways beyond the NHS, and the NHS encompasses about 50,000 miles of highways that are not part of the National Network.

"Other NHS" refers to NHS mileage that is not included on the National Network. Conventional combination trucks are tractors with one semitrailer up to 48 feet in length or with one 28-foot semitrailer and one 28-foot trailer. Conventional combination trucks can be up to 102 inches wide.

The National Network was established by Congress in 1982 to facilitate interstate commerce and encourage regional and national economic growth by requiring states to allow conventional combination trucks on the Interstate System and portions of the Federal-aid Primary System of highways. The National Network, which is approximately 200,000 miles in length, has not changed significantly in three decades.

Figure 3-10. National Network for Conventional Combination Trucks: 2013

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.



Longer combination vehicles (LCVs) include truck tractors pulling a long semi-trailer and a short trailer (often called a Rocky Mountain Double), a long semi-trailer and a long trailer (often called a Turnpike Double) or a short semi-trailer and two trailers (called a Triple). Although all states allow conventional combinations consisting of a 28-foot semitrailer and a 28-foot trailer, only 14 states and 6 state turnpike authorities allow LCVs on at least some parts of their road networks. Allowable routes for LCVs have been frozen since 1991.

Figure 3-11. Permitted Longer Combination Vehicles on the National Highway System: 2011
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, 2013.

Table 3-11. Trucks, Truck Miles, and Average Distance by Range of Operations and Jurisdictions: 2002

	Number of Trucks (thousands)	Truck Miles (millions)	Miles per Truck (thousands)
Total	**5,521**	**145,173**	**26**
Off the road	183	2,263	12
50 miles or less	2,942	42,531	15
51 to 100 miles	685	19,162	28
101 to 200 miles	244	11,780	48
201 to 500 miles	232	17,520	76
501 miles or more	293	26,706	91
Not reported	716	25,061	35
Not applicable	226	150	1
Operated in Canada	2	72	43
Operated in Mexico	2	29	19
Operated within the home base state	4,196	84,974	20
Operated in states other than the home base state	496	40,901	83
Not reported	599	19,046	32
Not applicable	226	150	1

Notes: Includes trucks registered to companies and individuals in the United States except pickups, minivans, other light vans, and sport utility vehicles. Numbers may not add to totals due to rounding.

Most trucks larger than pickups, minivans, other light vans, and sport utility vehicles typically operate close to home. About one-half of all trucks usually travel to destinations within 50 miles of their base, and three-fourths stayed within their base state. Less than 10 percent of trucks larger than pickups, minivans, other light vans, and sport utility vehicles typically travel to places more than 200 miles away, but these trucks account for 30 percent of the mileage.

Approximately three-fourths of the miles traveled by trucks larger than pickups, minivans, and other light vans are for the movement of products that range from electronics to sand and gravel. Most of the remaining mileage is for empty backhauls and empty shipping containers.

Table 3-11. Trucks, Truck Miles, and Average Distance by Range of Operations and Jurisdictions: 2002
Source: U.S. Department of Commerce, Census Bureau, 2002 Vehicle Inventory and Use Survey: United States, EC02TV-US, table 3a (Washington, DC: 2004), available at *www.census.gov/prod/ec02/ec02tv-us.pdf* as of September 20, 2013.

Table 3-12. Truck Miles by Products Carried: 2002

Products carried	Millions of miles
Total[1]	**145,173**
No product carried	28,977
Mixed freight	14,659
Tools, nonpowered	7,759
All other packaged foodstuffs	7,428
Tools, powered	6,478
Products not specified	6,358
Mail and courier parcels	4,760
Miscellaneous manufactured products	4,008
Vehicles, including parts	3,844
Wood products	3,561
Bakery and milled grain products	3,553
Articles of base metal	3,294
Machinery	3,225
Paper or paperboard articles	3,140
Meat, seafood, and their preparations	3,056
Nometallic mineral products	3,049
Electronic and other electrical equipment	3,024
Base metal in primary or semifinished forms	2,881
Gravel or crushed stone	2,790
All other agricultural products	2,661
All other waste and scrape (non-EPA manifest)	2,647
Plastic and rubber	2,393
Animal feed and products of animal origin	2,088
Furniture, mattresses, lamps, etc.	2,043
Pulp, newsprint, paper, paperboard	1,936
Fertilizers and fertilizer materials	1,666
Textile, leather, and related articles	1,538
Grains, cereal	1,368
All other chemical products and preparations	1,351
Fuel oils	1,232
All other coal and refined petroleum products	1,172
Logs and other wood in the rough	1,149
Alcoholic beverages	1,124
Natural sands	1,089
Recyclable products	922
Basic chemicals	876
Gasoline and aviation turbine fuel	849
Empty shipping containers	794
Printed products	765
Animals and fish, live	735
Precision instruments and apparatus	734
All other transportation equipment	636
All other nonmetallic minerals	499
Monumental or building stone	462
Tobacco products	445
Pharmaceutical products	305
Coal	301
Passengers	274
Products, equipment, or materials not elsewhere classified	265
Hazardous waste (EPA manifest)	190
Not applicable[2]	150
Crude petroleum	132
Metallic ores and concentrates	45

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

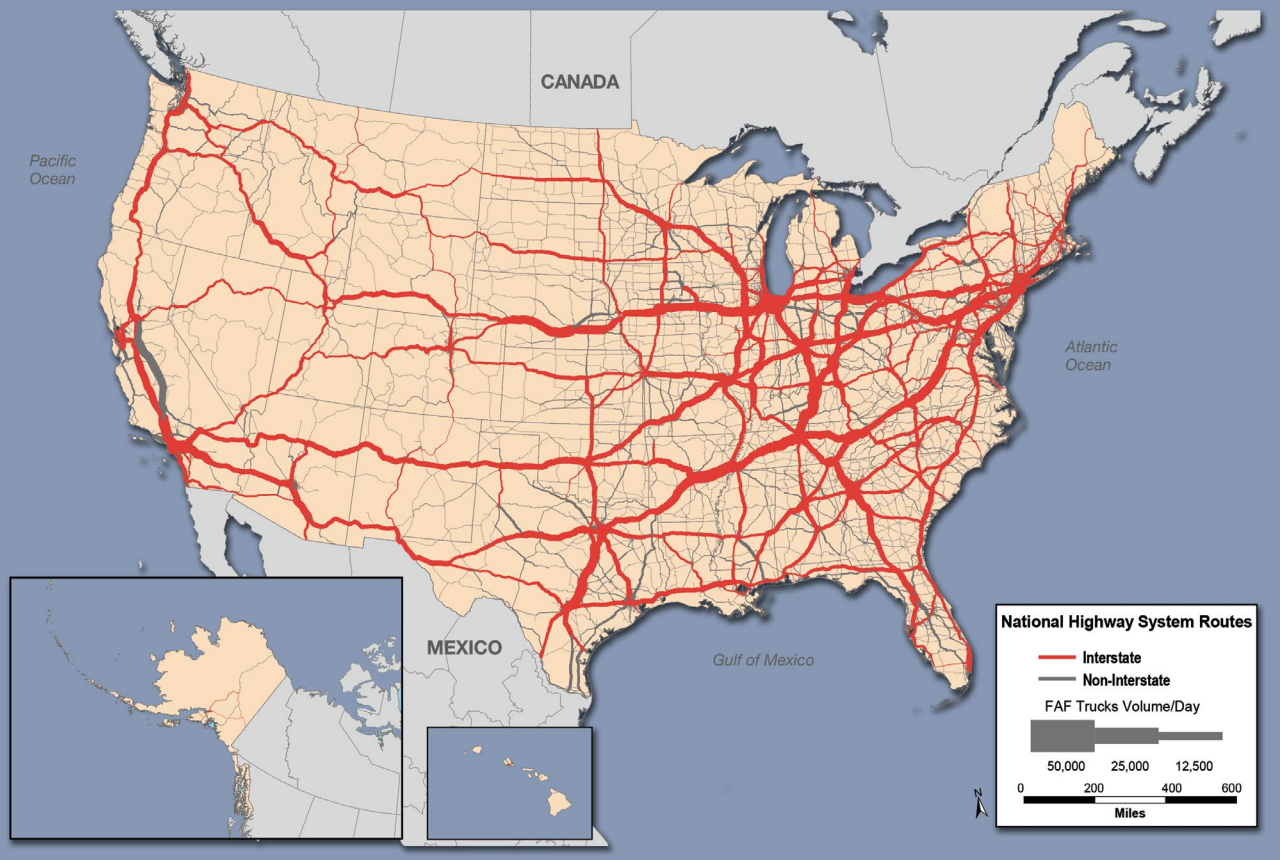
[2] Vehicles not in use. When the survey respondent had partial-year ownership of the vehicle, annual miles were adjusted to reflect miles traveled when not owned by the respondent.

Note: Includes trucks registered to companies and individuals in the United States except pickups, minivans, other light vans, and sport utility vehicles.

Table 3-12. Truck Miles by Products Carried: 2002

Source: U.S. Department of Commerce, Census Bureau, 2002 Vehicle Inventory and Use Survey: United States, EC02TV-US (Washington, DC: 2004), available at *www.census.gov/prod/ec02/ec02tv-us.pdf* as of September 20, 2013.

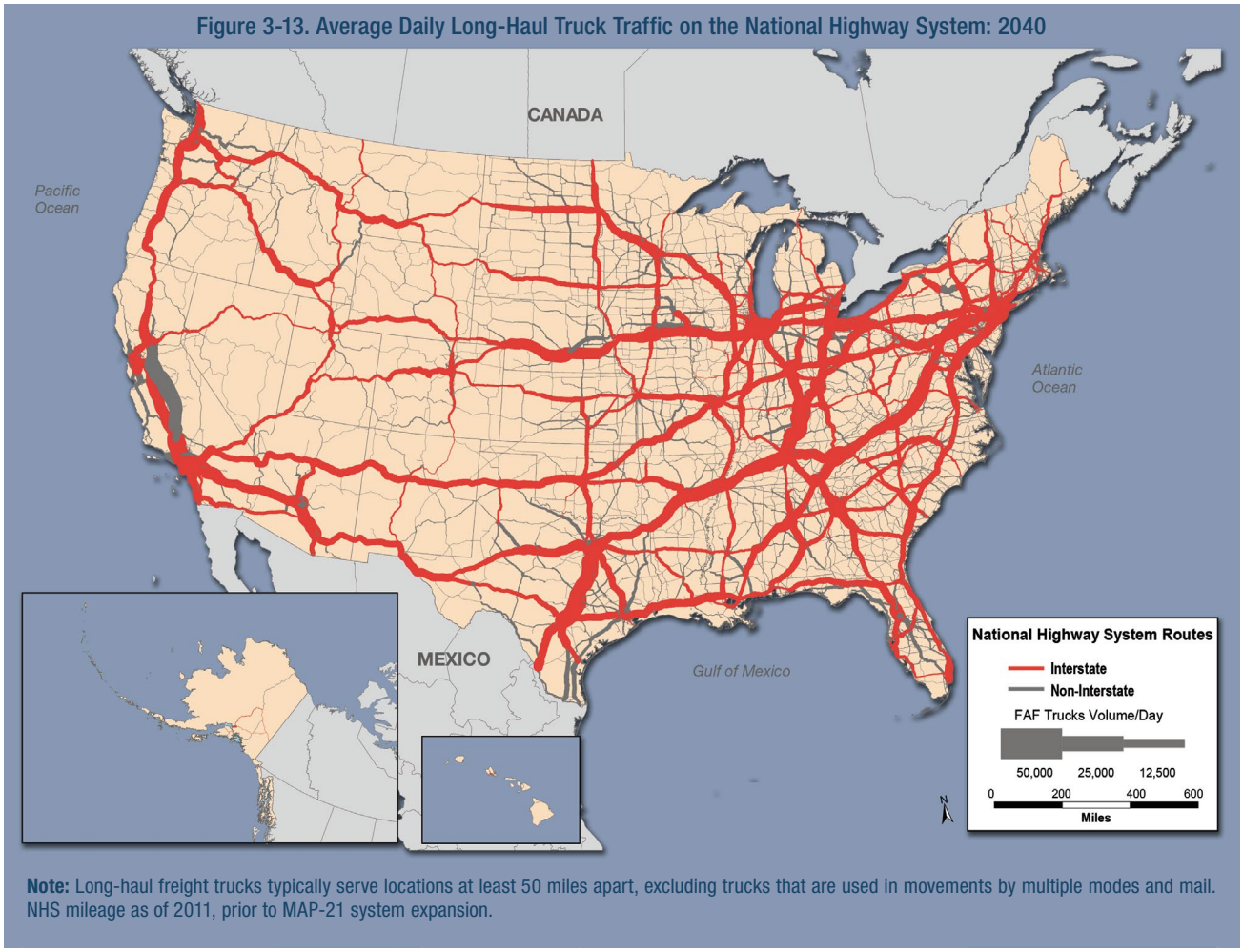
Figure 3-12. Average Daily Long-Haul Truck Traffic on the National Highway System: 2011



Note: Long-haul freight trucks typically serve locations at least 50 miles apart, excluding trucks that are used in movements by multiple modes and mail. NHS mileage as of 2011, prior to MAP-21 system expansion.

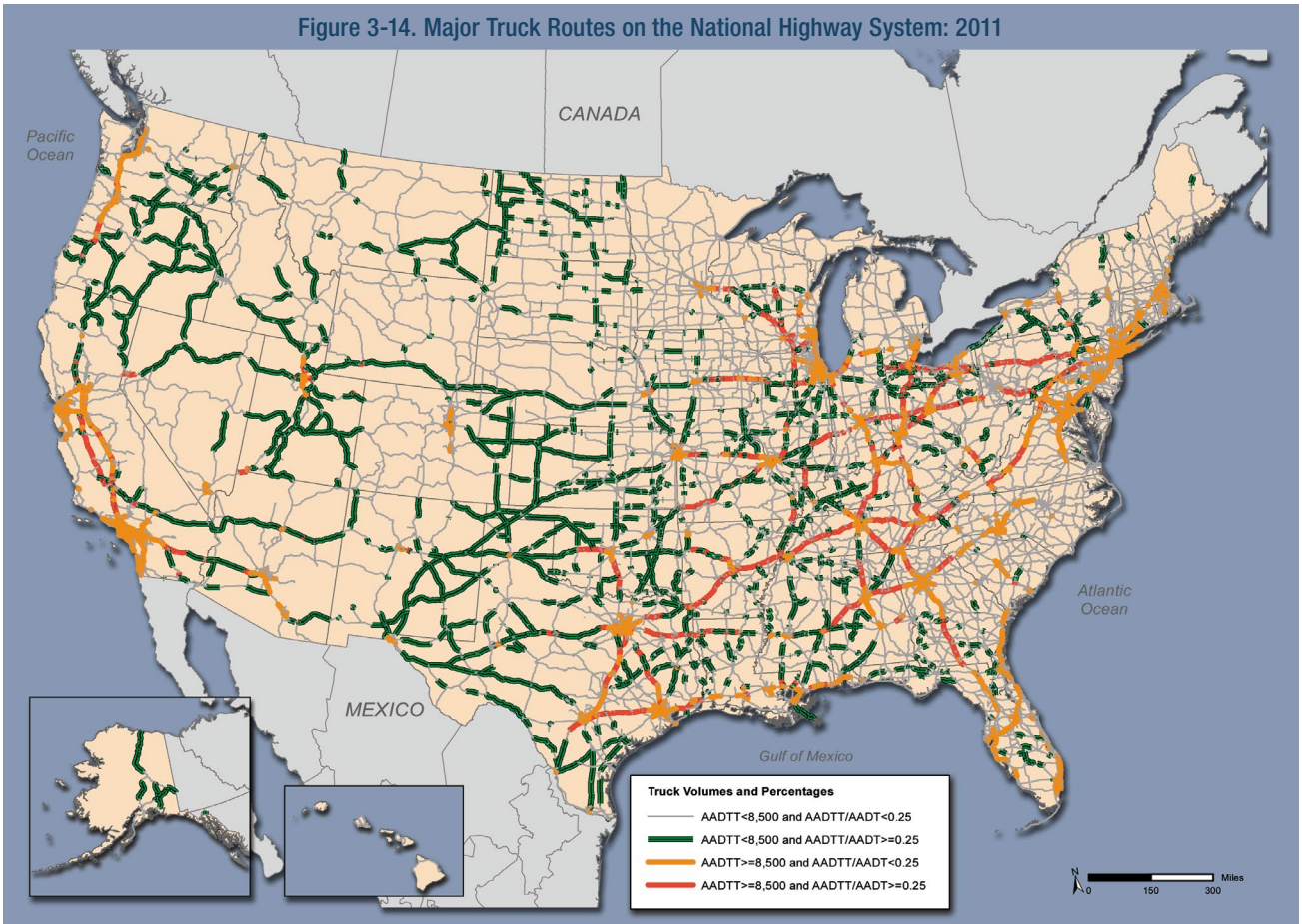
Long-haul freight truck traffic in the United States is concentrated on major routes connecting population centers, ports, border crossings, and other major hubs of activity. Except for Route 99 in California and a few toll roads and border connections, most of the heaviest traveled routes are on the Interstate System.

Figure 3-12. Average Daily Long-Haul Truck Traffic on the National Highway System: 2011
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.



By 2040, long-haul freight truck traffic in the United States is expected to increase dramatically on the NHS. Forecast data indicate that truck travel may reach 460 million miles per day.

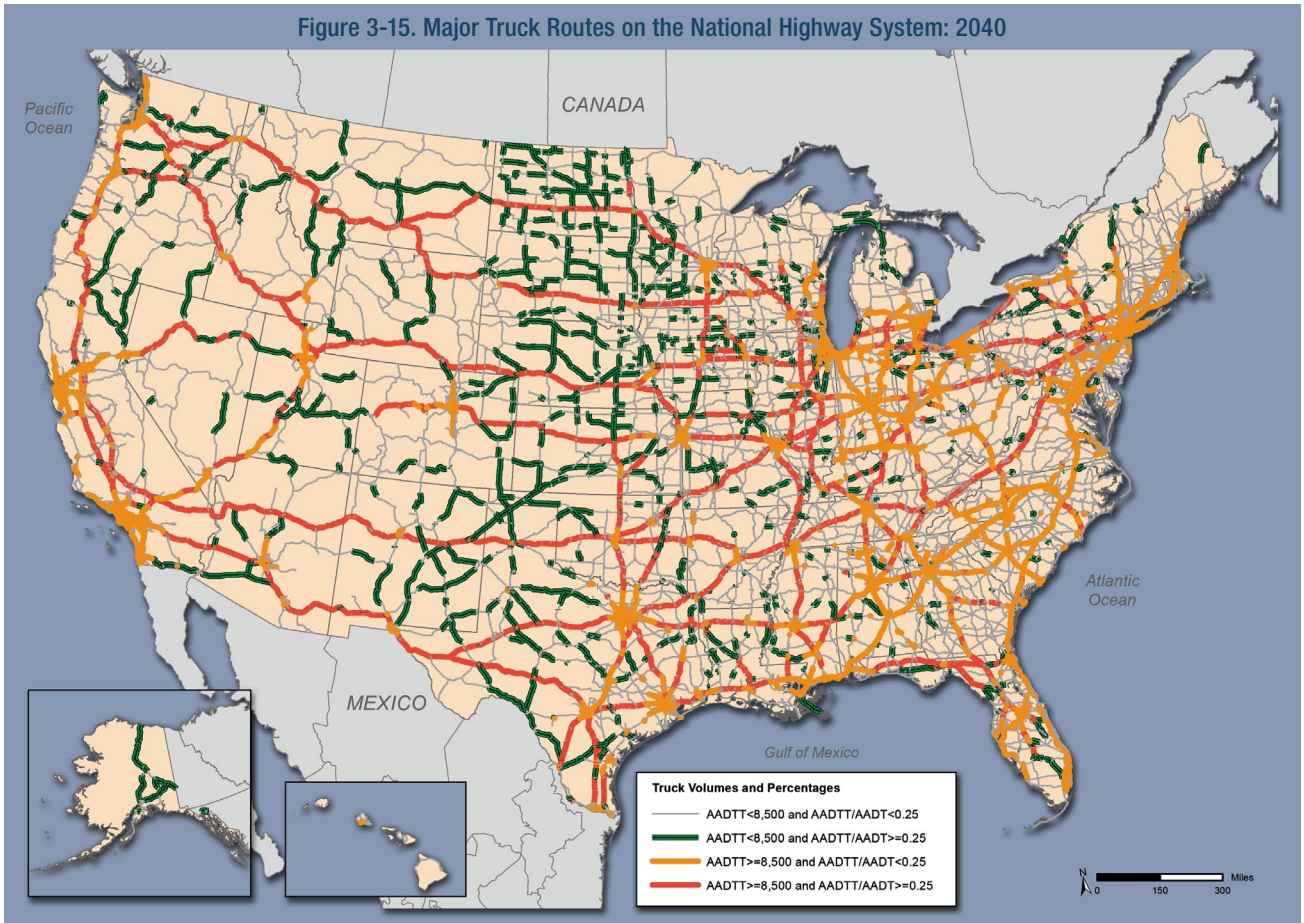
Figure 3-13. Average Daily Long-Haul Truck Traffic on the National Highway System: 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.



Notes: AADTT is average annual daily truck traffic and includes all freight-hauling and other trucks with six or more tires. AADT is average annual daily traffic and includes all motor vehicles. NHS mileage as of 2011, prior to MAP-21 system expansion.

Selected routes carry a significant concentration of trucks, either as an absolute number or as a percentage of the traffic stream. Nearly 14,530 miles of the NHS carry more than 8,500 trucks per day on sections where at least every fourth vehicle is a truck. With each truck carrying an average of 16 tons of cargo, 8,500 trucks per day haul approximately 50 million tons per year.

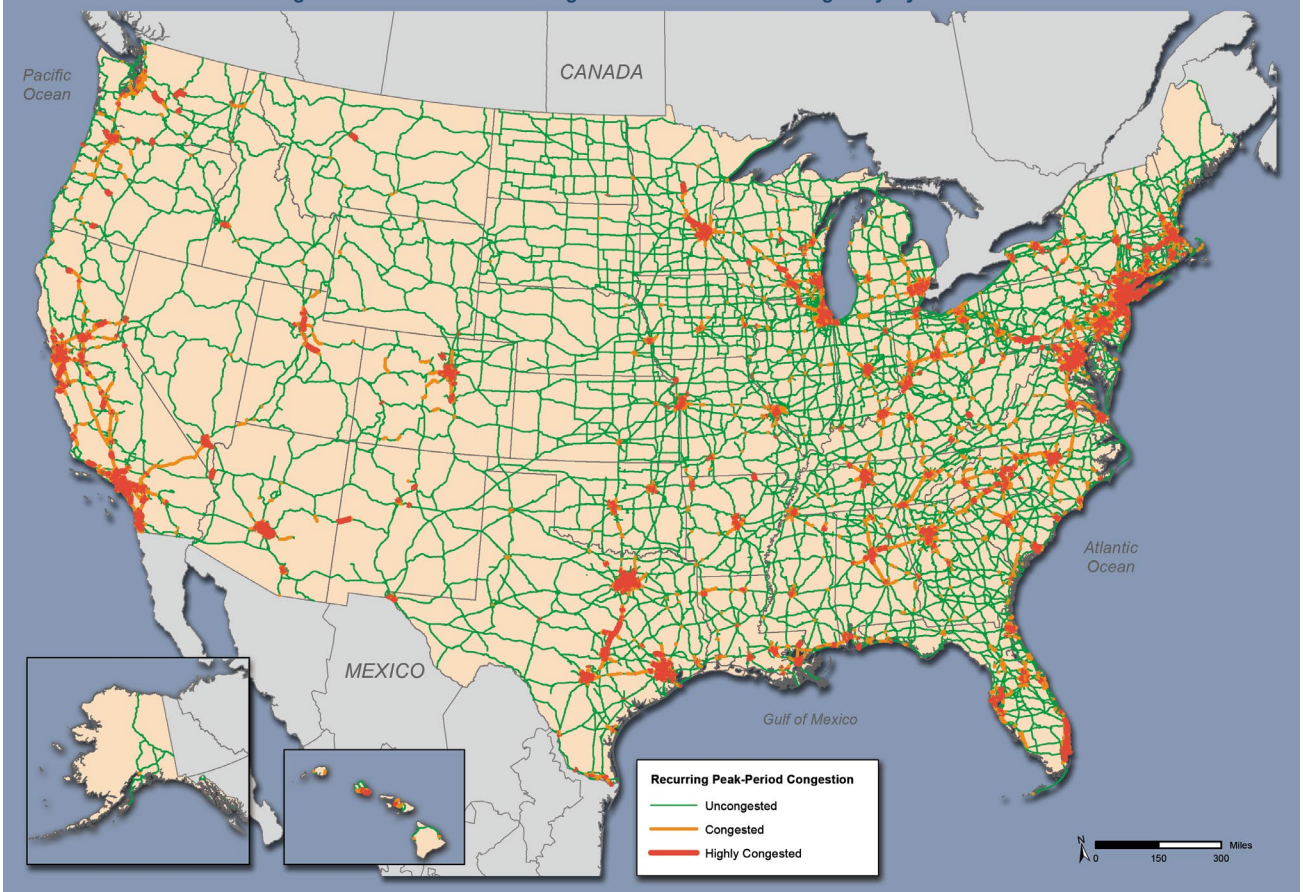
Figure 3-14. Major Truck Routes on the National Highway System: 2011
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.



The number of NHS miles carrying large volumes and high percentages of trucks is forecast to increase dramatically by 2040. Segments with more than 8,500 trucks per day and where at least every fourth vehicle is a truck are forecast to reach 42,000 miles, an increase of more than 175 percent from 2011.

Figure 3-15. Major Truck Routes on the National Highway System: 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.

Figure 3-16. Peak-Period Congestion on the National Highway System: 2011



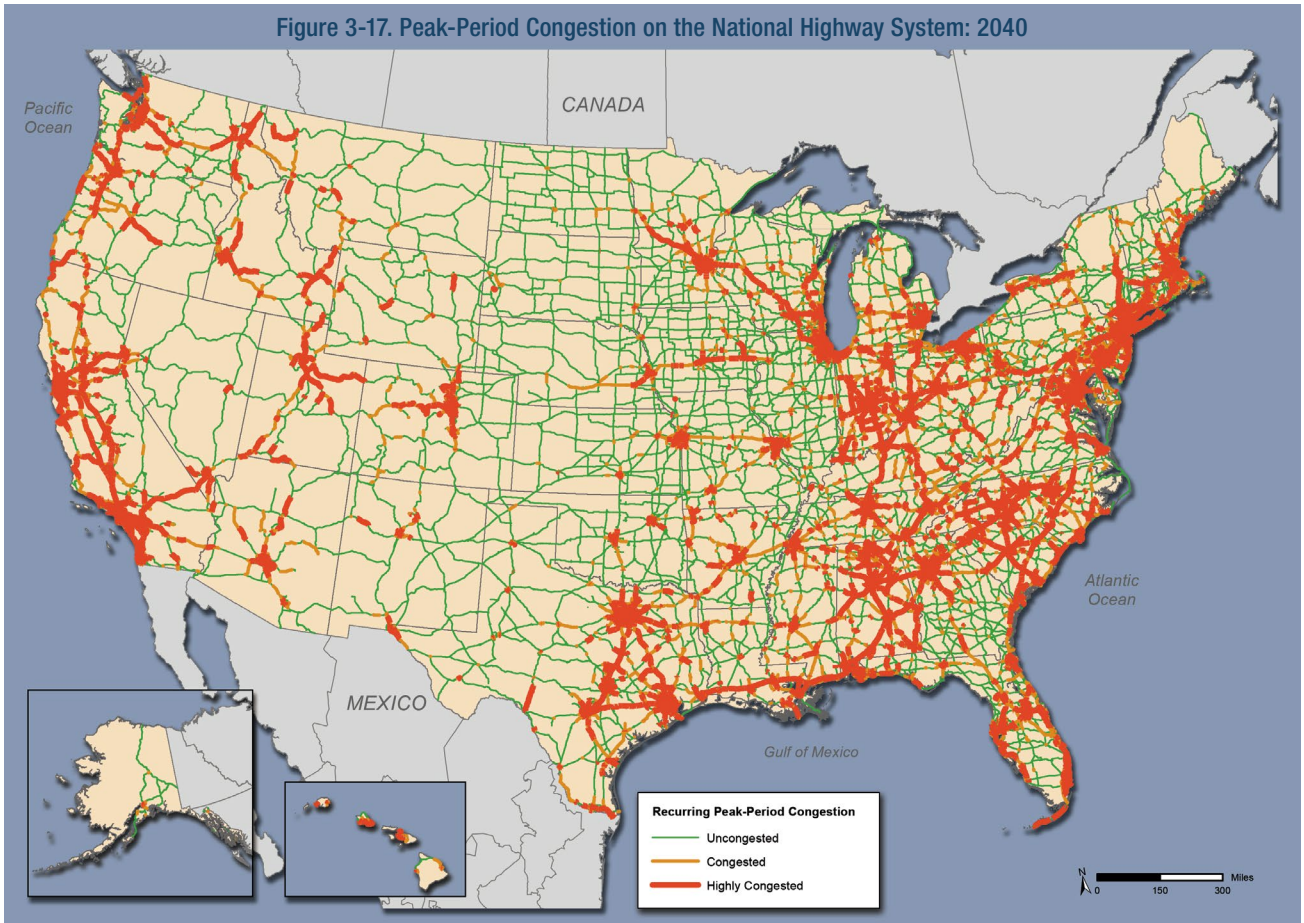
Notes: Highly congested segments are stop-and-go conditions with volume/service flow ratios greater than 0.95. Congested segment have reduced traffic speeds with volume/service flow ratios between 0.75 and 0.95.

The volume/service flow ratio is estimated using the procedures outlined in the Highway Performance Monitoring System Field Manual, Appendix N. NHS mileage as of 2011, prior to MAP-21 system expansion.

Recurring congestion caused by volumes of passenger vehicles and trucks that exceed capacity on roadways during peak periods is concentrated primarily in major metropolitan areas. In 2011, peak-period congestion resulted in traffic slowing below posted speed limits on 13,500 miles of the NHS and created stop-and-go conditions on an additional 8,700 miles.

Figure 3-16. Peak-Period Congestion on the National Highway System: 2011

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.

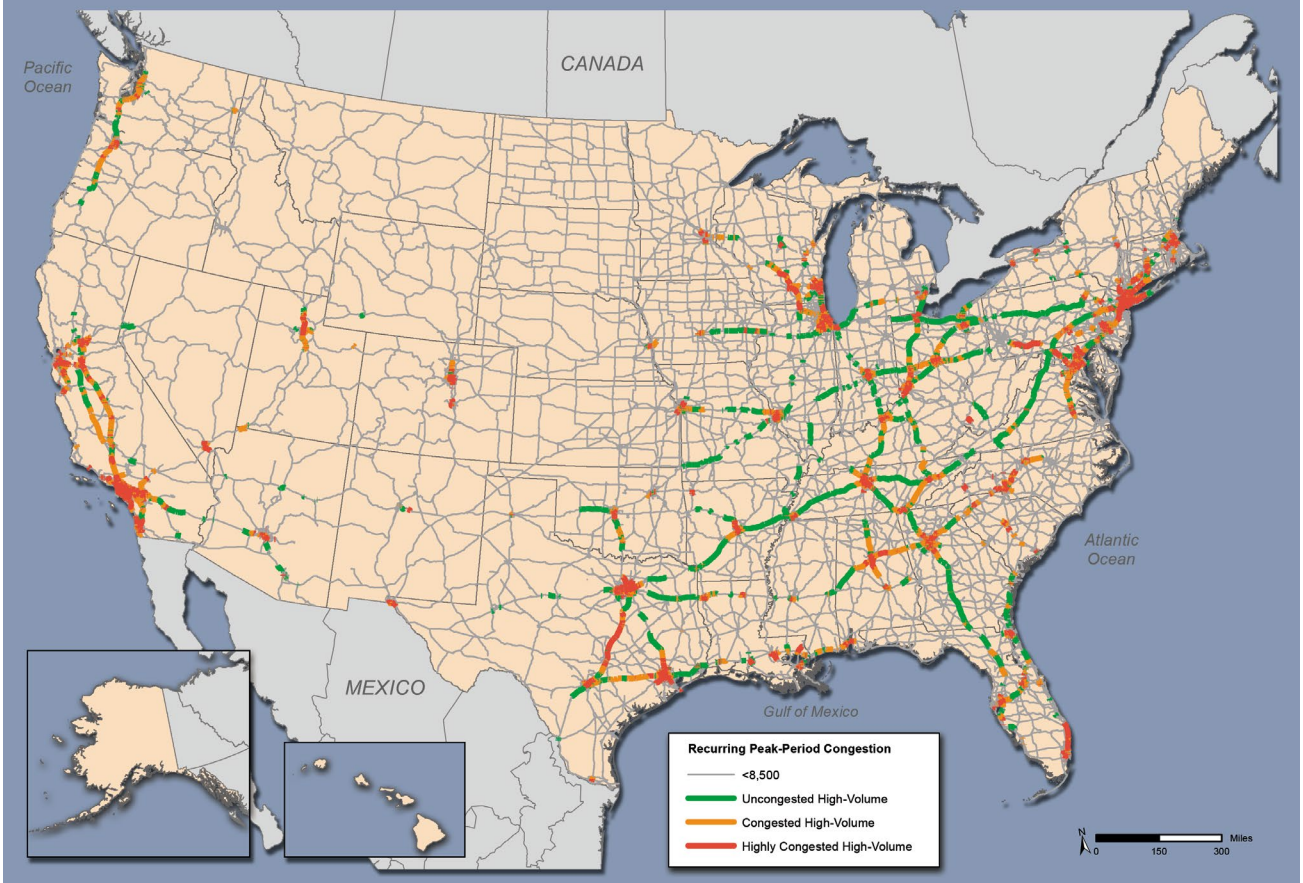


Notes: AADTT is average annual daily truck traffic and includes all freight-hauling and other trucks with six or more tires. AADT is average annual daily traffic and includes all motor vehicles. NHS mileage as of 2011, prior to MAP-21 system expansion.

Assuming no changes in network capacity, increases in truck and passenger vehicle traffic are forecast to expand areas of recurring peak-period congestion to 34 percent of the NHS in 2040 compared with 10 percent in 2011. This will slow traffic on 28,000 miles of the NHS and create stop-and-go conditions on an additional 46,000 miles.

Figure 3-17. Peak-Period Congestion on the National Highway System: 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.

Figure 3-18. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2011

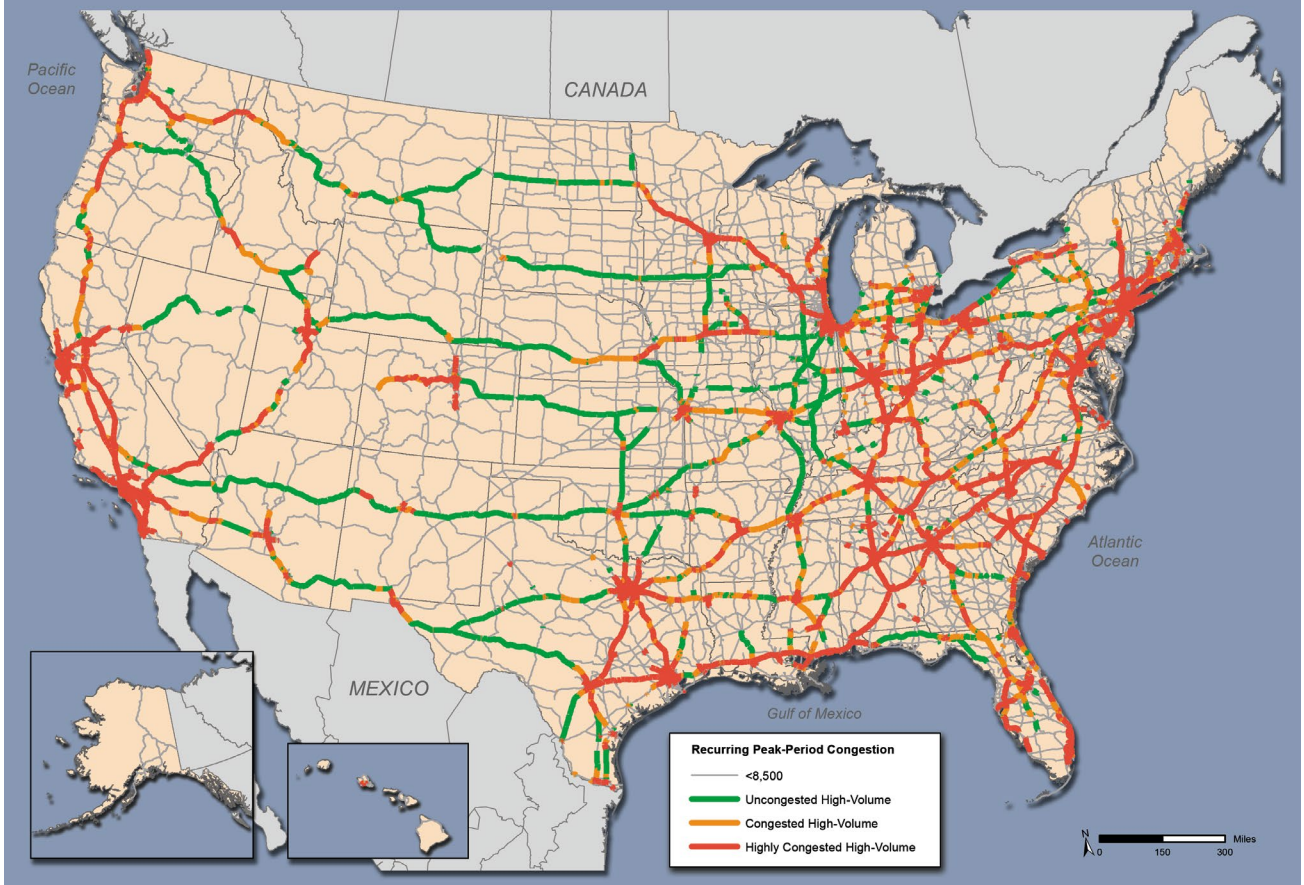


Notes: High-volume truck portions of the National Highway System carry more than 8,500 trucks per day, including freight-hauling long-distance trucks, freight hauling local trucks, and other trucks with six or more tires.
Highly congested segments are stop-and-go conditions with volume/service flow ratios greater than 0.95. Congested segments have reduced traffic speeds with volume/service flow ratios between 0.75 and 0.95.
The volume/service flow ratio is estimated using the procedures outlined in the HPMS Field Manual, Appendix N. NHS mileage as of 2011, prior to MAP-21 system expansion.

Congested highways carrying a large number of trucks substantially impede interstate commerce, and trucks on those segments contribute significantly to congestion. Recurring congestion slows traffic on 5,800 miles and creates stop-and-go conditions on 4,500 miles of the NHS that carry more than 8,500 trucks per day.

Figure 3-18. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2011
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.

Figure 3-19. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2040



Notes: High-volume truck portions of the National Highway System carry more than 8,500 trucks per day, including freight-hauling long-distance trucks, freight hauling local trucks, and other trucks with six or more tires.

Highly congested segments are stop-and-go conditions with volume/service flow ratios greater than 0.95. Congested segments have reduced traffic speeds with volume/service flow ratios between 0.75 and 0.95.

The volume/service flow ratio is estimated using the procedures outlined in the HPMS Field Manual, Appendix N. NHS mileage as of 2011, prior to MAP-21 system expansion.

Assuming no change in network capacity, the number of NHS miles with recurring congestion and a large number of trucks is forecast to increase significantly between 2011 and 2040. On highways carrying more than 8,500 trucks per day, recurring congestion will slow traffic on close to 7,400 miles and create stop-and-go conditions on an additional 22,000 miles.

Figure 3-19. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2013.

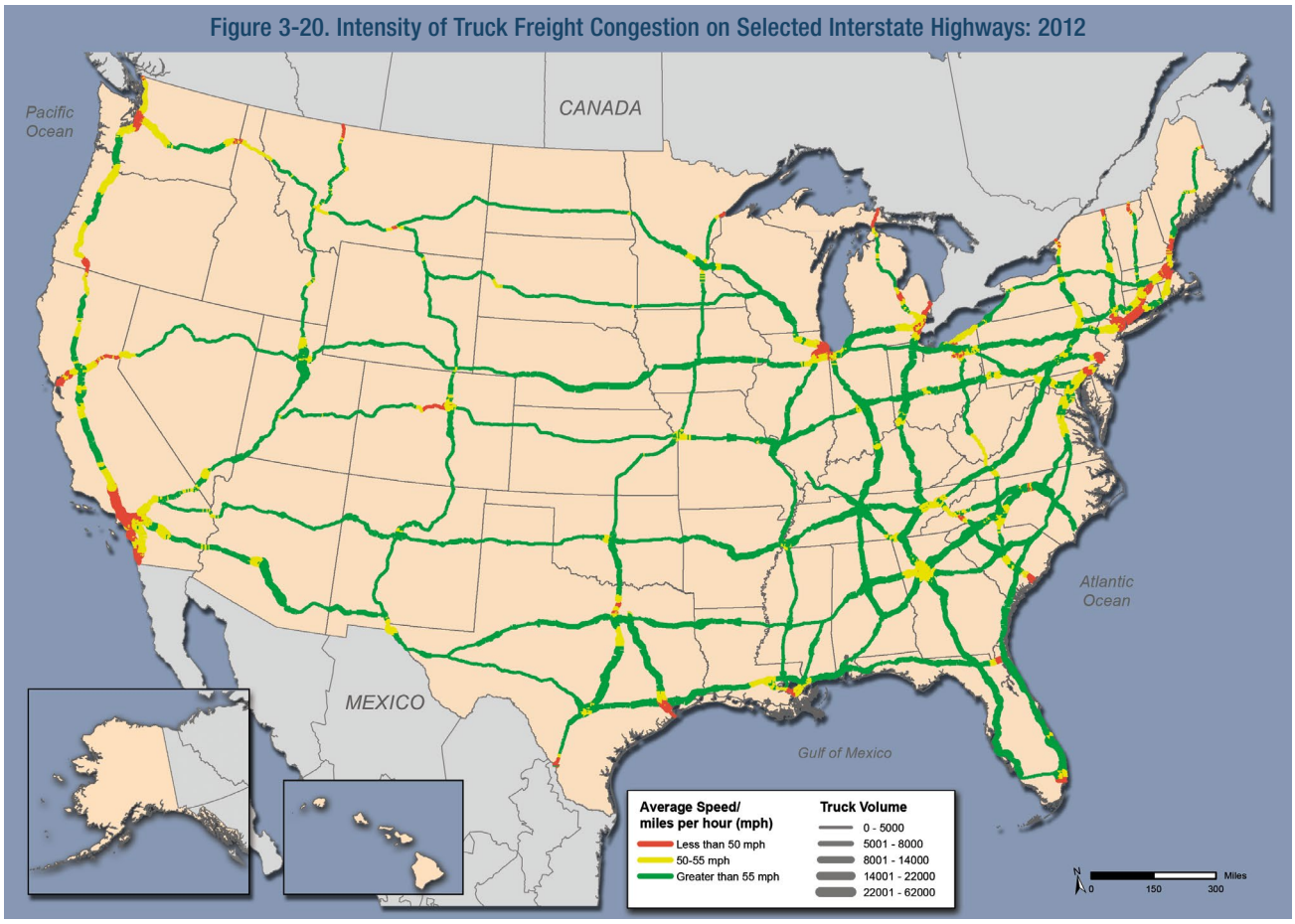
Table 3-13. Performance Measurements for Selected Corridors: July-December 2012

Corridor	Average Speed	Peak Period Average Speed	Non-Peak Period Average Speed	Non-Peak/ Peak Ratio	Buffer Index
I-5: Medford, OR to Seattle	56.24	55.05	57.25	1.04	30.10
I-5/CA 99: Sacramento to Los Angeles	55.90	55.46	56.30	1.02	25.86
I-10: Los Angeles to Tucson	59.50	58.60	60.18	1.03	19.17
I-10: Pensacola to I-75	63.87	63.90	63.85	1.00	4.74
I-10: San Antonio to New Orleans	61.54	60.60	62.34	1.03	23.20
I-30: Little Rock to Dallas	62.61	62.15	62.96	1.01	13.18
I-35: Laredo to Oklahoma City	61.41	60.25	62.25	1.03	20.09
I-40: Knoxville to Little Rock	62.25	61.98	62.48	1.01	15.50
I-40: Oklahoma City to Flagstaff	64.00	63.96	64.05	1.00	9.53
I-40: Raleigh to Asheville	62.37	62.03	62.61	1.01	9.80
I-55/I-39/I-94: St. Louis to Minneapolis	62.38	62.12	62.62	1.01	10.19
I-57/I-74: I-24 (IL) to I-55 (IL)	62.69	62.72	62.68	1.00	10.68
I-65/I-24: Chattanooga to Nashville to Chicago	61.10	60.48	61.58	1.02	20.68
I-70: Kansas City to Columbus	61.86	61.57	62.07	1.01	14.67
I-75: Lexington to Detroit	60.80	60.18	61.30	1.02	20.88
I-75: Tampa to Knoxville	62.45	61.74	62.93	1.02	13.81
I-78/I-76: New York to Pittsburgh	59.82	59.35	60.18	1.01	14.57
I-80: Chicago to I-76 (CO/NE border)	63.15	63.07	63.21	1.00	10.79
I-80: Cleveland to Chicago	62.44	62.46	62.43	1.00	10.54
I-80: New York to Cleveland	60.87	60.26	61.33	1.02	16.65
I-81: Harrisburg to I-40 (Knoxville)	62.43	62.38	62.48	1.00	10.34
I-84: Boise to I-86	62.72	62.54	62.85	1.00	6.34
I-94: Chicago to Detroit	60.47	60.12	60.77	1.01	8.39
I-95: Miami to I-26 (SC)	62.59	61.98	63.05	1.02	15.29
I-95: Richmond to New Haven	55.04	52.57	56.62	1.08	48.35

Notes: For this table, reliability is expressed as a Buffer Index. The Buffer Index represents the extra buffer time (or time cushion) that most drivers add to their average travel time when planning trips to ensure on-time arrival. This extra time is added to account for any unexpected delay. The buffer index is expressed as a percentage and its value increases as reliability gets worse. This formulation of the buffer index uses a 95th percentile travel time to represent a near-worst case travel time. It represents the extra time a traveler should allow to arrive on-time for 95 percent of all trips. A simple analogy is that a driver who uses a 95 percent reliability indicator would be late only one weekday per month. The reliability measure is most meaningful when applied to an actual trip or segment. As it is applied to an entire corridor in this table, the reliability calculation is applied to segments and then averaged for the corridor. The Buffer Index derived is not so much an actual percent that one would apply to determine reliability at any point on the corridor. Instead, it should be used in this case as an overall indicator of performance.

The Federal Highway Administration, (FHWA) Freight Performance Measurement (FPM) Program monitors performance on corridors that have the heaviest freight volumes. Performance measurements for selected highway corridors are shown here. This information is beneficial in understanding freight performance on these corridors and identifying areas in need of operational and capital improvements.

Table 3-13. Performance Measurements for Selected Corridors: July–December 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Performance Measurement Program, special tabulation, 2013.



In addition to calculating peak-period congestion from traffic volumes as shown in other figures, FHWA, in cooperation with private industry, measures the speed and travel time reliability of more than 500,000 trucks on 25 freight-significant corridors on an annual basis. Average truck speeds drop below 55 miles per hour (mph) near major urban areas, border crossings and gateways, and in mountainous terrain.

To facilitate a better understanding of the intensity of truck congestion and travel reliability issues, FHWA combined truck volumes from the FAF with average truck speeds measured by the FPM Program. This information is useful to private- and public-sector freight stakeholders who desire to better understand the magnitude and severity of congestion and the constraints to mobility experienced along highways. Many major urban area Interstates that have heavy truck volumes are experiencing average speeds of less than 55 mph.

Figure 3-20. Intensity of Truck Freight Congestion on Selected Interstate Highways: 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Performance Measurement Program, 2013.

Table 3-14. Top 25 Congested Freight-Significant Locations: 2012

Location	Congestion Ranking	Average Speed (mph)	Peak Period Average Speed (mph)	Non-Peak Period Average Speed (mph)	Non-Peak/ Peak Ratio
Chicago, IL: I-290 at I-90/I-94	1	30.13	22.82	32.89	1.44
Houston, TX: I-610 @ US 290	2	41.99	34.10	45.70	1.34
Austin, TX: I-35	3	35.79	23.12	42.56	1.84
Fort Lee, NJ: I-95 at SR-4	4	28.98	22.67	31.84	1.40
St. Louis, MO: I-70 at I-64 (West)	5	41.62	38.45	42.88	1.12
Louisville, KY: I-65 at I-64/I-71	6	44.93	39.34	47.35	1.20
Houston, TX: I-45 at US-59	7	38.55	30.19	42.49	1.41
Cincinnati, OH: I-71 @ I-75	8	48.12	41.59	50.58	1.22
Houston, TX: I-10 @ I-45	9	45.63	36.21	50.02	1.38
Dallas, TX: I-45 at I-30	10	42.44	34.37	45.71	1.33
Houston, TX: I-10 @ US 59	11	46.65	35.77	52.26	1.46
Chicago, IL: I-90 at I-94 (North)	12	35.39	22.64	40.99	1.81
Denver, CO: I-70 @ I-25	13	44.10	37.65	47.04	1.25
Atlanta, GA: I-285 at I-85 (North)	14	45.69	34.87	50.94	1.46
Los Angeles, CA: SR-60 at SR-57	15	46.43	39.01	49.30	1.26
Houston, TX: I-45 @ I-610 north	16	47.51	38.21	51.99	1.36
Minneapolis - St. Paul, MN: I-35W at I-494	17	44.80	35.01	49.74	1.42
Hartford, CT: I-84 at I-91	18	47.52	38.25	51.37	1.34
Nashville, TN: I-24 @ I-440N Interchange	19	49.17	41.61	52.58	1.26
Brooklyn, NY: I-278 at Belt Parkway	20	39.81	34.18	41.78	1.22
Houston, TX: I-10 @ I-610 west	21	49.69	42.28	52.86	1.25
Indianapolis, IN: I-65 @ I-70 North	22	51.64	48.26	52.93	1.10
Ft. Worth, TX: I-35W at I-30	23	47.64	40.26	50.78	1.26
Atlanta, GA: I-75 at I-285 (North)	24	48.75	38.99	53.30	1.37
Chicago, IL: I-90 at I-94 (South)	25	48.44	41.38	50.78	1.23

Key: mph = miles per hour.

Notes: FHWA monitors 250 freight-significant highway infrastructure locations on an annual basis. These locations were identified over several years through reviews of past research, available highway speed and volume datasets, and surveys of private- and public-sector stakeholders. FHWA developed a freight congestion index to rank congestion's impact on freight. The index factors in the number of trucks using a particular highway facility and the impact that congestion has on average commercial vehicle speed in each of the 250 study areas. These data represent truck travel during weekdays at all hours of the day in 2012. Average speeds below a free flow of 55 miles per hour indicate congestion.

Truck speed and travel time reliability data can be used to identify and quantify major freight truck chokepoints and bottlenecks along highways that are critical to the Nation's freight transportation system. FHWA developed a freight congestion index that ranks congestion's impact on freight movement. The index factors in both the number of trucks using a particular highway facility and the impact that congestion has on the average speed of those vehicles.

On weekdays, average speeds during peak periods (between 6:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 7:00 p.m.) are typically less than those recorded during non-peak periods. Freight traveling across urban Interstate interchanges is affected to the greatest degree by peak-period congestion. At several locations, congestion affects freight mobility during all hours of the day.

Table 3-14. Top 25 Congested Freight-Significant Locations: 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Performance Measurement Program, special tabulation, 2013.

Table 3-15. Largest Improvements in Average Speed for Congested Freight Highway Locations: 2012

Location	Average Speed (mph)			Peak Period Average Speed (mph)			Non-Peak Period Average Speed (mph)		
	2011	2012	Percent change, 2011-2012	2011	2012	Percent change, 2011-2012	2011	2012	Percent change, 2011-2012
Fairfax County, VA: I-495 at I-66	38.87	43.75	12.5	32.26	38.51	19.4	41.09	45.45	10.6
Milwaukee, WI: Mitchell Interchange - 94/894	47.89	53.70	12.1	44.00	51.68	17.5	49.43	54.47	10.2
Spokane, WA: I-90 at SR 195	48.61	54.20	11.5	47.68	54.50	14.3	49.02	54.07	10.3
Louisville, KY: I-65 at I-64/I-71	40.51	44.93	10.9	31.95	39.34	23.1	44.84	47.35	5.6
Buffalo-Niagara Falls, NY: I-90 at I-290	44.04	47.96	8.9	40.98	44.95	9.7	45.51	49.42	8.6
Philadelphia, PA: I-76 at I-476	45.02	48.87	8.6	37.57	41.72	11.0	48.26	51.90	7.5
Dayton, OH: I-75 at U.S. 35 Interchange	46.59	49.98	7.3	40.17	47.93	19.3	49.33	50.76	2.9
Los Angeles, CA: I-405 at I-605	45.46	48.48	6.6	36.76	38.73	5.4	50.39	52.76	4.7

Key: mph = miles per hour.

Several monitored locations have recorded noticeable improvements in performance from 2011 to 2012 when considering the averages over 24 hours.

Table 3-15. Largest Improvements in Average Speed for Congested Freight Highway Locations: 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Performance Measurement Program, special tabulation, 2013.

Delay, reliability, and similar performance measures are typically based on the difference between speed limits and actual speeds. Speed limits for trucks vary from state to state and differ from limits set for passenger vehicles in nine states.

Table 3-16. Maximum Posted Speed Limits on Rural Interstates: 2013 (miles per hour)

State	Truck	Car
Alabama	70	70
Alaska	65	65
Arizona	75	75
Arkansas	65	70
California	55	70
Colorado	75	75
Connecticut	65	65
Delaware	65	65
District of Columbia[1]	55	55
Florida	70	70
Georgia	70	70
Hawaii	60	60
Idaho	65	75
Illinois	65	65
Indiana	65	70
Iowa	70	70
Kansas	70	70
Kentucky	[2]65	[2]65
Louisiana	75	75
Maine	75	75
Maryland	65	65
Massachusetts	65	65
Michigan	60	70
Minnesota	70	70
Mississippi	70	70
Missouri	70	70
Montana	65	75
Nebraska	75	75
Nevada	75	75
New Hampshire	65	65
New Jersey	65	65
New Mexico	75	75
New York	65	65
North Carolina	70	70
North Dakota	75	75
Ohio	65	[3]65
Oklahoma	75	75
Oregon	55	65
Pennsylvania	65	65
Rhode Island	65	65
South Carolina	70	70
South Dakota	75	75
Tennessee	70	70
Texas	[4]70	[4]75
Utah	[5]75	[5]75
Vermont	65	65
Virginia	70	70
Washington	60	70
West Virginia	70	70
Wisconsin	65	65
Wyoming	75	75

[1] Urban Interstate.
[2] Effective July 10, 2007, the posted speed limit is 70 miles per hour (mph) in designated areas on I-75 and I-71.
[3] The posted speed limit is 70 mph on the Ohio Turnpike.
[4] In sections of I-10 and I-20 in rural West Texas, the speed limit for passenger cars and light trucks is 80 mph.
[5] Portions of I-15 have a posted limit of 80 mph.

Table 3-16. Maximum Posted Speed Limits on Rural Interstates: 2013
Source: Insurance Institute for Highway Safety, Maximum Posted Speed Limits for Passenger Vehicles, available at *www.iihs.org/iihs/topics/t/speed/topicoverview* as of September 20, 2013.

Table 3-17. Average Truck Speeds on Selected Metropolitan Area Roadways: 2012
(miles per hour)

Metropolitan Area	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Atlanta, GA	54.05	53.99	53.70	53.73
Boston, MA	48.35	47.93	46.95	47.31
Chicago, IL	51.96	51.66	51.44	51.75
Dallas, TX	55.96	55.65	55.86	56.05
Detroit, MI	49.98	49.43	49.45	49.15
Houston, TX	53.59	53.76	53.11	53.44
Los Angeles, CA	43.35	42.73	42.58	43.37
Miami, FL	56.74	57.09	56.75	57.12
New York, NY	51.60	50.86	50.78	50.45
Philadelphia, PA	48.56	47.52	48.10	48.11
Phoenix, AZ	57.71	57.41	57.25	57.97
San Francisco, CA	45.72	44.84	43.96	43.98
Seattle, WA	49.92	51.78	50.82	49.77
Washington, DC	55.35	53.98	53.84	54.38

Analysis has shown truck speed and reliability decrease in urban areas. FHWA uses FPM Program data to measure truck speeds within 14 very large Census Metropolitan Statistical Areas. In 2012, five of the fourteen metropolitan areas had average truck speeds of less than 50 mph on their Interstates.

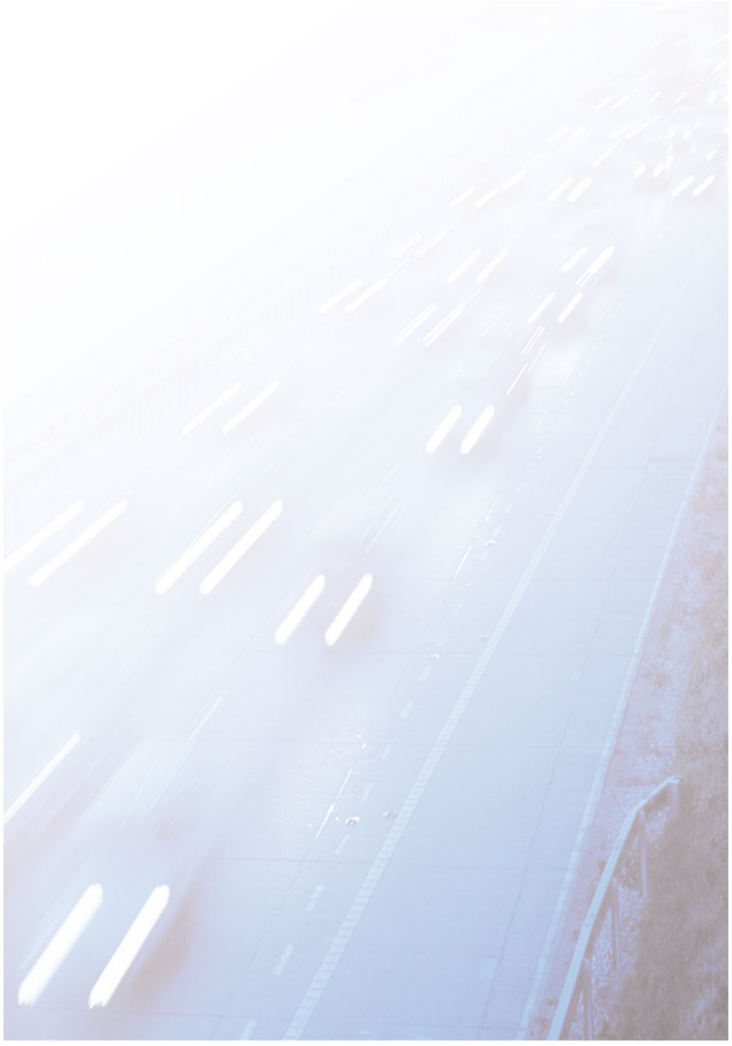


Table 3-17. Average Truck Speeds on Selected Metropolitan Area Roadways: 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Performance Measurement Program, special tabulation, 2013.

Table 3-18. Truck Trip Reliability as Indicated by Minimum and Maximum Travel Times Between Selected City-Pairs: 2012

Location	Northbound/ Eastbound Minimum	Northbound/ Eastbound Maximum	Maximum/ Minimum Percent Difference	Southbound/ Westbound Minimum	Southbound/ Westbound Maximum	Maximum/ Minimum Percent Difference
Atlanta, GA - Savannah, GA	4:00:03	4:45:22	17.2	4:00:34	4:37:08	14.1
Chicago, IL - Milwaukee, WI	1:32:29	2:30:45	47.9	1:31:51	3:00:55	65.3
Chicago, IL - Nashville, TN	7:57:04	8:54:44	11.4	7:54:55	8:44:02	9.8
Detroit, MI - Chicago, IL	4:50:10	5:32:07	13.5	4:52:19	5:45:45	16.7
Detroit, MI - Grand Rapids, MI	2:31:51	3:02:20	18.2	2:32:22	3:00:24	16.8
Houston, TX - Beaumont, TX	1:24:46	1:50:50	26.7	1:24:44	1:52:25	28.1
Houston, TX - Dallas, TX	3:46:27	4:38:02	20.5	3:49:07	4:38:58	19.6
Houston, TX - San Antonio, TX	3:20:14	4:24:42	27.7	3:22:44	4:29:22	28.2
Indianapolis, IN - Chicago, IL	3:09:37	4:01:10	23.9	3:07:43	3:43:27	17.4
Las Vegas, NV - Los Angeles, CA	4:19:22	5:49:04	29.5	4:31:46	5:47:41	24.5
Los Angeles, CA - San Francisco, CA	7:09:31	8:29:24	17.0	7:13:36	8:42:18	18.6
Miami, FL - Tampa, FL	4:49:04	6:02:54	22.6	4:49:37	6:00:59	21.9
Nashville, TN - Indianapolis, IN	4:44:25	5:31:29	15.3	4:45:43	5:26:16	13.3
New York, NY - Albany, NY	2:45:54	4:03:50	38.0	2:46:30	3:49:55	32.0
New York, NY - Buffalo, NY	7:32:01	9:08:00	19.2	7:31:49	8:42:38	14.5
New York, NY - Hartford, CT	1:59:23	3:38:55	58.8	2:00:16	3:50:13	62.7
Philadelphia, PA - New York, NY	1:43:58	3:38:29	71.0	1:39:58	3:24:14	68.6
Phoenix, AZ - Los Angeles, CA	6:20:32	7:33:49	17.6	6:33:45	7:48:14	17.3
Phoenix, AZ - Tucson, AZ	1:51:05	2:24:36	26.2	1:51:12	2:26:07	27.1
San Antonio, TX - Austin, TX	1:25:50	2:22:29	49.6	1:26:23	2:30:31	54.2
San Diego, CA - Los Angeles, CA	2:16:10	4:10:51	59.3	2:14:54	4:08:40	59.3
San Francisco, CA - Sacramento, CA	1:37:33	3:04:44	61.8	1:33:42	2:39:18	51.9
Seattle, WA - Portland, OR	2:57:23	4:08:27	33.4	2:56:51	4:00:12	30.4
Tampa, FL - Orlando, FL	1:21:07	2:05:28	42.9	1:23:07	2:03:38	39.2
Washington, DC - Baltimore, MD	0:56:22	1:40:41	56.4	0:55:01	1:46:08	63.4

Notes: Travel times are shown in hours, minutes, and seconds. The trip times were calculated between city centers using Interstate average travel speed data from the Freight Performance Measurement Program.

Intercity travel-time reliability is a key freight performance measure. It influences logistics, operational strategies, and load optimization. FHWA analyzed the truck trip reliability of key city-pair origins and destinations. Travel time between Philadelphia and New York City showed the greatest change, increasing 1 hour and 10 minutes in the northbound direction and more than 1 hour and four minutes in the southbound direction. Other city pairs also experienced large negative changes in travel-time reliability.

Table 3-18. Truck Trip Reliability as Indicated by Minimum and Maximum Travel Times Between Selected City-Pairs: 2012

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Performance Measurement Program, special tabulation, 2013.

Table 3-19. Number of Incoming Trucks, Trains and Loaded Containers Crossing the U.S.-Mexico and U.S.-Canada Borders: 2000, 2005, and 2009-2012 (thousands)

Metropolitan Area	2000	2005	2009	2010	2011	2012
Canadian Border						
Trucks	7,048	6,784	5,021	5,444	5,490	5,624
Loaded Truck Containers	5,335	5,819	3,897	4,171	4,049	4,069
Trains	33	33	24	26	27	29
Loaded Rail Containers	1,215	1,458	1,023	1,209	1,288	1,432
Mexican Border						
Trucks	4,526	4,676	4,291	4,743	4,868	5,104
Loaded Truck Containers	2,350	3,031	2,729	3,174	3,277	3,460
Trains	7	9	7	8	8	9
Loaded Rail Containers	266	336	239	318	359	400

Note: Trains include both passenger and freight trains.

A large number of trucks and trains carry goods into the United States from Mexico and Canada. In 2012, 5.1 million trucks hauled nearly 3.5 million loaded containers into the United States from Mexico, an increase of 13 percent and 47 percent, respectively, over 2000 levels. This increased traffic reflects a doubling in U.S.-Mexico trade, as discussed in chapter 2. In contrast, the number of incoming trucks and loaded containers from Canada declined by 20 percent and 24 percent, respectively, while incoming loaded rail containers increased by 18 percent between 2000 and 2012.

Table 3-19. Number of Incoming Trucks, Trains, and Loaded Containers Crossing the U.S-Mexico and U.S-Canada Borders: 2000, 2005, and 2009-2012

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, based on data from the Department of Homeland Security, U.S. Customs and Border Protection, Office of Field Operations, available at *http://transborder.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html* as of October 3, 2013.

Table 3-20. Average Time for Commercial Vehicles to Travel One Mile At Selected U.S.-Canada Border Crossings: 2012

Location	Direction	Average Minutes per Mile
Ambassador Bridge - Detroit, MI	Inbound	6.1
	Outbound	4.2
Port Huron, MI	Inbound	5.4
	Outbound	3.9
Peace Bridge - Buffalo, NY	Inbound	5.3
	Outbound	4.8
Lewiston-Queenston Bridge - Lewiston, NY	Inbound	4.5
	Outbound	4.1
Champlain, NY	Inbound	5.5
	Outbound	4.0
Blaine, WA	Inbound	7.8
	Outbound	6.2
Alexandria Bay, NY	Inbound	5.5
	Outbound	4.2
Pembina, ND	Inbound	5.7
	Outbound	3.9
Derby, VT	Inbound	4.5
	Outbound	3.4
Calais, ME	Inbound	3.7
	Outbound	4.0
Sumas, WA	Inbound	5.4
	Outbound	5.8
Highgate, VT	Inbound	3.7
	Outbound	2.7
Houlton, ME	Inbound	4.3
	Outbound	3.4
Sweetgrass, MT	Inbound	7.4
	Outbound	5.5
Jackman, ME	Inbound	5.9
	Outbound	4.2

Border crossings are potential bottlenecks in the freight transportation network. FHWA monitors truck crossing times at 15 U.S.-Canada border crossings. At all but two borders, transit times were longer for inbound U.S. traffic than for travel to Canada.

Table 3-20. Average Time for Commercial Vehicles to Travel One Mile At Selected U.S.-Canada Border Crossings: 2012

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, special tabulation, 2013.

Table 3-21. Average Truck Transit Times at Selected U.S.-Mexico Border Crossings: 2012

Month	Bridge of the Americas - El Paso, Texas (minutes)	Pharr-Reynosa International Bridge - Pharr, Texas (minutes)
January	53	60
February	47	63
March	54	62
April	57	56
May	45	48
June	46	43
July	48	43
August	44	45
September	42	45
October	42	55
November	47	55
December	NA	NA

Key: NA = not available.

The U.S. Department of Transportation in partnership with the Texas Department of Transportation also measures transit times from Mexico to the Unites States at the Bridge of the Americas and the Pharr-Reynosa International Bridge. The data are collected using radio frequency identification technology installed at the start of the crossing (typically the end of the queue) and at the vehicle safety inspection station exit (the end of the crossing trip). Vehicle identification information is anonymously collected and time-stamped at each reader station, and travel time is calculated between the reader stations.

Table 3-21. Average Truck Transit Time at Selected U.S.-Mexico Border Crossings: 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations; U.S. Department of Transportation, Intelligent Transportation Systems Joint Program Office; and Texas Department of Transportation, 2013.

IV. ECONOMIC CHARACTERISTICS OF THE FREIGHT TRANSPORTATION INDUSTRY

The freight transportation industry is an important part of the U.S. economy. It employs millions of people and comprises 11.7 percent of the Nation's economic activity, as measured by gross domestic product.

Table 4-1. Transportation Fixed Assets: 2000, 2005, and 2010-2012 (billions of current dollars)

	2000	2005	2010	2011	2012	Percent change, 2000 to 2012
Private Sector						
Transportation Equipment[1]	828	980	1,001	1,037	1,108	33.8
Transportation Structures[2]	450	557	656	680	690	53.5
Public Sector						
Highways	1,435	2,056	2,939	3,132	3,265	127.5
Transportation Structures[2]	261	413	592	635	663	154.3
Federal	6	10	14	15	13	104.7
State and Local	254	403	578	621	650	155.5

[1] Includes trucks, truck trailers, buses, automobiles, aircraft, ships, boats, and railroad equipment.

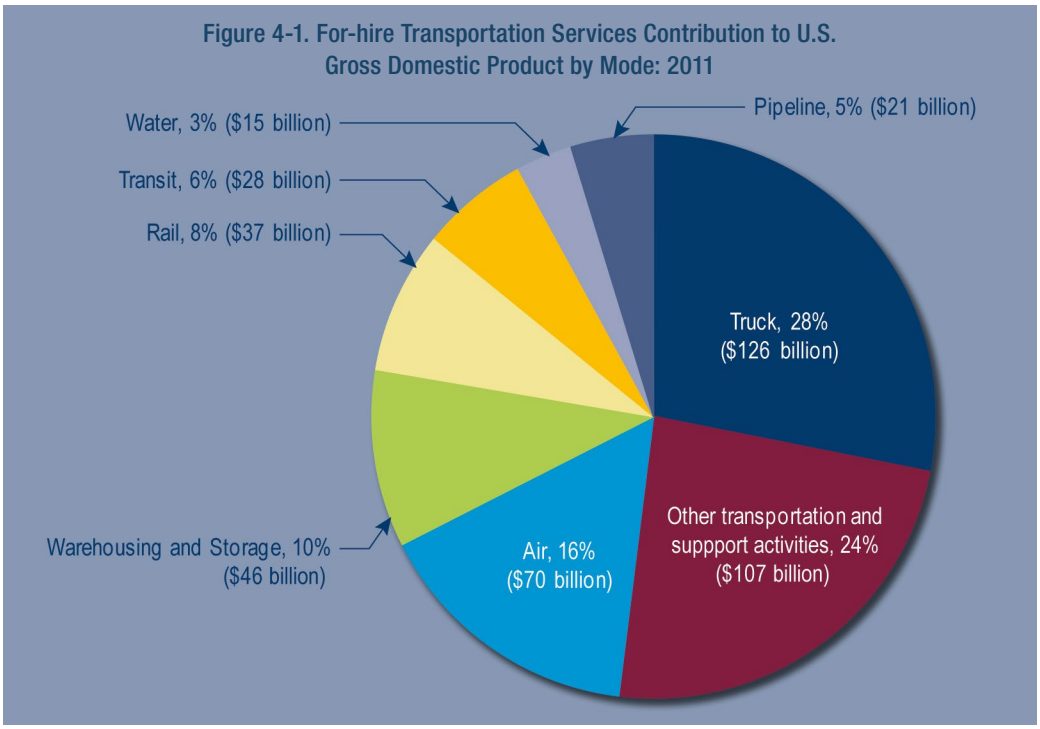
[2] Includes physical structures for all modes of transportation.

Fixed transportation assets reflect the important role of both public and private sectors in moving freight. The freight railroad facilities and services are almost entirely private, while private-sector trucks operate over public highways. Air-cargo services in the private sector operate in public airways and mostly public airports, and ships in the private sector serve public waterways and both public and private port facilities. Pipelines are mostly privately owned, although significantly controlled by public regulation. In the public sector, virtually all truck routes are owned and maintained by state or local governments. Airports and harbors are typically owned by public authorities, although terminals are usually owned or managed by private operators. Air and water navigation is mostly controlled by the Federal government, and safety is regulated by all levels of government.

Total private and public fixed assets grew from just over $27.7 trillion in 2000 to $48.7 trillion in 2012 (current U.S. dollars). Transportation equipment and structures (private and public) accounted for approximately 12 percent of the total in 2012. The components of transportation fixed assets and their 2012 values are private transportation equipment ($1.11 trillion), private transportation structures ($690 billion), and government transportation structures ($3.93 trillion).[1]

[1] See the U.S. Department of Commerce, Bureau of Economic Analysis, Fixed Assets tables 1.1, 2.1, 3.1s and 7.1b for total and transportation fixed assets data. Both passenger and freight data are included under transportation fixed assets.

Table 4-1. Transportation Fixed Assets: 2000, 2005, and 2010-2012
Source: U.S. Department of Commerce, Bureau of Economic Analysis, National Economic Accounts, Fixed Assets Tables, tables 2.1, 3.1s, and 7.1b, available at *www.bea.gov/iTable/index_FA.cfm* as of October 17, 2013.



Transportation contributes to the nation's economic output, as measured by gross domestic product (GDP). In 2011, for-hire transportation contributed $448 billion to U.S. GDP. The for-hire trucking mode contributed the largest share (28 percent), followed by air (16 percent). BTS analysis found that transportation services provided by nontransportation industries for their own use, referred to as in-house transportation sector, are almost as large as the for-hire sector.

Figure 4-1. For-Hire Transportation Services Contribution to Gross Domestic Product by Mode: 2011

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Industry Economic Accounts, as cited in the U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, table 3-1, available at *www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/index.html* as of October 3, 2013.

Table 4-2. Economic Characteristics of Transportation and Warehousing Establishments in Freight-Dominated Modes: 2002 and 2007

NAICS	Establishments		Revenue (millions of current $)		Payroll (millions of current $)		Paid Employees	
	2002	2007	2002	2007	2002	2007	2002	2007
Transportation and warehousing, Total	**199,618**	**219,706**	**382,152**	**639,916**	**115,989**	**173,183**	**3,650,859**	**4,454,383**
Rail transportation	NA	NA	NA	NA	NA	NA	NA	NA
Water transportation	1,890	1,721	23,331	34,447	3,194	4,544	66,153	75,997
Truck transportation	112,642	120,390	164,219	217,833	47,750	58,266	1,435,210	1,507,923
Pipeline transportation	2,188	2,529	22,031	25,718	2,477	3,219	36,790	36,964
Support activities for transportation	33,942	42,130	57,414	86,596	16,202	24,579	465,616	608,385
Couriers and messengers	12,655	13,004	58,165	77,877	17,175	20,431	561,514	557,195
Warehousing and storage	12,671	13,938	16,548	21,921	17,183	25,526	565,533	720,451

Key: NA = not available; NAICS = North American Industry Classification System.
Notes: Total includes air transportation, transit and ground passenger transportation, and scenic and sightseeing transportation. Data are for establishments in which transportation is the primary business. Data exclude transportation provided privately, such as trucking organized "in-house" by a grocery company. Data are not collected for rail transportation or for governmental organizations even when their primary activity would be classified in industries covered by the Economic Census. For example, data are not collected for publicly operated buses and subway systems.

The freight industry has many components, encompassing companies large and small. All told there were nearly 220,000 transportation and warehousing establishments in 2007, with more than one-half of those primarily engaged in trucking. Revenue generated by trucking accounted for about 34 percent of transportation and warehousing sector revenue while warehousing accounted for a small percentage of the total.

Table 4-3. Economic Characteristics of Freight Railroads: 2000 and 2011

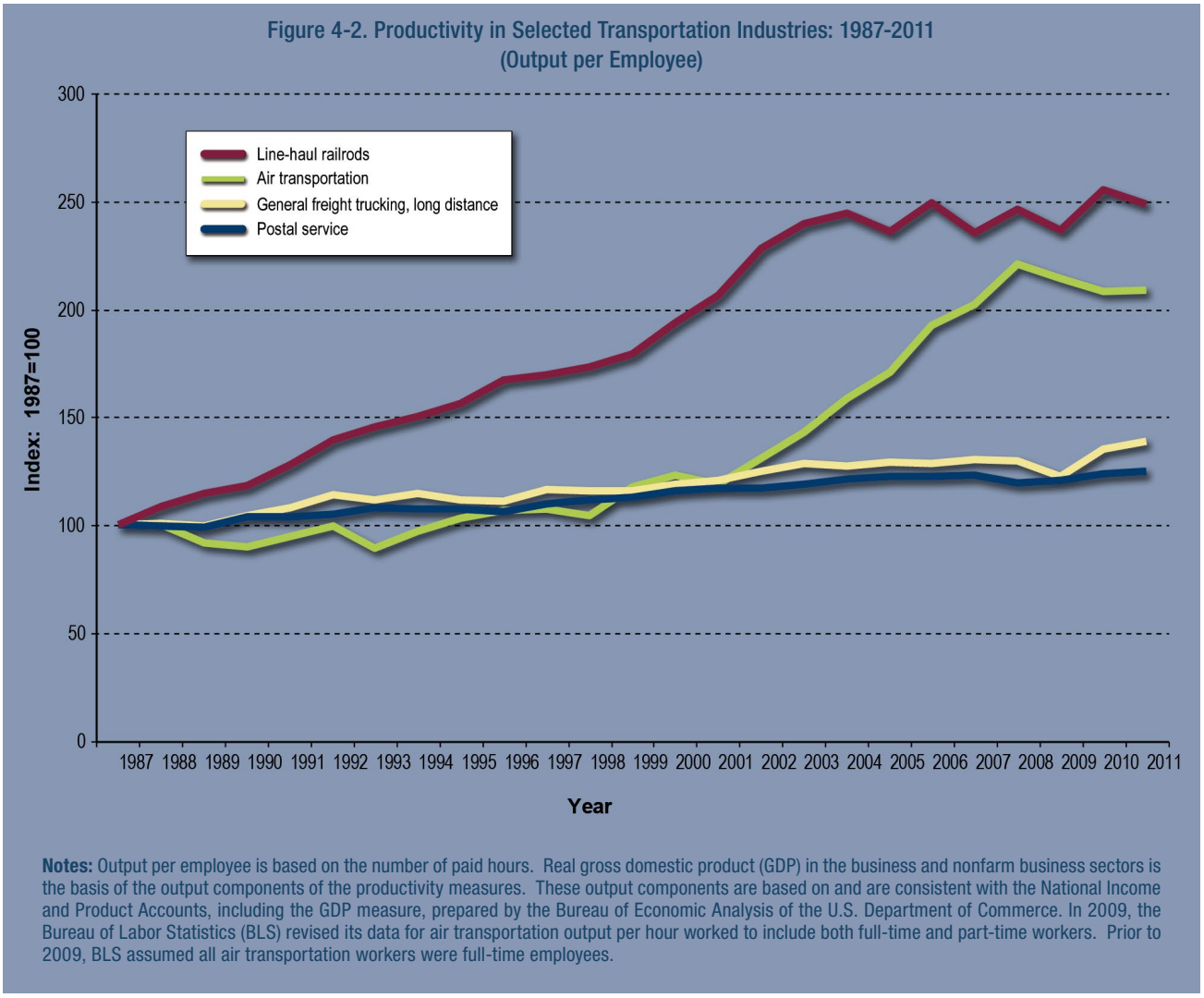
	Class I		Non-Class I		Total	
	2000	2011	2000	2011	2000	2011
Number of railroads	8	7	552	560	560	567
Freight revenue (billions of current dollars)	33.1	65.0	3.2	4.0	36.3	68.9
Operating revenue (billions of current dollars)	34.1	67.4	NA	NA	NA	NA
Employees	168,360	158,623	23,448	17,317	191,808	175,940

Key: NA = not available.
Note: Class I railroads have annual carrier operating revenue of $433.2 million or more. Numbers may not add to totals due to rounding.

Railroads include Class I (national), Class II (regional), and Class III (local) carriers. In all three classes of railroads, revenue grew while employment declined between 2000 and 2011.

Table 4-2. Economic Characteristics of Transportation and Warehousing Establishments in Freight-Dominated Modes: 2002 and 2007
Sources: 2002: U.S. Department of Commerce, Census Bureau, 2002 Economic Census, Transportation and Warehousing, United States (Washington, DC: 2004), available at *www.census.gov/econ/census02/data/us/US000_48.HTM* as of September 20, 2013; **2007:** U.S. Department of Commerce, Census Bureau, 2007 Economic Census, Transportation and Warehousing, United States (Washington, DC: 2010), available at *www.census.gov/econ/census07* as of September 20, 2013.

Table 4-3. Economic Characteristics of Freight Railroads: 2000 and 2011
Source: Association of American Railroads, Railroad Facts (Washington, DC: annual issues), p. 3.



Between 1987 and 2011, output-per-hour worked more than doubled in line-haul railroading. (Line-haul railroads do not include switching and terminal operations or short-distance/local railroads.) Long-distance, general-freight trucking grew by 39 percent over the same period. However, in recent years trucking has grown more rapidly. (Long-distance, general-freight trucking establishments exclude local trucking and truck operators that require specialized equipment, such as flatbeds, tankers, or refrigerated trailers.)

Figure 4-2. Productivity in Selected Transportation Industries: 1987-2011
Sources: U.S. Department of Labor, Bureau of Labor Statistics, Industry Productivity, available at *www.bls.gov/lpc/* as of October 2, 2013.

Table 4-4. Employment in For-Hire Transportation Establishments Primarily Serving Freight: 1990, 2000, and 2010-2012[1] (thousands)

	1990	2000	2010	2011	2012
Total U.S. labor force[2]	**109,487**	**131,785**	**130,346**	**132,186**	**134,691**
Transportation and warehousing	3,476	4,410	4,235	4,322	4,494
Rail transportation	272	232	223	232	230
Water transportation	57	56	63	63	63
Truck transportation	1,122	1,406	1,271	1,318	1,371
Air Transportation[3]	541	628	454	456	451
Pipeline transportation	60	46	42	43	44
Support activities for transportation[4]	364	537	548	574	589
Couriers and messengers	375	605	527	522	560
Warehousing and storage	407	514	643	650	696

[1] Annual averages.
[2] Excludes farm employment.
[3] Data for air transportation includes passenger and freight transportation employment.
[4] Industries in the support activities for transportation subsector provide services to transportation carrier establishments or to the general public. This subsector includes a wide array of establishments, including air traffic control services, marine cargo handling, and motor vehicle towing.

Notes: These data include workers employed in transportation industries but not necessarily in a transportation occupation, such as a lawyer working for a trucking company. Moreover, these data exclude workers in transportation occupations employed by non-transportation industries, such as a truck driver employed by a retail company.

Employment in the truck and water transportation industries has grown since 1990, while railroads, air transportation, and pipelines have experienced a decline in the number of employees. Between 1990 and 2012, pipelines showed the greatest decline, followed by air. Trucking in 2012 accounted for nearly 31 percent of total transportation and warehousing sector employment.

Table 4-4. Employment in For-Hire Transportation Establishments Primarily Serving Freight: 1990, 2000, and 2010-2012
Source: U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics survey, available at *www.bls.gov/ces* as of October 3, 2013.

Table 4-5. Employment in Selected Freight Transportation and Freight Transportation-Related Occupations: 2000 and 2010-2012

Occupation (SOC code)	2000	2010	2011	2012
Vehicle operators, pipeline operators, and primary support				
Driver/sales worker (53-3031)	373,660	371,670	387,950	394,110
Truck drivers, heavy and tractor-trailer (53-3032)	1,577,070	1,466,740	1,508,620	1,556,510
Truck drivers, light or delivery services (53-3033)	1,033,220	780,260	771,210	769,010
Locomotive engineers (53-4011)	29,390	40,750	38,790	37,060
Rail yard engineers, dinkey operators, and hostlers (53-4013)	4,020	5,600	5,060	5,170
Railroad brake, signal, and switch operators (53-4021)	16,830	22,760	23,830	24,380
Railroad conductors and yardmasters (53-4031)	40,380	42,700	44,280	42,740
Sailors and marine oilers (53-5011)	30,090	31,690	31,280	31,500
Captains, mates, and pilots of water vessels (53-5021)	21,080	29,280	30,220	30,860
Ship engineers (53-5031)	7,370	9,470	10,010	10,760
Bridge and lock tenders (53-6011)	4,790	3,250	3,420	3,460
Gas compressor and gas pumping station operators (53-7071)	6,510	4,040	3,870	4,350
Pump operators, except wellhead pumpers (53-7072)	13,730	9,440	12,150	11,870
Transportation equipment manufacturing and maintenance occupations				
Bus and truck mechanics and diesel engine specialists (49-3031)	258,800	222,770	222,940	230,030
Rail car repairers (49-3043)	10,620	19,280	19,480	19,140
Transportation Infrastructure construction and maintenance occupations				
Rail-track laying and maintenance equipment operators (47-4061)	9,940	15,520	15,590	16,870
Signal and track switch repairers (49-9097)	5,540	7,400	8,300	8,600
Dredge operators (53-7031)	3,100	1,720	1,590	1,740
Secondary support service occupations				
Dispatchers, except police, fire, and ambulance (43-5032)	167,180	180,540	182,310	184,890
Postal service mail carriers (43-5052)	354,980	324,990	315,330	305,490
Shipping, receiving, and traffic clerks (43-5071)	864,530	687,850	687,940	690,780
Transportation inspectors (53-6051)	26,520	24,280	24,810	24,310
Tank car, truck, and ship loaders (53-7121)	17,480	10,390	10,960	12,390

Key: SOC = Standard Occupational Classification.

Freight transportation jobs are not limited to for-hire carriers. Truck driving is by far the largest freight transportation occupation in the United States, and many drivers work for retailers and other establishments with shipper-owned trucks. There were approximately 2.72 million truck drivers in 2012; about 57 percent of these professionals drive heavy/tractor trailer trucks, 28 percent drive light/delivery service trucks, and about 15 percent are driver/sales workers.

Table 4-5. Employment in Selected Freight Transportation and Freight Transportation-Related Occupations: 2000 and 2010-2012
Source: U.S. Department of Labor, Bureau of Labor Statistics, National Occupational Employment and Wages, 2012, available at *www.bls.gov/oes* as of October 2, 2013.

Table 4-6. Producer Price Indices for Selected Transportation Services: 1990, 2000, 2003, and 2007-2011

	1990	2000	2003	2007	2008	2009	2010	2011
Air Transportation (NAICS 481)[1]	NA	147.7	162.1	183.7	203.8	188.5	202.9	218.3
Scheduled Air Transportation (NAICS 4811)[2]	110.2	180.1	198.5	224.5	248.9	229.1	247.7	267.9
Scheduled Freight Air Transportation (NAICS 481112)	NA	NA	100.0	109.0	127.8	119.1	130.2	145.9
Nonscheduled Air Transportation (NAICS 4812)[3]	NA	107.3	117.8	148.5	165.8	160.4	165.4	168.1
Rail Transportation (NAICS 482)[3]	NA	102.6	108.8	140.9	157.3	148.5	156.2	169.8
Line-Haul Railroads (NAICS 482111)[4]	107.5	114.5	121.4	157.2	175.5	165.6	174.3	189.4
Water Transportation (NAICS 483)	NA	NA	100.0	113.5	127.0	116.1	125.5	133.4
Deep Sea Freight Transportation (NAICS 483111)[5]	113.1	155.8	219.9	230.0	258.3	218.8	244.8	253.8
Coastal and Great Lakes Freight Transportation (NAICS 483113)	NA	NA	100.0	130.2	141.8	137.4	146.7	158.5
Inland Water Freight Transportation (NAICS 483211)	100.0	117.9	124.7	186.1	218.3	211.4	217.4	235.9
Truck Transportation (NAICS 484)	NA	NA	100.0	115.4	123.0	117.3	119.4	126.4
General Freight Trucking (NAICS 4841)	NA	NA	100.0	116.5	123.6	117.5	119.3	126.8
General Freight Trucking, Local (NAICS 48411)	NA	NA	100.0	119.6	130.2	126.0	127.2	130.5
General Freight Trucking, Long Distance (NAICS 48412)	NA	NA	100.0	115.9	122.2	115.5	117.5	126.1
Specialized Freight Trucking (NAICS 4842)	NA	NA	100.0	113.1	122.1	117.4	119.9	125.7
Used Household and Office Goods Moving (NAICS 48421)	NA	NA	100.0	108.8	112.2	112.8	114.7	122.9
Specialized Freight (except Used Goods) Trucking, Local (NAICS 48422)	NA	NA	100.0	114.2	126.7	123.9	126.5	131.3
Specialized Freight (except Used Goods) Trucking, Long Distance (NAICS 48423)	NA	NA	100.0	114.8	123.6	113.2	115.8	121.4
Pipeline Transportation (NAICS 486)	NA	NA	NA	NA	NA	NA	NA	NA
Pipeline Transportation of Crude Oil (NAICS 4861)	NA	NA	100.0	125.4	137.1	141.0	183.4	184.7
Other Pipeline Transportation (NAICS 4869)[6]	NA	NA	100.0	115.0	121.6	128.7	133.8	137.3
Support Activities for Transportation (NAICS 488)	NA	NA	100.0	108.5	111.7	108.6	110.7	114.0
Support Activities for Water Transportation (NAICS 4883)[7]	NA	NA	100.0	112.7	117.3	116.8	120.2	123.9
Navigational Services to Shipping (NAICS 48833)	NA	NA	100.0	120.6	133.8	122.9	122.9	129.3
Freight Transportation Arrangement (NAICS 4885)[3]	NA	98.3	97.9	100.2	102.5	94.8	95.2	98.7
Postal Service (NAICS 491)	100.0	135.2	155.0	171.9	178.9	185.0	187.7	190.6
Couriers and Messengers (NAICS 492)	NA	NA	100.0	131.5	142.0	141.5	153.4	168.8

Key: NA = not available; NAICS = North American Industry Classification System.

[1] Base year = 1992.

[2] Base year = 1989.

[3] Base year = 1996.

[4] Base year = 1984.

[5] Base year = 1988.

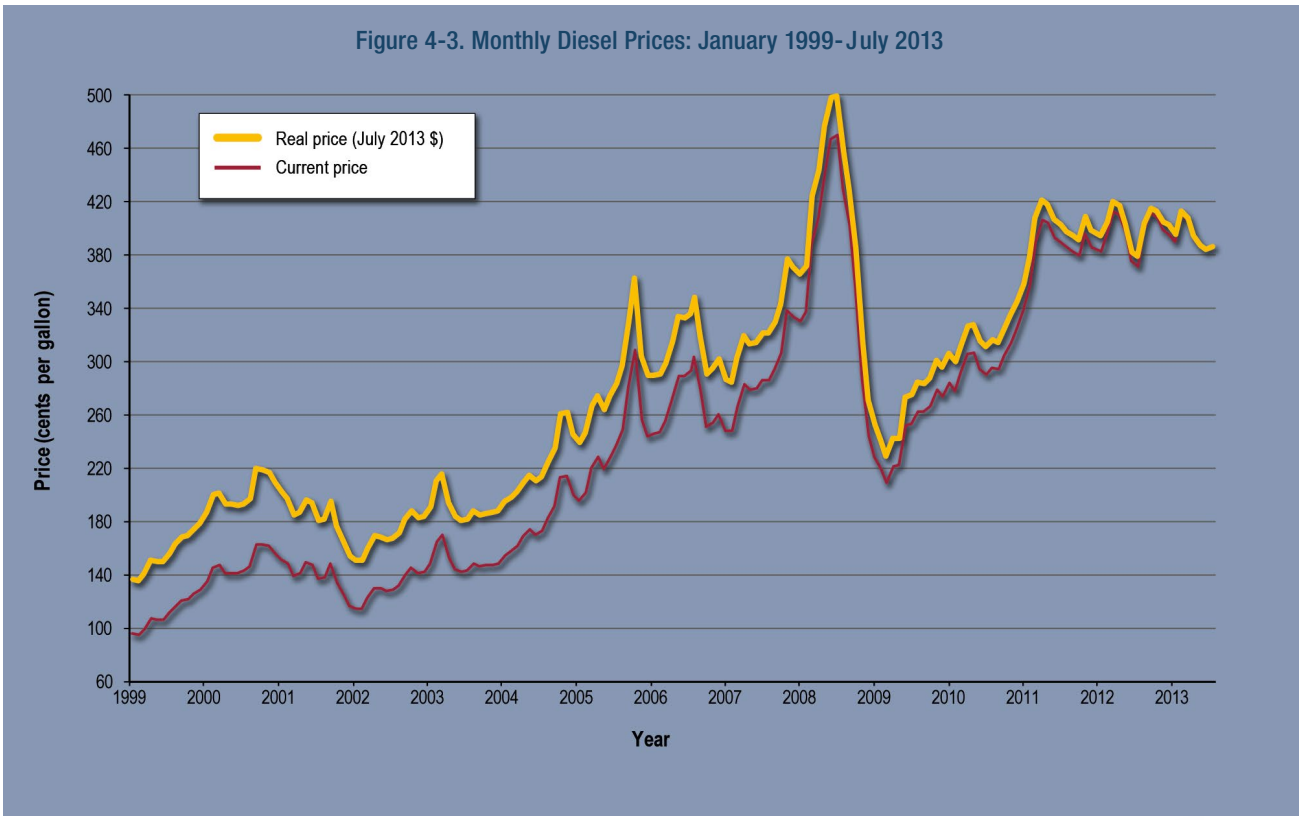
[6] Other pipeline transportation includes pipeline transportation of refined petroleum products (NAICS 48691).

[7] Support activities for water transportation include port and harbor operations (NAICS 48831), marine cargo handling (NAICS 48832), and navigational services to shipping (NAICS 48833).

Notes: Index values start at 100.0 in 2003 unless another year is specified. This table shows annual data, which are calculated by the Bureau of Labor Statistics by averaging monthly indices. 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.

From 2010 to 2011, the prices charged for transportation purchased from carriers and support activities have gone up in all industries shown in table 4-6. Rail transportation prices increased by nearly 9 percent and air prices by more than 7 percent.

Table 4-6. Producer Price Indices for Selected Transportation Services: 1990, 2000, 2003, and 2007-2011
Source: U.S. Department of Labor, Bureau of Labor Statistics, Producer Price Index Industry Data, available at *www.bls.gov/data/sa.htm* as of October 2, 2013.



Diesel prices were about 112 percent higher in July 2013 than 10 years earlier (in inflation-adjusted terms). Diesel prices peaked in the summer of 2008 followed by a sharp decline during the economic recession.

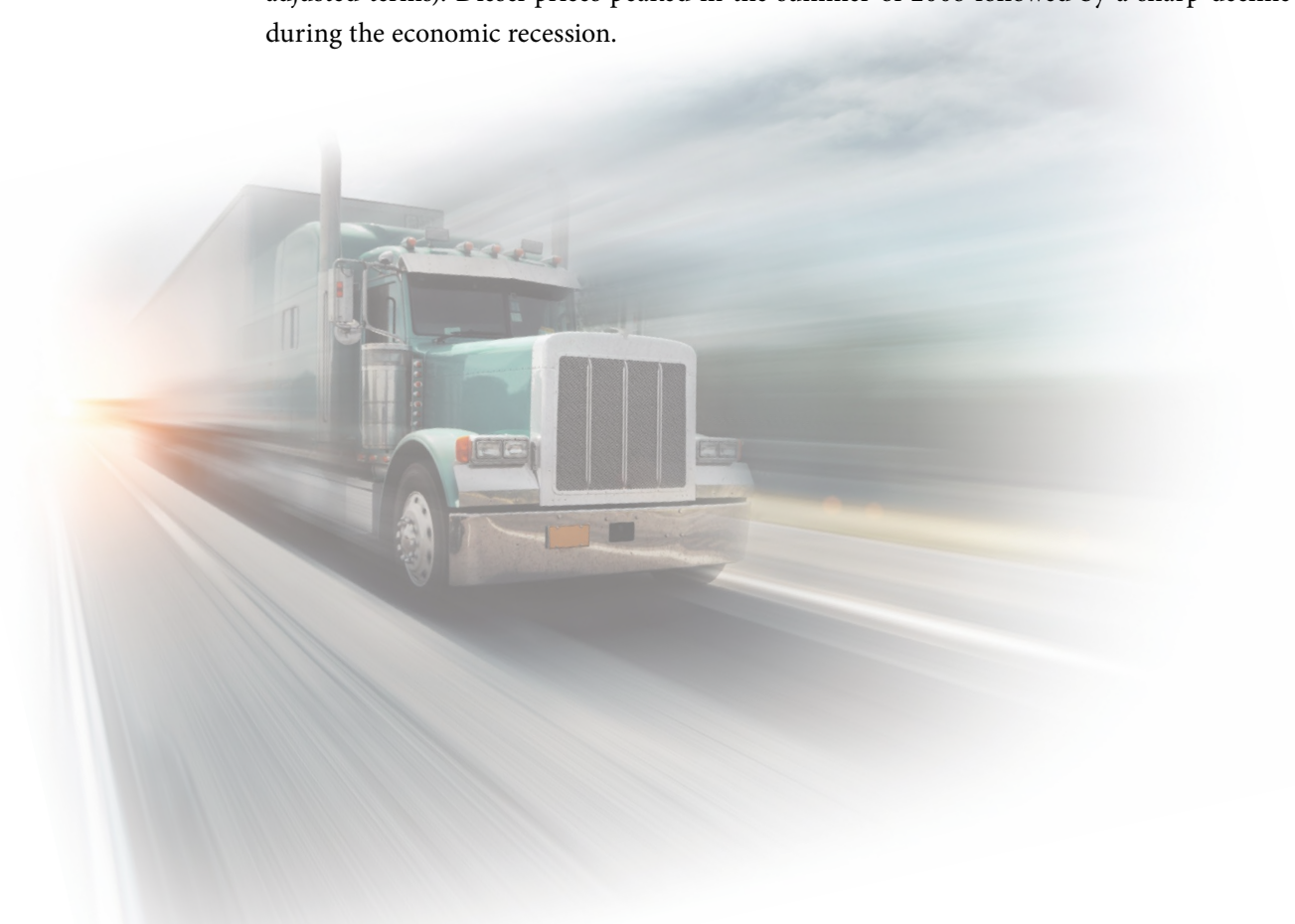


Figure 4-3. Monthly Diesel Prices: January 1999 - July 2013

Sources: Diesel price: U.S. Department of Energy, Energy Information Agency, U.S. Petroleum Prices, available at *www.eia.doe.gov* as of September 2, 2013. **Consumer price index:** U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index – All Urban Consumers, Monthly, available at *www.bls.gov* as of September 2, 2013.

V. SAFETY, ENERGY, AND ENVIRONMENTAL IMPLICATIONS OF FREIGHT TRANSPORTATION

Growing demand for freight transportation heightens concerns about its safety, energy consumption, and environmental impacts. While safety in all freight modes continues to be monitored actively, the availability of energy consumption data has declined with the discontinuation of the Vehicle Inventory and Use Survey.

Table 5-1. Fatalities by Freight Transportation Mode: 1990, 2000, and 2010-2012

	1990	2000	2010	2011	2012
Total transportation fatalities (passenger and freight)	**(R) 47,379**	**(R) 44,376**	**34,968**	**34,349**	**U**
Highway (passenger and freight)	**44,599**	**41,945**	**(R) 32,999**	**32,367**	**33,561**
Large truck occupants[1]	705	754	(R) 530	635	697
Others killed in crashes involving large trucks	4,567	4,528	3,146	3,122	3,224
Large truck occupants[1] (percent)	1.6	1.8	1.6	2.0	2.1
Others killed in crashes involving large trucks (percent)	10.2	10.8	9.6	9.6	9.6
Railroad (passenger and freight)	**729**	**631**	**600**	**(R) 557**	**U**
Highway-rail crossing[2]	130	119	125	(R) 110	U
Railroad[2,3]	599	512	475	(R) 447	U
Trespassers	543	463	438	407	U
Waterborne (passenger and freight)	**186**	**111**	**(R) 93**	**(R) 62**	**U**
Vessel-related[4]	85	42	41	28	U
Freight ship	0	0	10	1	U
Tank ship	5	0	1	0	U
Tug/towboat	13	1	4	0	U
Offshore supply	2	0	1	0	U
Fishing vessel	47	26	9	14	U
Mobile offshore drilling units	0	0	0	0	U
Platform	1	0	0	0	U
Freight barge	0	0	0	0	U
Tank barge	0	0	1	0	U
Miscellaneous[5]	11	15	15	13	U
Not vessel-related[4]	101	69	(R) 52	(R) 34	U
Pipeline	**9**	**38**	**(R) 22**	**(R) 14**	**12**
Hazardous liquid pipeline	3	1	1	1	3
Gas pipeline	6	37	(R) 21	(R) 13	9

Key: P = preliminary; R = revised; U = unavailable at date of publication.

[1] Large trucks are defined as trucks over the 10,000 pound gross vehicle weight rating, including single-unit trucks and truck tractors.

[2] Includes fatalities involving motor vehicles at private highway-rail grade crossings and fatalities not involving motor vehicles at all highway-rail grade crossings resulting from freight and passenger rail operations including commuter rail. Excludes highway-rail grade crossing fatalities involving motor vehicles at public highway-rail grade crossings which are counted under Highway.

[3] Includes Amtrak. Fatalities include those resulting from train accidents, train incidents, and nontrain incidents.

[4] Vessel-related casualties include those involving damage to vessels such as collisions or groundings. Not vessel-related casualties include deaths from falling overboard or from accidents involving onboard equipment.

[5] Includes industrial vessel, passenger (inspected), passenger (uninspected), recreational, research vessel, unclassified, and unknown data.

Notes: Caution must be exercised in comparing fatalities across modes because significantly different definitions are used.

While the amount of freight transportation activity has increased in recent decades, the number of fatalities has declined or remained stable, with the exception of waterborne casualties that are not vessel related. Trucks accounted for approximately 12 percent of all highway fatalities in 2012. The vast majority of fatalities involve passenger travel on highways.

Table 5-1. Fatalities by Freight Transportation Mode: 1990, 2000, and 2010-2012

Source: Total: U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, available at www.bts.gov as of April 28, 2014. **Highway:** U.S. Department of Transportation, National Highway Transportation Safety Administration, National Center for Statistics and Analysis, Traffic Safety Facts, Large Trucks (annual issues) **2010-2012:** U.S. Department of Transportation, National Highway Transportation Safety Administration, National Center for Statistics and Analysis, Traffic Safety Facts - Highlights (annual issues). **Railroad:** U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis, available at http://safetydata.fra.dot.gov/officeofsafety/default.asp as of October 4, 2013. **Waterborne:** U.S. Department of Homeland Security, U.S. Coast Guard, Data Administration Division, personal communication, September 30, 2013. **Pipeline:** U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Pipeline Safety Program, Pipeline Library, available at http://primis.phmsa.dot.gov/comm/PipelineLibrary.htm as of October 4, 2013.

Table 5-2. Injuries by Freight Transportation Mode: 1990, 2000, and 2010-2012

	1990	2000	2010	2011	2012
Total transportation fatalities (passenger and freight)	**3,269,465**	**3,217,115**	**(R) 2,258,768**	**(R) 2,234,245**	**U**
Highway (passenger and freight)	**3,230,667**	**3,188,750**	**(R) 2,239,000**	**2,217,000**	**2,362,000**
Large truck occupants[1]	41,822	30,832	20,000	23,000	25,000
Others injured in crashes involving large trucks	108,000	109,000	60,000	66,000	79,000
Large truck occupants[1] (percent of highway)	1.3	1.0	0.9	1.0	1.1
Others injured in crashes involving large trucks (percent of highway)	3.3	3.4	3.9	3.0	3.3
Railroad (passenger and freight)	**(R) 22,957**	**(R) 10,614**	**(R) 7,671**	**(R) 7,550**	**U**
Highway-rail grade crossing[2]	(R) 221	(R) 190	(R) 169	(R) 216	U
Railroad[2,3]	(R) 22,736	(R) 10,424	(R) 7,502	(R) 7,334	U
Trespassers	560	414	390	368	U
Waterborne (passenger and freight)	**NA**	**(R) 758**	**(R) 677**	**(R) 901**	**U**
Vessel-related[4]	175	151	135	247	U
Freight ship	10	5	17	24	U
Tank ship	13	3	0	10	U
Tug/towboat	19	18	0	27	U
Offshore supply	9	6	3	1	U
Fishing vessel	31	21	15	46	U
Mobile offshore drilling units	13	0	10	6	U
Platform	9	0	0	0	U
Freight barge	3	2	0	4	U
Tank barge	3	0	0	0	U
Miscellaneous[5]	12	96	90	129	U
Not vessel-related[4]	NA	607	(R) 542	(R) 654	U
Pipeline	**76**	**81**	**(R) 109**	**(R) 57**	**58**
Hazardous liquid pipeline	7	4	4	2	4
Gas pipeline	69	77	(R) 105	(R) 55	54

Key: NA = not available; R = revised; U = unavailable at date of publication.

[1] Large trucks are defined as trucks over the 10,000 pound gross vehicle weight rating, including single-unit trucks and truck tractors.

[2] Includes injuries involving motor vehicles at private highway-rail grade crossings and fatalities not involving motor vehicles at all highway-rail grade crossings resulting from freight and passenger rail operations including commuter rail. Excludes highway-rail grade crossing injuries involving motor vehicles at public highway-rail grade crossings which are counted under Highway.

[3] Includes train accidents and other incidents. Most injuries involve workers on duty and are included under other incidents (4,050 in 2012).

[4] Vessel-related injuries include those involving damage to vessels, such as collisions or groundings. Not vessel-related injuries include those from falls overboard or from accidents involving onboard equipment.

[5] Includes industrial vessel, oil recovery, passenger (inspected), passenger (uninspected), recreational, research vessel, unclassified, and unknown data.

Historically, the highway mode has accounted for nearly all injuries in freight transportation, but the number of injuries has dropped substantially since 1990.

Table 5-2. Injured Persons by Freight Transportation Mode: 1990, 2000, and 2010-2012

Source: Total: U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics*, available at www.bts.gov as of April 28, 2014. **Highway:** U.S. Department of Transportation, National Highway Transportation Safety Administration, National Center for Statistics and Analysis, Traffic Safety Facts, Large Trucks (annual issues). **2010-2012:** U.S. Department of Transportation, National Highway Transportation Safety Administration, National Center for Statistics and Analysis,Traffic Safety Facts - Highlights (annual issues). **Railroad:** U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis, available at http://safetydata.fra.dot.gov/officeofsafety/default.asp as of October 4, 2013. **Waterborne:** U.S. Department of Homeland Security, U.S. Coast Guard, Data Administration Division, personal communication, September 30, 2013. **Pipeline:** U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Pipeline Safety Program, Pipeline Library, available at http://primis.phmsa.dot.gov/comm/PipelineLibrary.htm as of October 4, 2013.

Table 5-3. Crashes, Accidents, and Incidents by Freight Transportation Mode: 1990, 2000, and 2010-2012

	1990	2000	2010	2011	2012
Highway (passenger and freight)	**6,471,000**	**6,394,000**	**5,419,000**	**5,338,000**	**5,615,000**
Large truck[1]	371,801	437,861	276,000	287,000	317,000
Large truck[1] (percent of total)	5.7	6.8	5.1	5.4	5.6
Rail (passenger and freight)					
Highway-rail grade crossing[2,3]	5,715	3,502	2,027	(R) 2,060	1,967
Railroad[2,4]	2,879	2,983	1,902	(R) 2,022	1,739
Waterborne (passenger and freight)					
Vessel-related	3,613	5,403	5,434	6,381	U
Pipeline[5]	**430**	**380**	**591**	**593**	**570**
Hazardous liquid pipeline	140	(R) 146	(R) 350	(R) 346	364
Gas pipeline	290	(R) 234	(R) 241	(R) 247	206

Key: R = revised; U = unavailable at date of publication.

[1] Large trucks are defined as trucks over the 10,000 pound gross vehicle weight rating, including single-unit trucks and truck tractors.
[2] Includes Amtrak.
[3] Includes both accidents and incidents. Most highway-rail grade crossing accidents are also counted under highway.
[4] Train accidents only.
[5] In 2002, the Pipeline and Hazardous Materials Safety Administration lowered the threshold for determining incidents for volume released from 50 barrels to 5 gallons, resulting in a significant increase in the number of pipeline incidents reported.

The number of crashes and other freight transportation accidents has declined in all modes except water and hazardous liquid pipeline since 1990, despite an increase in freight transportation activity.

Table 5-3. Crashes, Accidents, and Incidents by Freight Transportation Mode: 1990, 2000, and 2010-2012
Source: Total: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, National Transportation Statistics, available at *www.bts.gov* as of October 4, 2013. **Highway:** U.S. Department of Transportation, National Highway Transportation Safety Administration, National Center for Statistics and Analysis, Traffic Safety Facts, Large Trucks (annual issues). **2010-2012:** U.S. Department of Transportation, National Highway Transportation Safety Administration, National Center for Statistics and Analysis, Traffic Safety Facts - Highlights (annual issues). **Railroad:** U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis, available at *http://safetydata.fra.dot.gov/officeofsafety/default.asp* as of October 4, 2013. **Waterborne:** U.S. Department of Homeland Security, U.S. Coast Guard, Data Administration Division, personal communication, September 6, 2011. **Pipeline:** U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Pipeline Safety Program, Pipeline Library, available at *http://primis.phmsa.dot.gov/comm/PipelineLibrary.htm* as of April 2, 2014.

Table 5-4. Hazardous Materials Transportation Incidents: 1990, 2000, 2010-2012

	1990	2000	2010	2011	2012
Total	**8,879**	**17,557**	**(R) 14,800**	**(R) 15,026**	**15,433**
Accident-related	297	394	359	(R) 376	397
Air	**297**	**1,419**	**(R) 1,294**	**1,400**	**1,460**
Accident-related	0	3	2	2	2
Highway	**7,296**	**15,063**	**12,652**	**(R) 12,810**	**13,241**
Accident-related	**249**	**329**	**321**	**(R) 334**	**362**
Rail	**1,279**	**1,058**	**749**	**(R) 745**	**662**
Accident-related	48	62	35	40	33
Water[1]	**7**	**17**	**105**	**71**	**70**
Accident-related	0	0	1	0	0
Other[2]	**0**	**0**	**NA**	**NA**	**NA**
Accident-related	0	0	NA	NA	NA

Key: NA = not available; R = revised.

[1] Water category includes only packaged (nonbulk) marine. Non-packaged (bulk) marine hazardous materials incidents are reported to the U.S. Coast Guard and are not included.

[2] Other category includes freight forwarders and modes not otherwise specified.

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 means vehicular accident or derailment. Each modal total also includes fatalities caused by human error, package failure, and causes not elsewhere classified. As of 2005, the "Other" data are no longer included in the hazardous materials information system report.

Because most hazardous materials are transported by truck, the majority of incidents related to the movement of hazardous materials occur on highways or in truck terminals. A very small share of hazardous materials transportation incidents are the result of a vehicular crash or derailment (referred to as "accident related"). Approximately two percent of incidents were accident related in 2012, but they accounted for 79 percent of all property damage. Most hazardous materials incidents occur because of human error or package failure, particularly during loading and unloading.

Table 5-4. Hazardous Materials Transportation Incidents: 1990, 2000, and 2010-2012
Source: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Hazardous Materials Safety, Hazardous Materials Information System Database, available at *www.phmsa.dot.gov/hazmat/library/data-stats* as of September 20, 2013.

Table 5-5a. Commercial Motor Carrier Compliance Reviews by Safety Rating: 2012

Safety rating	2012 Federal	2012 State	2012 Total
Satisfactory	2,224	1,362	3,586
Conditional	2,446	1,058	3,504
Unsatisfactory	217	129	346
Not rated	207	1,578	1,785
Total	**5,094**	**4,127**	**9,221**

Notes: These data include any review that resulted in a safety rating, including Motor Carrier Safety Compliance Reviews or CSA2010 reviews. As a result, the total number of reviews in this table differs from the total in Table 5-5b because that table includes reviews that did not result in a formal safety rating. A compliance review is an on-site examination of a motor carrier's records and operations to determine whether the carrier meets the Federal Motor Carrier Safety Administration's safety fitness standard.

The safety fitness of motor carriers is a top priority of the U.S. Department of Transportation. As part of its efforts to improve safety, federal and state governments conducted 9,221 safety compliance reviews that resulted in a formal safety rating in 2012. Of that total, only about 4 percent of motor carriers received an unsatisfactory rating.

Table 5-5b. Commercial Motor Carrier Compliance Reviews by Type: 2009-2012

Review Type	2009 Federal	2009 State	2009 Total	2010 Federal	2010 State	2010 Total	2011 Federal	2011 State	2011 Total	2012 Federal	2012 State	2012 Total
Total Reviews	**12,326**	**7,979**	**20,305**	**(R) 12,308**	**7,877**	**(R) 20,185**	**11,094**	**(R) 7,336**	**(R) 18,430**	**12,373**	**7,848**	**20,221**
Motor Carrier Safety Compliance Reviews[1]	10,084	6,429	16,513	(R) 8,858	5,705	(R) 14,563	(R) 4,613	(R) 3,650	(R) 8,263	0	0	0
Cargo Tank Facility Reviews	84	22	106	121	(R) 24	(R) 145	78	19	97	77	15	92
Shipper Reviews	341	38	379	310	80	390	(R) 256	(R) 59	(R) 315	234	81	315
Non-Rated Reviews (excludes SCR & CSA2010)	1,243	815	2,058	1,725	636	2,361	(R) 951	(R) 531	(R) 1,482	1,156	567	1,723
CSA Offsite	136	207	343	333	356	689	(R) 318	(R) 301	(R) 619	233	341	574
CSA Onsite Focused/ Focused CR	260	260	520	591	(R) 617	(R) 1,208	(R) 4,344	(R) 1,911	(R) 6,255	7,274	3,198	10,472
CSA Onsite Comprehensive	178	208	386	370	(R) 460	(R) 830	(R) 534	(R) 865	(R) 1,399	3,399	3,646	7,045
Total Security Contact Reviews	**1,378**	**581**	**1,959**	**1,276**	**621**	**1,897**	**603**	**(R) 302**	**(R) 905**	**505**	**216**	**721**

Key: R = revised; SCR = Security Contact Reviews; CSA = Compliance, Safety, Accountability; CR = Compliance Review.

[1] Beginning in 2012, all reviews that were previously considered Motor Carrier Safety Compliance Reviews are now included in the CSA Onsite Comprehensive Investigations total.

Notes: These data include all compliance reviews conducted in the specified years. As a result, the total number of reviews in this table differs from the total in table 5-5a because that table only includes reviews that resulted in a formal safety rating. A compliance review is an on-site examination of a motor carrier's records and operations to determine whether the carrier meets the Federal Motor Carrier Safety Administration's safety fitness standard.

Federal and state governments also conduct shipper, cargo tank facility, and onsite comprehensive safety analysis reviews.

Table 5-5a. Commercial Motor Carrier Compliance Reviews by Safety Rating: 2012
Source: U.S. Department of Transportation, Federal Motor Carrier Administration, Motor Carrier Management Information System (MCMIS), Compliance Review Activity by Safety Rating for Fiscal Years, available at *www.fmcsa.dot.gov* as of September 20, 2013.

Table 5-5b. Commercial Motor Carrier Compliance Reviews by Type: 2009-2012
Source: U.S. Department of Transportation, Federal Motor Carrier Administration, Motor Carrier Management Information System (MCMIS), Compliance Review Activity by Safety Rating for Fiscal Years, available at www.fmcsa.dot.gov as of September 25, 2013.

Table 5-6. Roadside Safety Inspection Activity Summary by Inspection Type: 2000 and 2010-2012

	2000		2010		2011		2012	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All inspections								
Number of inspections	2,453,776	100.0	3,569,373	100.0	3,601,302	100.0	3,582,221	100.0
With no violations	639,593	26.1	1,225,324	34.3	1,342,133	37.3	1,395,748	39.0
With violations	1,814,183	73.9	2,344,049	65.7	2,259,169	62.7	2,186,473	61.0
Driver inspections								
Number of inspections	2,396,688	100.0	3,470,871	100.0	3,484,536	100.0	3,464,458	100.0
With no violations	1,459,538	60.9	2,316,960	66.8	2,422,611	69.5	2,463,117	71.1
With violations	937,150	39.1	1,153,911	33.2	1,061,925	30.5	1,001,341	28.9
With OOS violations	191,031	8.0	183,350	5.3	173,980	5.0	170,015	4.9
Vehicle inspections								
Number of inspections	1,908,300	100.0	2,413,094	100.0	2,425,973	100.0	2,442,853	100.0
With no violations	584,389	30.6	834,551	34.6	880,172	36.3	928,661	38.0
With violations	1,323,911	69.4	1,578,543	65.4	1,545,801	63.7	1,514,192	62.0
With OOS violations	452,850	23.7	480,416	19.9	491,730	20.3	491,541	20.1
Hazardous materials inspections								
Number of inspections	133,486	100.0	211,154	100.0	208,852	100.0	204,427	100.0
With no violations	101,098	75.7	180,522	85.5	183,150	87.7	180,587	88.3
With violations	32,388	24.3	30,632	14.5	25,702	12.3	23,840	11.7
With OOS violations	9,964	7.5	9,210	4.4	7,998	3.8	7,670	3.8

Key: OOS = out of service.

Notes: A roadside inspection is an examination of individual commercial motor vehicles and drivers to determine if they are in compliance with the Federal Motor Carrier Safety Regulations and/or Hazardous Materials Regulations. Serious violations result in the issuance of driver or vehicle OOS orders. Serious violations include operating a vehicle in a hazardous condition, hazardous materials onboard, or lack of required operating authority. These violations must be corrected before the driver or vehicle can return to service. Moving violations also may be recorded in conjunction with a roadside inspection.

Less than one-fourth of all roadside inspections of commercial vehicles resulted in the vehicle being placed out of service (OOS) for a serious violation. A much lower percentage of driver and hazardous materials inspections resulted in OOS orders. In 2012, about five percent of driver inspections and less than four percent of hazardous materials inspections resulted in an OOS order.

Table 5-6. Roadside Safety Inspection Activity Summary By Inspection Type: 2000 and 2010-2012
Source: U.S. Department of Transportation, Federal Motor Carrier Safety Administration, Motor Carrier Management Information System (MCMIS), Roadside Inspection Activity Summary for Fiscal Years, special tabulation, October, 17, 2013.

Table 5-7. Fuel Consumption by Transportation Mode: 2007-2011

	2007	2008	2009	2010	2011
Highway[1]					
Gasoline, diesel and other fuels (million gallons)	176,203	170,765	168,140	(R) 170,411	168,597
Truck, total	47,219	47,704	44,303	(R) 45,023	42,377
Single-unit 2-axle 6-tire or more truck	16,314	17,144	16,253	(R) 15,097	14,183
Combination truck	30,904	30,561	28,050	(R) 29,927	28,193
Truck (percent of total)	26.8	27.9	26.3	(R) 26.4	25.1
Rail, Class I (in freight service)					
Distillate / diesel fuel (million gallons)	(R) 4,087	(R) 3,911	(R) 3,220	(R) 3,519	3,710
Water					
Residual fuel oil (million gallons)	6,327	(R) 5,258	(R) 4,589	(R) 5,143	4,560
Distillate / diesel fuel oil (million gallons)	1,924	(R) 1,983	(R) 1,913	(R) 2,003	2,133
Gasoline (million gallons)	1,222	1,136	1,130	1,167	1,104
Pipeline					
Natural gas (million cubic feet)	621,364	647,956	670,174	(R) 674,124	683,715

Key: R = revised.

[1] Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

In recent years, increases in fuel costs, a slight decrease in the number of trucks on the road, and improved energy efficiency have affected the number of gallons of fuel burned by commercial trucks. From 2007 to 2011, truck fuel consumption declined by 10 percent, from 47.2 billion gallons to 42.4 billion gallons. Fuel use in Class I freight railroads declined by 9 percent, from 4.1 billion gallons in 2007 to 3.7 billion gallons in 2011.

Table 5-8. Energy Consumption by Selected Freight Transportation Mode: 2007-2011 (trillions of Btus)

	2007	2008	2009	(R) 2010	2011
Truck	6,326	6,382	5,922	6,038	5,683
Class I Rail	(R) 567	(R) 542	(R) 447	488	515
Water	1,367	(R) 1,204	(R) 1,094	1,194	1,117
Pipeline (natural gas only)	642	668	691	695	705

Key: R = revised; Btu = British Thermal Unit.

Notes: Class I railroads have annual carrier operating revenue of $433.2 million or more. Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this figure should not be compared to those in pre-2011 editions of *Freight Facts and Figures*. Data do not include energy consumed by oil pipelines (crude petroleum and petroleum products) or coal slurry/water slurry pipelines.

In 2011, trucking accounted for a large majority of freight transportation energy consumption, followed by water, a distant second.

Table 5-7. Fuel Consumption by Transportation Mode: 2007-2011
Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1. **Rail:** Association of American Railroads, Railroad Facts (Washington, DC: annual issues), p. 61. **Water:** U.S. Department of Energy, Energy Information Administration, Fuel Oil and Kerosene Sales 2011 (Washington, DC: 2012), tables 2, 4, and similar tables in earlier editions; U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table MF-24, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 20, 2013. **Pipeline:** U.S. Department of Energy, Natural Gas Annual 2011, (Washington, DC: January 2013), table 15 and similar tables in earlier editions.

Table 5-8. Energy Consumption by Selected Freight Transportation Mode: 2007-2011 (trillions of BTUs)
Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1. **Rail:** Association of American Railroads, Railroad Facts (Washington, DC: annual issues), p. 61. **Water:** U.S. Department of Energy, Energy Information Administration, Fuel Oil and Kerosene Sales 2011 (Washington, DC: 2012), tables 2, 4, and similar tables in earlier editions; U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table MF-24, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 20, 2013. **Pipeline:** U.S. Department of Energy, Natural Gas Annual 2011, (Washington, DC: January 2013), table 15 and similar tables in earlier editions.

Table 5-9. Single-Unit Truck Fuel Consumption and Travel: 2007-2011

	2007	2008	2009	2010	2011
Number registered (thousands)	8,117	8,288	8,356	8,217	7,819
Vehicle-miles traveled (millions)	119,979	126,855	120,207	(R) 110,738	103,515
Fuel consumed (million gallons)	16,314	17,144	16,253	(R) 15,097	14,183
Average miles traveled per vehicle	14,782	15,306	14,386	(R) 13,476	13,239
Average miles traveled per gallon	7.4	7.4	7.4	7.3	7.3
Average fuel consumed per vehicle (gallons)	2,010	2,068	1,945	(R) 1,837	1,814

Key: R = revised.

Notes: Single-unit trucks have 2-axles and at least 6 tires or a gross vehicle weight rating exceeding 10,000 pounds. Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

Miles per gallon for single-unit trucks (based on total travel and fuel consumption) have been relatively stable in recent years. Single-unit trucks traveled fewer miles overall and fewer miles per vehicle, resulting in reduced fuel consumption even though there was little change in miles per gallon. In 2011, single-unit trucks consumed 914 million fewer gallons than the previous year.

Table 5-10. Combination Truck Fuel Consumption and Travel: 2007-2011

	2007	2008	2009	2010	2011
Number registered (thousands)	2,635	2,585	2,617	2,553	2,452
Vehicle-miles traveled (millions)	184,199	183,826	168,100	(R) 175,789	163,692
Fuel consumed (million gallons)	30,904	30,561	28,050	(R) 29,927	28,193
Average miles traveled per vehicle	69,896	71,106	64,231	(R) 68,859	66,768
Average miles traveled per gallon	6.0	6.0	6.0	5.9	5.8
Average fuel consumed per vehicle (gallons)	11,727	11,821	10,718	(R) 11,723	11,500

Key: R = revised.

Notes: Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

Miles per gallon for combination trucks (based on total travel and fuel consumption) also remained relatively stable between 2007 and 2011. During the same period, vehicle-miles traveled by combination trucks declined by 20.5 billion (about 11 percent).

Table 5-9. Single-Unit Truck Fuel Consumption and Travel: 2007-2011
Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1. Available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 1, 2013.

Table 5-10. Combination Truck Fuel Consumption and Travel: 2007-2011
Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1. Available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 1, 2013.

Table 5-11. Energy Intensities of Selected Domestic Freight Transportation Modes: 2007-2011

	2007	2008	2009	2010	2011
Highway[1] (Btu per vehicle-mile)	21,238	21,008	21,024	(R) 21,499	21,698
Railroad (Class I) (Btu per freight-car-mile)	14,846	14,573	13,907	13,733	14,043
Railroad (Class I) (Btu per ton-mile)	320	305	291	289	298
Domestic Waterborne Commerce (Btu per ton-mile)	225	252	225	217	NA

Key: Btu = British thermal unit; NA = not available; R = revised.

[1] Includes heavy single-unit and combination trucks. Heavy single-unit trucks are trucks that have two axles and at least six tires or a gross vehicle weight rating exceeding 10,000 pounds. Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Energy intensity data are based on the new FHWA methodology. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

Energy intensity is the amount of energy used to produce a given level of output or activity, in this case vehicle-miles and ton-miles. In recent years, the energy intensity of trucking has remained relatively stable, while rail and water have improved somewhat.

Table 5-11. Energy Intensities of Domestic Freight Transportation Modes: 2007-2011
Source: Oak Ridge National Laboratory, Transportation Energy Data Book: Edition 32 (Oak Ridge, TN: annual issues), table 2.15, available at *http://cta.ornl.gov/data/index.shtml* as of September 20, 2013.

Table 5-12. Estimated National Average Vehicle Emissions Rates: 2000, 2005, 2011, and 2012 (grams per mile)

	2000	2005	2011	2012
	Gasoline			
Cars				
Exhaust HC	0.82	0.45	0.24	0.21
Nonexhaust HC	0.61	0.38	0.19	0.17
Total HC	1.43	0.82	0.43	0.37
Exhaust CO	14.31	7.83	4.39	3.93
Exhaust NO_x	1.90	1.17	0.64	0.54
Light trucks[1]				
Exhaust HC	1.22	0.89	0.61	0.56
Nonexhaust HC	0.63	0.44	0.31	0.29
Total HC	1.85	1.33	0.92	0.86
Exhaust CO	22.21	14.95	10.21	9.43
Exhaust NO_x	2.76	1.94	1.41	1.29
Heavy trucks[2]				
Exhaust HC	2.75	1.87	1.19	1.09
Nonexhaust HC	1.22	0.94	0.70	0.65
Total HC	3.97	2.81	1.89	1.74
Exhaust CO	62.88	47.27	32.95	30.67
Exhaust NO_x	5.84	4.50	3.45	3.27
	Diesel			
Cars				
Exhaust HC	0.26	0.16	0.07	0.07
Exhaust CO	1.14	0.57	0.63	0.72
Exhaust NO_x	1.36	1.96	1.09	0.96
Light trucks[1]				
Exhaust HC	0.65	0.66	0.55	0.51
Exhaust CO	3.51	3.74	3.15	2.91
Exhaust NO_x	6.04	5.83	4.26	3.92
Heavy trucks[2]				
Exhaust HC	1.06	1.10	0.86	0.81
Exhaust CO	4.59	4.64	3.28	3.02
Exhaust NO_x	23.20	16.84	9.84	8.80

Key: CO = carbon monoxide; HC = hydrocarbon; NO_x = nitrogen oxides.

[1] Includes pick-up trucks, sport-utility vehicles, and minivans with a gross vehicle weight rating up to 8,500 pounds.

[2] Includes trucks with a gross vehicle weight rating over 8,500 pounds.

Notes: This table is based on MOVES2010b, the latest highway vehicle emissions factor model from the U.S. Environmental Protection Agency. Similar tables in previous editions of *Freight Facts and Figures* were based on earlier models. Thus, the data in this table should not be compared to those in previous editions.

Air quality is affected by freight vehicle emissions. Compared with gasoline-fueled cars and trucks, diesel-fueled heavy trucks emit small amounts of carbon monoxide (CO), but large amounts of nitrogen oxides (NO_x). However, since 2000 diesel-fueled heavy-duty truck emissions of NO_x have declined by 62 percent.

Table 5-12. Estimated National Average Vehicle Emissions Rates of Heavy-Duty and Light-Duty Vehicles: 2000, 2005, 2011, and 2012
Source: Environmental Protection Agency, National Vehicle and Fuel Emissions Laboratory, special tabulation, October 25, 2013.

Table 5-13. Freight Nitrogen Oxides (NO_x) and Particulate Matter (PM-10) Emissions by Single-Unit and Combination Trucks: 2000, 2002, 2005, 2012, 2020, and 2030 (thousands of short tons)

Mode	2000	2002	2005	2012	2020	2030
NO_x emissions	5,227	5,029	4,240	2,345	1,333	1,022
Total PM-10 emissions	219	216	210	116	59	40
Exhaust emissions	203	199	192	98	36	12
Brake emissions	13	13	14	15	18	22
Tire emissions	3	4	4	4	5	6

Note: Single-unit trucks have 2-axles and at least 6 tires or a gross vehicle weight rating exceeding 10,000 pounds.

Trucks are the largest contributor to freight emissions nationally, producing 2.3 million tons of NO_x in 2012. However, substantial reductions in freight-related NO_x emissions have been made since the U.S. Environmental Protection Agency required the use of ultra-low sulfur diesel (ULSD) fuel in heavy-duty trucks and other diesel-powered highway vehicles beginning in 2006. Between 2006 and 2012, NO_x emissions from single-unit and combination trucks decreased by 55 percent. PM-10 emissions declined by 47 percent over the same period. Truck-related NO_x and PM-10 emissions are projected to further decline by 56 percent and 66 percent, respectively, from 2012 to 2030.

Table 5-14. U.S. Greenhouse Gas Emissions by Economic End-Use Sector: 1990, 2005, and 2008-2011 (electricity-related emissions distributed among sectors)[1] (millions of metric tonnes of CO_2 equivalent)

Sector	(R)1990	(R)2005	(R)2008	(R)2009	(R)2010	2011
Industry[2]	2,181.3	2,102.4	2,036.3	1,789.8	1,916.9	1,897.2
Transportation[3]	1,556.3	2,017.2	1,920.8	1,845.2	1,856.9	1,833.7
Commercial	953.1	1,243.6	1,223.6	1,159.6	1,216.3	1,169.8
Residential	939.5	1,192.4	1,211.1	1,150.8	1,165.2	1,131.0
Agriculture	519.3	581.5	607.1	593.3	597.1	612.6
U.S. Territories[4]	33.7	58.2	49.8	47.9	58.0	58.0
Total	**6,183.3**	**7,195.3**	**7,048.8**	**6,586.6**	**6,810.3**	**6,702.3**

Key: CO_2 = carbon dioxide; R = revised.

[1] Emissions from electricity generation are allocated to each economic end-use sector on the basis of each sector's share of aggregate electricity consumption. This method assumes each sector consumes electricity that is generated from the national average mix of fuels according to their carbon intensity.

[2] Industry includes manufacturing, construction, and mining. Six manufacturing industries--petroleum refineries, chemicals, primary metals, paper, food, and nonmetallic mineral products-represent the vast majority of energy use and thus GHG emissions in the industrial sector.

[3] Includes emissions from military aircraft (12.6 million metric tonnes in 2011) and "other" transportation, primarily lubricants (9.0 million metric tonnes in 2011). Emissions from international bunker fuels are not included.

[4] Electricity-related emissions were not distributed to U.S. Territories.

Notes: Greenhouse gas (GHG) emissions include CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. CO_2 equivalent is computed by multiplying the weight of the gas being measured by its estimated Global Warming Potential (GWP). The Intergovernmental Panel on Climate Change developed the GWP concept to compare the ability of one GHG to trap heat in the atmosphere to another gas. Carbon comprises 12/44 of CO_2 by weight. Numbers may not add to totals due to rounding.

In addition to CO, NO_x, and particulate matter emissions, the transportation sector releases large quantities of greenhouse gases (GHGs), such as carbon dioxide (CO_2), methane, nitrous oxide, and hydrofluorocarbons. When emissions from electricity are distributed among end-use sectors, transportation is responsible for about 27 percent of all greenhouse gases emitted in the United States in 2011 and nearly 7 percent of all greenhouse gases emitted globally.[1] The industrial sector produces the largest amount of GHG emissions (28 percent).

1 Intergovernmental Panel on *Climate Change, Climate Change 2007: Synthesis Report* (Geneva, Switzerland: 2008).

Table 5-13. Nitrogen Oxides (NO_x) and Particulate Matter (PM-10) Emissions from Single-Unit and Combination Trucks: 2000, 2002, 2005, 2012, 2020, and 2030
Source: U.S. Environmental Protection Agency, MOVES (Motor Vehicle Emission Simulator) model 2010B, special tabulation, October 5, 2013.

Table 5-14. U.S. Greenhouse Gas Emissions by Economic End-Use Sector: 1990, 2005, and 2008-2011
Source: U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011, EPA 430-R-13-001 (Washington, DC: April 12, 2013, table ES-8, available at *http://epa.gov/climatechange/ghgemissions/usinventoryreport.html* as of September 13, 2013.

Table 5-15. U.S. Transportation Sector CO_2 Emissions from Fossil Fuel Combustion by Fuel Type: 1990, 2005, and 2008-2011 (millions of metric tonnes of CO_2 equivalent)

Fuel	1990	2005	2008	2009	2010	2011
Petroleum	**(R)1,457.9**	**(R)1858.7**	**(R)1779.3**	**(R)1,711.3**	**(R)1,725.8**	**1,706.2**
Motor gasoline	983.7	1,187.8	1,130.3	1,128.5	(R)1,125.0	1,100.4
Distillate fuel oil	262.9	458.1	(R)443.5	(R)409.7	(R)426.3	435.4
Jet fuel	(R)184.2	189.3	(R)155.1	(R)154.1	(R)151.5	146.5
Residual fuel[1]	22.6	19.3	19.9	15.4	(R)19.3	20.1
Aviation gasoline	3.1	2.4	2.0	1.8	1.9	1.9
Liquefied petroleum gas	1.4	1.7	2.5	1.7	1.8	1.9
Natural Gas	**36.0**	**33.1**	**36.7**	**37.9**	**(R)38.1**	**38.8**
Transportation Total[2]	**(R)1,494.0**	**(R)1,891.7**	**(R)1,816.0**	**(R)1,749.2**	**(R)1,763.9**	**1,745.0**
U.S. Total[2]	**(R)4,748.5**	**(R)5,748.7**	**(R)5,590.6**	**(R)5,222.4**	**(R)5,408.1**	**5,277.2**
Transportation Sector as % of Total	**(R)31.5**	**(R)32.9**	**(R)32.5**	**(R)33.5**	**(R)32.6**	**33.1**

Key: CO_2 = carbon dioxide; R = revised.

[1] Fluctuations in emissions estimates reflect data collection problems.

[2] Electricity-related emissions are not included in the transportation sector and U.S. totals.

[3] Includes greenhouse gas emissions from military aircraft (12.6 million metric tonnes in 2011); "other" transportation, primarily lubricants (9.0 million metric tonnes in 2011); and electricity-related emissions. Emissions from international bunker fuels are not included.

Notes: CO_2 equivalent is computed by multiplying the weight of the gas being measured by its estimated Global Warming Potential (GWP). The Intergovernmental Panel on Climate Change developed the GWP concept to compare the ability of one GHG to trap heat in the atmosphere to another gas. Carbon comprises 12/44 of CO_2 by weight. Numbers may not add to totals due to rounding. Electricity-related emissions are not included in this table.

CO_2 accounts for nearly all of the transportation sector's GHG emissions, primarily from the combustion of fossil fuels. Almost all of the energy consumed by the sector is petroleum-based and includes motor gasoline, diesel fuel, jet fuel, and residual oil. Gasoline-fueled passenger cars and light-duty trucks are responsible for about 61 percent of transportation sector CO_2 emissions while the combustion of diesel fuel in medium- and heavy-duty trucks and jet fuel in aircraft produced much of the rest.

From 1990 to 2011, transportation CO_2 emissions rose by 17 percent, likely the result of increased demand for travel and the stagnation of vehicle fuel efficiency. More recently, however, transportation sector CO_2 emissions have declined due in part to slow economic growth and higher fuel prices, which in turn have led to a decrease in demand for passenger travel.

Table 5-15. U.S. Transportation Sector CO_2 Emissions from Fossil Fuel Combustion by Fuel Type: 1990, 2005, and 2008-2011

Source: U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011, EPA 430-R-13-001 (Washington, DC: April 12, 2013), Annex 2, tables A-11, A-12, A-13, A-14, A-15, A-16, A-17, A-22, A-27, and A-32, available at *http://epa.gov/climatechange/ghgemissions/usinventoryreport.html* as of September 13, 2013.

Table 5-16. U.S. Greenhouse Gas Emissions from Domestic Freight Transportation: 1990, 2005, and 2008-2011 (millions of metric tonnes of CO_2 equivalent)

Mode	1990	2005	2008	(R)2009	2010	2011	Percent change, 1990 to 2011
Trucking	231.1	(R)408.4	(R)427.0	(R)389.2	(R)402.9	401.1	73.6
Freight Rail	34.5	46.7	44.4	37.2	40.0	42.0	21.7
Ships and Other Boats[1]	30.6	27.9	(R)28.4	(R)23.9	(R)27.3	31.4	2.6
Pipelines[2]	(R)36.0	32.2	35.6	(R)36.7	(R)37.1	37.7	4.7
Commercial Aircraft	(R)19.2	(R)21.4	(R)18.0	(R)16.7	(R)16.3	16.5	-14.1
Freight Total	**(R)351.5**	**(R)536.5**	**(R)553.4**	**(R)503.7**	**(R)523.6**	**528.7**	**50.4**
Passenger Total	**(R)1,157.6**	**(R)1,450.9**	**(R)1,340.1**	**(R)1,317.3**	**(R)1,310.1**	**1,283.2**	**10.9**
Transportation Total[3]	**(R)1,556.3**	**(R)2,017.2**	**(R)1,920.8**	**(R)1,845.2**	**(R)1,856.9**	**1,833.7**	**17.8**
Freight as % of Transportation Total	**(R)22.6**	**(R)26.6**	**(R)28.8**	**(R)27.3**	**(R)28.2**	**28.8**	**27.4**

Key: CO_2 = carbon dioxide; R = revised.

[1] Fluctuations in emissions estimates reflect data collection problems.

[2] Includes only CO_2 emissions from natural gas used to power pipelines.

[3] Includes greenhouse gas emissions from military aircraft (12.6 million metric tonnes in 2011); "other" transportation, primarily lubricants (9.0 million metric tonnes in 2011); and electricity-related emissions. Emissions from international bunker fuels are not included.

Notes: U.S. Environmental Protection Agency (EPA) used U.S. Department of Energy fuel consumption data to allocate freight and passenger rail emissions. EPA used U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics data on freight shipped by commercial aircraft and the total number of passengers enplaned to split commercial aircraft emissions. Each passenger was estimated to weigh an average of 150 pounds and luggage was estimated to weigh 50 pounds. Previous *Inventories* included commercial aircraft emissions under passenger travel. CO_2 equivalent is computed by multiplying the weight of the gas being measured by its estimated Global Warming Potential (GWP). The Intergovernmental Panel on Climate Change developed the GWP concept to compare the ability of one GHG to trap heat in the atmosphere to another gas. Carbon comprises 12/44 of CO_2 by weight. Numbers may not add to totals due to rounding.

Since 1990, the rate of growth of GHG emissions from freight sources has been more than four times as fast as that for passenger travel. Trucking accounted for 76 percent of freight emissions followed by freight rail, a distant second.

Table 5-16. U.S. Greenhouse Gas Emissions from Domestic Freight Transportation: 1990, 2005, and 2008-2011
Source: U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011, EPA 430-R-13-001 (Washington, DC: April 12, 2013), table ES-8 and Annex 3, tables A-114 and A-115, available at *www.epa.gov/climatechange/ghgemissions/usinventoryreport.html* as of September 13, 2013.

Table 5-17. Medium- and Heavy-duty Truck Greenhouse Gas Emissions: 1990, 2005, and 2008-2011 (millions of metric tonnes of CO_2 equivalent)

	1990	2005	2008	2009	2010	2011
Carbon dioxide	230.1	396.0	(R)413.9	376.3	(R)390.0	388.3
Methane	0.2	(R)0.1	(R)0.1	0.2	(R)0.1	0.1
Nitrous Oxide	0.8	(R)1.1	(R)1.4	(R)1.1	1.1	1.0
Hydrofluorocarbons	≤0.05	11.1	(R)11.6	11.6	11.6	11.7
Total Truck	231.1	(R)408.4	(R)427.1	(R)389.2	(R)402.9	401.1
Total U.S. Transportation[1]	**(R)1,556.3**	**(R)2,017.2**	**(R)1,920.8**	**(R)1,845.2**	**(R)1,856.9**	**1,833.7**
Total U.S.[1]	**(R)6,183.3**	**(R)7,195.3**	**(R)7,048.8**	**(R)6,586.6**	**(R)6,810.3**	**6,702.3**
Truck share of transportation total (percent)	**(R)14.8**	**20.2**	**(R)22.2**	**(R)21.1**	**(R)21.7**	**21.9**
Truck share of U.S. total (percent)	**3.7**	**5.7**	**(R)6.1**	**5.9**	**5.9**	**6.0**

Key: CO_2 = carbon dioxide; R = revised.

[1] Transportation and U.S. totals include greenhouse gas emissions from military aircraft (12.6 million metric tonnes in 2011); "other" transportation, primarily lubricants (9.0 million metric tonnes in 2011); and electricity-related emissions. Emissions from international bunker fuels are not included.

Notes: CO_2 equivalent is computed by multiplying the weight of the gas being measured by its estimated Global Warming Potential (GWP). The Intergovernmental Panel on Climate Change developed the GWP concept to compare the ability of one GHG to trap heat in the atmosphere to another gas. Carbon comprises 12/44 of CO_2 by weight. Medium- and heavy-duty trucks weigh 8,501 pounds and above. Numbers may not add to totals due to rounding.

Between 1990 and 2011, medium- and heavy-duty truck emissions rose by 74 percent, the largest percentage increase of any major transportation mode. An increase in truck freight movement is largely responsible for the rise in emissions over the last 21 years.

Table 5-17. Medium- and Heavy-Duty Truck Greenhouse Gas Emissions: 1990, 2005, and 2008-2011

Source: U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011, EPA 430-R-13-001 (Washington, DC: April 12, 2013), tables 2-15 and ES-8, available at *http://epa.gov/climatechange/ghgemissions/usinventoryreport.html* as of September 13, 2013.

Table 5-18. Number and Volume of Oil Spills In and Around U.S. Waterways: 1990, 2000, and 2009-2011

	1990		2000		2009		2010[1]		2011	
	Incidents	Gallons spilled	Incidents	Gallons spilled	Incidents	Gallons spilled	Incidents	Gallons spilled	Incidents	Gallons spilled
Total, all spills	**8,177**	**7,915,007**	**8,354**	**1,431,370**	**3,304**	**211,601**	**3,008**	**207,712,793**	**3,065**	**210,271**
Vessel sources, total	**2,485**	**6,387,158**	**5,560**	**1,033,643**	**1,645**	**126,658**	**1,508**	**894,934**	**1,531**	**107,663**
Tankship	249	4,977,251	111	608,176	28	14,417	23	421,583	26	1,702
Tank barge	457	992,025	229	133,540	98	4,424	73	965	67	15,852
Other vessels[2]	1,779	417,882	5,220	291,927	1,519	107,816	1,412	472,386	1,438	90,109
Nonvessel sources, total	**2,584**	**1,408,472**	**1,645**	**373,761**	**979**	**54,276**	**1,008**	**206,809,141**	**1,159**	**94,759**
Facilities[3]	2,287	1,059,302	1,054	311,604	927	51,703	869	221,642	1,004	89,467
Pipelines	149	316,928	25	17,021	16	1,657	34	4,627	38	1,687
All other non-vessels[4]	148	32,242	566	45,136	36	916	105	206,582,872	117	3,605
Unknown/Unidentified	**3,108**	**119,377**	**1,149**	**23,966**	**680**	**30,667**	**492**	**8,718**	**375**	**7,849**

[1] The largest spill in U. S. waters began on April 20, 2010 with an explosion and fire on the mobile offshore drilling unit (MODU) Deepwater Horizon. Subsequently, the MODU sank, leaving an open exploratory well to discharge crude oil into the Gulf of Mexico for nearly three months. The most commonly accepted spill amount from the well is approximately 206.6 million gallons.

[2] 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).

[3] Facilities include mobile offshore drilling units, offshore supply vessels, offshore platforms, designated waterfront facilities, fixed platforms, mobile facilities, and municipal facilities.

[4] All other non-vessels include aircraft, land vehicles, railroad equipment, bridges, factories, fleeting areas, industrial facilities, marinas, common carriers, sewer drainage, shipyard/repair facilities, and shorelines.

Water quality is affected by oil spills from vessels and pipelines transporting crude oil and petroleum products and by facilities, such as offshore drilling units and platforms. In 2011, vessel-related spills accounted for 51 percent of total gallons spilled. While the amount of oil spilled each year varies considerably, U.S. Coast Guard data show an overall decrease since 1990, with the exception in 2005 when Hurricane Katrina caused numerous spills and in 2010 when the Deepwater Horizon mobile offshore drilling unit sank after an explosion and fire, leaving a well open to discharge crude oil into the Gulf of Mexico. The well discharged 206.6 million gallons of crude oil over nearly three months.

Table 5-18. Number and Volume of Oil Spills In and Around U.S. Waterways: 1990, 2000, and 2009-2011
Source: U.S. Coast Guard, Polluting Incidents In and Around U.S. Waters, A Spill/Release Compendium: 1969-2011 (Washington, DC: December 2012), tables Number of Spills by Source and Volume of Spills by Source.

Table 2-1M. Weight of Shipments by Transportation Mode: 2007, 2012, and 2040[1] (Millions of metric tonnes)

	2007				2012				2040			
	Total	Domestic	Exports[2]	Imports[2]	Total	Domestic	Exports[2]	Imports[2]	Total	Domestic	Exports[2]	Imports[2]
Total	**17,127**	**15,288**	**594**	**1,245**	**17,837**	**15,897**	**817**	**1,123**	**25,874**	**20,951**	**2,388**	**2,535**
Truck	11,592	11,418	86	88	11,959	11,769	107	83	17,042	16,405	334	304
Rail	1,723	1,583	56	84	1,831	1,683	74	74	2,513	1,979	352	182
Water	862	457	59	346	885	492	87	306	971	507	149	315
Air, air & truck	12	2	4	5	13	3	5	6	48	6	18	25
Multiple modes & mail[1]	1,296	393	353	550	1,441	411	490	540	3,243	586	1,403	1,255
Pipeline[1]	1,354	1,192	4	159	1,403	1,289	12	101	1,579	1,140	15	424
Other & unknown	287	241	33	13	307	251	43	13	477	329	118	31

[1] 2007 total and domestic numbers for the multiple modes & mail and the pipeline categories were revised as a result of Freight Analysis Framework database improvements.

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

Notes: 1 metric tonne = 1.1023 short tons. Numbers may not add to totals due to rounding. The 2012 data are provisional estimates that are based on selected modal and economic trend data. All truck, rail, water, and pipeline movements that involve more than one mode, including exports and imports that change mode at international gateways, are included in multiple modes & mail to avoid double counting. As a consequence, rail and water totals in this table are less than other published sources.

Table 2-4M. Top Commodities: 2012

Millions of Metric Tonnes		Billions of 2007 Dollars	
Total, all commodities	**17,837**	**Total, all commodities**	**17,352**
Gravel	2,103	Machinery	1,836
Cereal grains	1,447	Electronics	1,492
Coal	1,385	Motorized vehicles	1,348
Natural gas, coke, asphalt[1]	1,308	Mixed freight	1,090
Non-metallic mineral products	1,308	Pharmaceuticals	909
Waste/scrap	1,241	Miscellaneous manufactured products	717
Gasoline	934	Textiles/leather	710
Crude petroleum	710	Gasoline	705
Fuel oils	694	Plastics/rubber	601
Natural Sands	531	Articles of base metal	588

[1] This group includes coal and petroleum products not elsewhere classified such as liquefied natural gas, coke, asphalt, and other products of coal and petroleum refining, excluding gasoline, aviation fuel, and fuel oil.

Note: 1 metric tonne = 1.1023 short tons

Table 2-1M. Weight of Shipments by Transportation Mode: 2007, 2012, and 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2014.

Table 2-4M. Top Commodities: 2012
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2014.

Table 2-5M. Hazardous Materials Shipments by Transportation Mode: 2007

Transportation mode	Value		Metric Tonnes		Tonne-kilometers[1]		Kilometers
	$ Billions	Percent	Millions	Percent	Billions	Percent	Average distance per shipment
All modes, total	**1,448**	**100.0**	**2,024**	**100.0**	**472**	**100.0**	**154**
Single modes, total	**1,371**	**94.6**	**1,916**	**94.6**	**408**	**86.3**	**105**
Truck[2]	837	57.8	1091	53.9	152	32.2	95
For-hire	359	24.8	449	22.2	92	19.6	344
Private	478	33.0	642	31.7	59	12.6	51
Rail	69	4.8	118	5.8	135	28.5	930
Water	69	4.8	136	6.7	54	11.5	616
Air	2	0.1	S	S	S	S	1,762
Pipeline[3]	393	27.2	571	28.2	S	S	S
Multiple modes, total	**71**	**4.9**	**101**	**5.0**	**63**	**13.3**	**1,342**
Truck and rail	7	0.5	11	0.5	15	3.1	1,254
Truck and water	23	1.6	33	1.6	18	3.8	1,625
Rail and water	5	0.4	5	0.3	4	0.9	2,424
Parcel, U.S. Postal Service, or Courier	8	0.5	<1	<0.1	<1	<0.1	1,345
Other multiple modes	28	1.9	51	2.5	25	5.3	375
Unknown and other modes, total	**7**	**0.5**	**8**	**0.4**	**2**	**0.5**	**93**

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

[1] Tonne-kilometer estimates are based on estimated distances traveled along a modeled transportation network.

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

[3] Excludes crude oil shipments.

Notes: 1 metric tonne = 1.1023 short tons; 1 tonne-kilometer = 0.6849 ton miles. Value-of-shipment estimates are reported in $2007 dollars. Numbers and percents may not add to totals due to rounding.

Table 2-6M. Hazardous Materials Shipments by Hazard Class: 2007

Hazard class	Description	Value		Metric Tonnes		Tonne-kilometers[1]		Kilometers
		$ Billions	Percent	Millions	Percent	Billions	Percent	Average distance per shipment
Class 1	Explosives	12	0.8	3	0.1	<1	<0.1	813
Class 2	Gases	132	9.1	206	11.2	118	17.1	56
Class 3	Flammable liquids	1,170	80.8	1,443	78.6	387	56.3	100
Class 4	Flammable solids	4	0.3	17	0.9	12	1.7	341
Class 5	Oxidizers and organic peroxides	7	0.5	12	0.7	15	2.2	398
Class 6	Toxic (poison)	21	1.5	9	0.5	12	1.8	515
Class 7	Radioactive materials	21	1.4	<1	<0.1	<1	<0.1	S
Class 8	Corrosive materials	51	3.6	94	5.1	95	13.8	229
Class 9	Miscellaneous dangerous goods	30	2.1	52	2.8	49	7.1	534
Total		**1,448**	**100.0**	**1,836**	**100.0**	**688**	**100.0**	**106**

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

[1] Tonne-kilometer estimates are based on estimated distances traveled along a modeled transportation network.

Notes: 1 metric tonne = 1.1023 short tons; 1 tonne-kilometer = 0.6849 ton miles. Numbers and percents may not add to totals due to rounding.

Table 2-5M. Hazardous Materials Shipments by Transportation Mode: 2007
Source: U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, 2007 Commodity Flow Survey, Hazardous Materials (Washington, DC: July 2010), table 1a, available at *www.bts.gov/publications/commodity_flow_survey/* as of September 20, 2013.

Table 2-6M. Hazardous Materials Shipments by Hazard Class: 2007
Source: U.S. Department of Transportation, Bureau of Transportation Statistics and U.S. Department of Commerce, Census Bureau, 2007 Commodity Flow Survey, Hazardous Materials (Washington, DC: July 2010), table 2a, available at *www.bts.gov/publications/commodity_flow_survey/* as of September 30, 2013.

Table 2-7M. Domestic Mode of Exports and Imports by Tonnage and Value: 2007 and 2040

	Millions of Metric Tonnes		Billions of 2007 Dollars	
	2007	2040	2007	2040
Total	**1,839**	**4,922**	**3,193**	**12,134**
Truck[1]	680	2,145	1,968	7,852
Rail	253	868	200	573
Water	137	243	54	94
Air, air & truck[2]	2	9	206	892
Multiple modes & mail[3]	135	462	278	1,250
Pipeline	314	816	137	350
Other & unknown	47	152	220	1,016
No domestic mode[4]	272	227	130	108

[1] Excludes truck moves to and from airports.

[2] Includes truck moves to and from airports

[3] Multiple modes & mail includes U.S. Postal Service, courier shipments, and all intermodal combinations, except air and truck. In this table, oceangoing export and import shipments that move between ports and domestic locations by single modes are classified by the domestic mode rather than by multiple modes & mail.

[4] No domestic mode includes waterborne import shipments of crude petroleum off-loaded directly at the domestic destination (refineries) with no domestic mode of transportation.

Notes: 1 metric tonne = 1.1023 short tons. Numbers may not add to totals due to rounding.

Table 2-9M. Value and Tonnage of U.S. Merchandise Trade with Canada and Mexico: 2000, 2005, 2011, and 2012 (billions of current U.S. dollars and millions of metric tonnes)

	2000		2005		2011		2012	
Mode	**Value**	**Weight**	**Value**	**Weight**	**Value**	**Weight**	**Value**	**Weight**
Truck[1]	429	NA	491	173	626	189	665	178
Rail[1]	94	NA	116	128	152	129	168	140
Air	45	<1	33	<1	46	<1	44	<1
Water	33	176	58	232	108	188	106	178
Pipeline[1]	24	NA	52	78	81	112	77	123
Other[1]	29	NA	39	5	46	12	50	19
Total[1]	**653**	**NA**	**790**	**616**	**1,058**	**612**	**1,110**	**638**

Key: NA = not available.

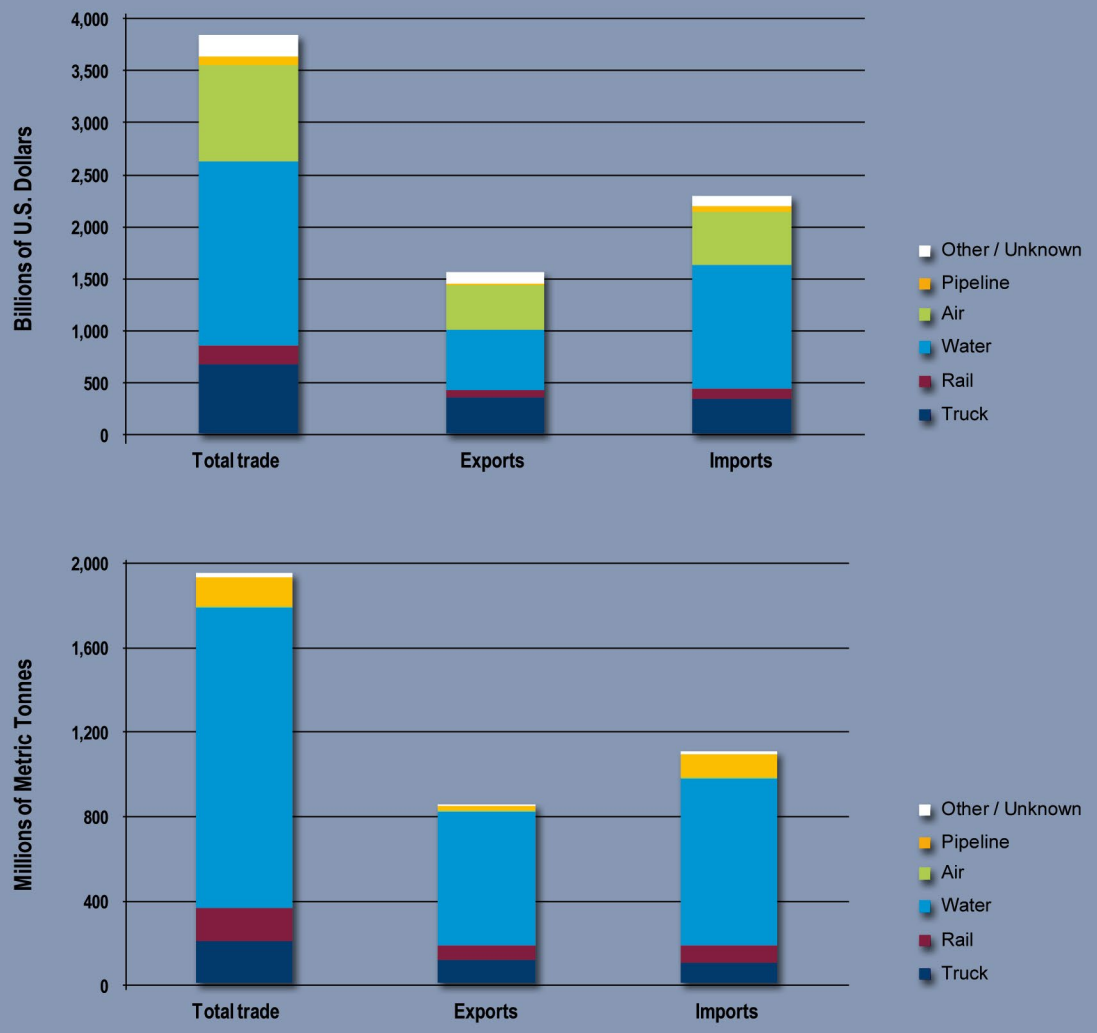
[1] The U.S. Department of Transportation, Bureau of Transportation Statistics estimated the weight of exports for truck, rail, pipeline, and other modes using weight-to-value ratios derived from imported commodities.

Notes: 1 metric tonne = 1.1023 short tons. "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 (FAF) due to variations in coverage and FAF conversion of values to constant dollars. Numbers may not add to totals due to rounding.

Table 2-7M. Domestic Mode of Exports and Imports by Tonnage and Value: 2007 and 2040
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.

Table 2-9M. Value and Tonnage of U.S. Merchandise Trade with Canada and Mexico: 2000, 2005, 2011, and 2012
Source: Truck, Rail, Pipeline, and Other: U.S. Department of Transportation, North American Transborder Freight Data, available at *www.bts.gov/transborder* as of October 15, 2013; **Air and Water:** U.S. Department of Commerce, Census Bureau, Foreign Trade Division, FT920 - U.S. Merchandise Trade: Selected Highlights (Washington, DC: annual issues).

Figure 2-5M. U.S. International Merchandise Trade by Transportation Mode: 2012



Notes: 1 metric tonne = 1.1023 short tons. The U.S. Department of Transportation (USDOT), Bureau of Transportation Statistics estimated 2012 weight data for truck, rail, pipeline, and other and unknown modes using value-to-weight ratios derived from imported commodities. Totals for the most recent year differ slightly from the USDOT, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework (FAF) due to variations in coverage and FAF conversion of values to constant dollars.

Figure 2-5M. U.S. International Merchandise Trade by Transportation Mode: 2012
Source: Total, water and air data: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, FT920 - U.S. Merchandise Trade: Selected Highlights (Washington, DC: February 2013). **Truck, rail, pipeline, and other and unknown data:** U.S. Department of Transportation, Bureau of Transportation Statistics, North American Transborder Freight Data, available at *www.bts.gov/transborder* as of October 17, 2013.

Table 3-1M. Kilometers of Infrastructure by Transportation Mode: 1990, 2000, and 2008-2011

	1990	2000	2008	2009	2010	2011
Public roads, route miles	6,222,926	6,358,386	6,532,576	NA	NA	6,323,503
National Highway System (NHS)	N	417,439	264,075	NA	NA	263,503
Interstates	72,536	75,109	75,657	NA	NA	75,571
Other NHS	N	184,287	188,418	NA	NA	187,932
Other	N	6,098,989	6,268,500	NA	NA	6,060,000
Strategic Highway Corridor Network (STRAHNET)[1]	N	99,881	100,182	NA	NA	102,811
Interstate	N	75,113	75,657	NA	NA	75,571
Non-Interstate	N	24,765	24,525	NA	NA	27,240
Railroad[2]	283,085	274,400	224,213	223,878	223,006	222,913
Class I	214,337	194,073	151,403	151,144	153,803	153,503
Regional	29,570	33,759	26,859	20,605	16,748	16,664
Local	39,165	46,567	45,951	52,129	52,456	52,745
Inland waterways						
Navigable channels	17,702	17,702	17,702	17,702	17,702	17,702
Great Lakes-St. Lawrence Seaway	3,769	3,769	3,769	3,769	3,769	3,769
Pipelines						
Oil	335,938	284,834	(R) 272,910	(R) 276,429	285,660	287,752
Gas	(R) 2,044,247	(R) 2,216,479	(R) 2,466,668	(R) 2,486,836	2,500,129	2,516,136

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

[1] The Strategic Highway Corridor Network (STRAHNET) is the total minimum public highway network necessary to support deployment needs of the U.S. Department of Defense.

[2] Class I railroads have annual carrier operating revenue of $433.2 million or more. Regional (Class II) railroads have annual carrier operating revenue greater than $20.5 million and less than $433.2 million. Local (Class III) railroads have annual carrier operating revenue below $20.5 million.

Note: 1 kilometer = 0.6214 miles.

Table 3-1M. Miles of Infrastructure by Transportation Mode: 1990, 2000, and 2008-2011

Source: Public Roads: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), tables HM-16 and HM-49, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of October 5, 2013. **Rail:** Association of American Railroads, Railroad Facts (Washington, DC: annual issues). **Navigable channels:** U.S. Army Corps of Engineers, A Citizen's Guide to the USACE, available at *www.corpsreform.org/sitepages/downloads/CitzGuideChptr1.pdf* as of October 5, 2013. **Great Lakes-St. Lawrence Seaway:** The St. Lawrence Seaway Development Corporation, The Seaway, available at *www.greatlakes-seaway.com/en/seaway/facts/index.html* as of October 5, 2013. **Pipelines:** U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety, Pipeline Statistics, available at *www.phmsa.dot.gov/pipeline/library/data-stats* as of October 5, 2013.

Table 3-7M. Top 25 Airports by Landed Weight of All-Cargo Operations: 2000 and 2009-2012[1]

Airport	2012 Rank	Landed weight (thousands of metric tons)				
		2000	2009	2010	2011	2012
Memphis, TN (Memphis International)	1	5,732	8,586	8,865	9,209	9,310
Anchorage, AK (Ted Stevens Anchorage International)[2]	2	7,333	7,042	8,829	8,062	7,495
Louisville, KY (Louisville International-Standiford Field)	3	3,617	4,662	4,825	4,981	4,955
Miami, FL (Miami International)	4	2,657	2,882	3,132	3,009	3,242
Indianapolis, IN (Indianapolis International)	5	2,616	2,075	2,140	2,183	2,241
Chicago, IL (O'Hare International)	6	1,870	1,587	2,221	1,982	2,066
Los Angeles, CA (Los Angeles International)	7	2,624	1,710	1,794	1,834	1,907
New York, NY (John F. Kennedy International)	8	2,534	1,443	1,780	1,789	1,585
Cincinnati, OH (Cincinnati/Northern Kentucky International)	9	828	512	1,103	1,279	1,446
Fort Worth, TX (Dallas/Fort Worth International)	10	1,534	1,303	1,375	1,390	1,401
Newark, NJ (Newark Liberty International)	11	1,779	1,328	1,351	1,383	1,295
Oakland, CA (Metropolitan Oakland International)	12	1,643	1,216	1,201	1,215	1,200
Ontario, CA (Ontario International)	13	1,107	1,060	1,017	1,050	1,071
Atlanta, GA (William B. Hartsfield International)	14	989	1,159	1,192	1,205	920
Honolulu, HI (Honolulu International)	15	628	926	963	959	897
Philadelphia, PA (Philadelphia International)	16	1,319	1,027	902	884	859
Houston, TX (George Bush Intercontinental)	17	435	711	692	733	711
Phoenix, AZ (Sky Harbor International)	18	835	554	550	562	590
Seattle, WA (Seattle-Tacoma International)	19	961	729	632	616	585
Denver, CO (Denver International)	20	817	566	561	548	546
San Francisco, CA (San Francisco International)	21	1,149	678	592	564	543
Portland, OR (Portland International)	22	800	494	482	515	527
Salt Lake City, UT (Salt Lake City International)	23	681	408	385	388	397
Minneapolis, MN (Minneapolis-St Paul International/Wold-Chamberlain)	24	564	430	465	439	397
San Juan, PR (Luis Munoz Marin International)	25	440	493	400	393	385
Top 25 airports[3]		**47,520**	**43,684**	**47,491**	**47,213**	**46,573**
United States, all airports[4]		**67,806**	**57,327**	**61,263**	**59,961**	**61,189**
Top 25 as % of U.S. total		**70.1**	**76.2**	**77.5**	**78.7**	**76.1**

[1] Dedicated to the exclusive transportation of cargo, all-cargo operations do not include aircraft carrying passengers that also may be carrying cargo. Aircraft landed weight is the certificated maximum gross landed weight of the aircraft as specified by the aircraft manufacturers.

[2] Anchorage includes a large share of all-cargo operations in-transit.

[3] Airport rankings change each year. Totals represent the top 25 airports for each year, not necessarily the top 25 airports listed here for 2012.

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

Note: 1 short ton = 2,000 pounds.

Table 3-7M. Top 25 Airports by Landed Weight of All-Cargo Operations: 2000 and 2009-2012

Source: U.S. Department of Transportation, Federal Aviation Administration, Air Carrier Activity Information System (ACAIS) database, All-Cargo Data, available at *www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/* as of September 11, 2013.

Table 3-8M. Trucks and Truck Kilometers by Average Weight: 1987, 1992, 1997, and 2002[1]

Average weight (kilograms)	1987		1992		1997		2002		Percent Change, 1987 to 2002	
	Number (thousands)	VKT (millions)	Number (thousands)	VKT (millions)	Number (thousands)	VKT (millions)	Number (thousands)	VKT (millions)	Number	VKT
Total	**3,624**	**144,789**	**4,008**	**168,952**	**4,701**	**237,972**	**5,415**	**234,348**	**49.4**	**61.9**
Light-heavy	**1,030**	**17,328**	**1,259**	**22,550**	**1,436**	**31,888**	**1,914**	**42,252**	**85.9**	**143.8**
4,536 to 6,350	525	8,754	694	12,874	819	18,509	1,142	24,439	117.6	179.2
6,351 to 7,257	242	4,407	282	4,791	316	6,359	396	9,508	63.6	115.8
7,258 to 8,845	263	4,168	282	4,884	301	7,020	376	8,306	43.2	99.3
Medium-heavy	**766**	**12,200**	**732**	**13,103**	**729**	**16,301**	**910**	**18,934**	**18.8**	**55.2**
8,846 to 11,793	766	12,200	732	13,103	729	16,301	910	18,934	18.8	55.2
Heavy-heavy	**1,829**	**115,261**	**2,017**	**133,299**	**2,536**	**189,782**	**2,591**	**173,161**	**41.7**	**50.2**
11,794 to 14,969	377	8,707	387	9,163	428	11,414	437	9,407	15.9	8.0
14,969 to 18,144	209	6,619	233	8,505	257	10,612	229	6,066	9.7	-8.4
18,144 to 22,680	**292**	**12,271**	**339**	**15,484**	**400**	**21,046**	**318**	**10,778**	**9.0**	**-12.2**
22,680 to 27,216	188	11,517	227	13,998	311	20,361	327	14,404	73.8	25.1
27,216 to 36,287	723	73,123	781	82,143	1,070	120,250	1,179	124,701	63.1	70.5
36,288 to 45,359	28	2,018	33	2,460	46	3,906	69	4,747	144.3	135.2
45,360 to 58,967	8	708	12	1,181	18	1,691	26	2,528	238.5	257.2
58,967 or more	4	298	5	365	6	502	6	530	43.2	77.9

Key: VKT = vehicle-kilometers traveled.

[1] Excludes trucks with an average weight of 4,536 kilograms (10,000 pounds) or less.

Notes: 1 kilometer = 0.6214 miles; 1 kilogram = 2.2046 pounds. Weight includes the empty weight of the vehicle plus the average weight of the load carried. Numbers may not add to totals due to rounding.

Table 3-8M. Trucks and Truck Kilometers by Average Weight: 1987, 1992, 1997, and 2002

Source: U.S. Department of Commerce, Census Bureau, 2002 Vehicle Inventory and Use Survey: United States, EC02TV-US (Washington, DC: 2004), available at *www.census.gov/prod/ec02/ec02tv-us.pdf* as of September 20, 2013; U.S. Department of Commerce, Census Bureau, 1992 Truck Inventory and Use Survey: United States, TC92-T-52 (Washington, DC: 1995), available at *www.census.gov/prod/ec97/97tv-us.pdf* as of September 20, 2013.

Table 3-11M. Trucks, Truck Kilometers, and Average Distance by Range of Operations and Jurisdictions: 2002

	Number of Trucks (thousands)	Truck Kilometers (millions)	Kilometers per Truck (thousands)
Total	**5,521**	**233,622**	**42**
Off the road	183	3,641	20
50 miles or less	2,942	68,444	23
51 to 100 miles	685	30,836	45
101 to 200 miles	244	18,957	78
201 to 500 miles	232	28,194	122
501 miles or more	293	42,978	147
Not reported	716	40,330	56
Not applicable	226	241	1
Operated in Canada	2	116	69
Operated in Mexico	2	47	30
Operated within the home base state	4,196	136,746	33
Operated in states other than the home base state	496	65,821	133
Not reported	599	30,650	51
Not applicable	226	241	1

Notes: 1 kilometer = 0.6214 miles. Includes trucks registered to companies and individuals in the United States except pickups, minivans, other light vans, and sport utility vehicles. Numbers may not add to totals due to rounding.

Table 3-11M. Trucks, Truck Kilometers, and Average Distance by Range of Operations and Jurisdictions: 2002
Source: U.S. Department of Commerce, Census Bureau, 2002 Vehicle Inventory and Use Survey: United States, EC02TV-US, table 3a (Washington, DC: 2004), available at *www.census.gov/prod/ec02/ec02tv-us.pdf* as of September 20, 2013.

Table 3-12M. Truck Kilometers by Products Carried: 2002

Products carried	Millions of kilometers
Total[1]	**233,622**
No product carried	46,632
Mixed freight	23,590
Tools, nonpowered	12,487
All other packaged foodstuffs	11,953
Tools, powered	10,424
Products not specified	10,232
Mail and courier parcels	7,660
Miscellaneous manufactured products	6,449
Vehicles, including parts	6,186
Wood products	5,730
Bakery and milled grain products	5,717
Articles of base metal	5,301
Machinery	5,190
Paper or paperboard articles	5,052
Meat, seafood, and their preparations	4,918
Nometallic mineral products	4,906
Electronic and other electrical equipment	4,866
Base metal in primary or semifinished forms	4,637
Gravel or crushed stone	4,490
All other agricultural products	4,282
All other waste and scrape (non-EPA manifest)	4,260
Plastic and rubber	3,850
Animal feed and products of animal origin	3,360
Furniture, mattresses, lamps, etc.	3,288
Pulp, newsprint, paper, paperboard	3,115
Fertilizers and fertilizer materials	2,681
Textile, leather, and related articles	2,475
Grains, cereal	2,201
All other chemical products and preparations	2,174
Fuel oils	1,983
All other coal and refined petroleum products	1,886
Logs and other wood in the rough	1,849
Alcoholic beverages	1,808
Natural sands	1,753
Recyclable products	1,484
Basic chemicals	1,410
Gasoline and aviation turbine fuel	1,365
Empty shipping containers	1,278
Printed products	1,231
Animals and fish, live	1,182
Precision instruments and apparatus	1,181
All other transportation equipment	1,024
All other nonmetallic minerals	802
Monumental or building stone	744
Tobacco products	717
Pharmaceutical products	491
Coal	484
Passengers	440
Products, equipment, or materials not elsewhere classified	426
Hazardous waste (EPA manifest)	306
Not applicable[2]	241
Crude petroleum	212
Metallic ores and concentrates	73

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

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

Notes: 1 kilometer = 0.6214 miles. Includes trucks registered to companies and individuals in the United States except pickups, minivans, other light vans, and sport utility vehicles.

Table 3-12M. Truck Kilometers by Products Carried: 2002

Source: U.S. Department of Commerce, Census Bureau, 2002 Vehicle Inventory and Use Survey: United States, EC02TV-US (Washington, DC: 2004), available at *www.census.gov/prod/ec02/ec02tv-us.pdf* as of September 20, 2013.

Table 5-7M. Fuel Consumption by Transportation Mode: 2007-2011

	2007	2008	2009	2010	2011
Highway[1]					
Gasoline, diesel and other fuels (million liters)	666,929	646,349	636,412	(R) 645,006	638,143
Truck, total	178,724	180,562	167,686	(R) 170,413	160,396
Single-unit 2-axle 6-tire or more truck	61,750	64,888	61,516	(R) 57,141	53,684
Combination truck	116,973	115,673	106,170	(R) 113,273	106,712
Truck (percent of total)	26.8	27.9	26.3	(R) 26.4	25.1
Rail, Class I (in freight service)					
Distillate / diesel fuel (million liters)	(R) 15,471	(R) 14,804	(R) 12,188	(R) 13,320	14,044
Water					
Residual fuel oil (million liters)	23,948	(R) 19,901	(R) 17,370	(R) 19,465	17,260
Distillate / diesel fuel oil (million liters)	7,282	(R) 7,507	(R) 7,241	(R) 7,581	8,075
Gasoline (million liters)	4,625	4,301	4,278	4,417	4,179
Pipeline					
Natural gas (million cubic meters)	17,595	18,348	18,977	(R) 19,089	19,361

Key: R = revised.

[1] Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

Notes: 1 liter = 0.2642 gallons; 1 cubic meter = 35.3147 cubic feet.

Table 5-9M. Single-Unit Truck Fuel Consumption and Travel: 2007-2011

	2007	2008	2009	2010	2011
Number registered (thousands)	8,117	8,288	8,356	8,217	7,819
Vehicle kilometers (millions)	193,079	204,144	193,445	(R) 178,207	166,584
Fuel consumed (million liters)	61,750	64,888	61,516	(R) 57,141	53,684
Average kilometers traveled per vehicle	23,788	24,631	23,151	(R) 21,687	21,305
Average kilometers traveled per liter	3.1	3.1	3.1	3.1	3.1
Average fuel consumed per vehicle (liters)	7,608	7,827	7,362	(R) 6,953	6,866

Key: R = revised.

Notes: 1 kilometer = 0.6214 miles; 1 liter = 0.2642 gallons. Single-unit trucks have 2-axles and at least 6 tires or a gross vehicle weight rating exceeding 10,000 lbs. Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

Table 5-7M. Fuel Consumption by Transportation Mode: 2007-2011

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1. **Rail:** Association of American Railroads, Railroad Facts (Washington, DC: annual issues), p. 61. **Water:** U.S. Department of Energy, Energy Information Administration, Fuel Oil and Kerosene Sales 2011 (Washington, DC: 2012), tables 2, 4, and similar tables in earlier editions; U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table MF-24, available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 20, 2013. **Pipeline:** U.S. Department of Energy, Natural Gas Annual 2011, (Washington, DC: January 2013), table 15 and similar tables in earlier editions.

Table 5-9M. Single-Unit Truck Fuel Consumption and Travel: 2007-2011

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1. Available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 2, 2013.

Table 5-10M. Combination Truck Fuel Consumption and Travel: 2007-2011

	2007	2008	2009	2010	2011
Number registered (thousands)	2,635	2,585	2,617	2,553	2,452
Vehicle kilometers traveled (millions)	296,426	295,826	270,518	(R) 282,892	263,425
Fuel consumed (million liters)	116,973	115,673	106,170	(R) 113,273	106,712
Average kilometers traveled per vehicle	112,481	114,429	103,365	(R) 110,813	107,448
Average kilometers traveled per liter	2.5	2.6	2.5	2.5	2.5
Average fuel consumed per vehicle (liters)	44,387	44,743	40,568	(R) 44,372	43,528

Key: R = revised.

Notes: 1 kilometer = 0.6214 miles; 1 liter = 0.2642 gallons. Based on a new methodology, FHWA revised its annual vehicle-miles traveled, number of vehicles, and fuel economy data beginning with 2007. Information on the new methodology is available at *www.fhwa.dot.gov/policyinformation/statistics.cfm*. Data in this table should not be compared to those in pre-2011 editions of *Freight Facts and Figures*.

Table 5-10M. Combination Truck Fuel Consumption and Travel: 2007-2011

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: annual issues), table VM-1. Available at *www.fhwa.dot.gov/policyinformation/statistics/2011/* as of September 1, 2013.

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16. Abstract

This report provides an overview of freight transportation, focusing on the volume and value of freight shipments, the extent of the freight network, industry employment and productivity patterns, and related safety, energy use, and environmental effects. Economic and social characteristics of the United States also are provided as background information. Metric data are available for several tables as well.

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