

III. THE FREIGHT TRANSPORTATION SYSTEM



Freight in America travels over one of the world’s largest and best networks 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 straining system capacity, increasing maintenance requirements, and threatening system performance.

Table 3-1. Miles of Infrastructure by Transportation Mode: 1980-2006

	1980	1990	2000	2006	Percent change, 1980-2006
Public roads, route miles	3,859,837	3,866,926	3,951,101	4,033,007	4.5
National Highway System (NHS)	N	N	161,189	163,467	N
Interstates	41,120	45,074	46,673	46,892	14.0
Other NHS	N	N	114,516	116,575	N
Other	N	N	3,789,912	3,869,539	N
Strategic Highway Corridor Network (STRAHNET)	N	N	62,066	61,968	N
Interstate	N	N	46,675	46,893	N
Non-Interstate	N	N	15,389	15,075	N
Railroad	¹ 183,077	175,909	170,512	139,929	-23.6
Class I	NA	133,189	120,597	94,801	N
Regional	NA	18,375	20,978	16,713	N
Local	NA	24,337	28,937	28,415	N
Inland waterways					
Navigable channels	11,000	11,000	11,000	11,000	0.0
Great Lakes-St. Lawrence Seaway	2,342	2,342	2,342	2,342	0.0
Pipelines					
Oil	218,393	208,752	176,996	169,346	-22.5
Gas	1,051,774	1,189,200	1,369,300	1,534,300	45.9

Key: N = not applicable; NA = not available.
¹Excludes Class III railroads.

Road infrastructure increased slowly over the past 25 years despite a large increase in the volume of traffic. Between 1980 and 2006, route miles of public roads increased by 4.5 percent compared with a 97 percent increase in vehicle miles traveled.

TABLE 3-1. MILES OF INFRASTRUCTURE BY TRANSPORTATION MODE: 1980-2006

Sources: **Public roads:** U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: annual issues), table HM-16 and HM-49. **Rail:** Association of American Railroads, *Railroad Facts* (Washington, DC: annual issues). **Navigable channels:** U.S. Army Corps of Engineers, *Corps Facts*, available at www.hq.usace.army.mil/cepa/pubs as of June 27, 2008. **Great Lakes-St. Lawrence Seaway:** The St. Lawrence Seaway Management Corporation, "The Seaway," available at www.greatlakes-seaway.com/en/seaway/facts/index.html as of November 28, 2008. **Oil pipelines: 1980-2000:** Eno Transportation Foundation, *Transportation in America, 2002* (Washington, DC: 2002). **2006:** 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 November 28, 2008. **Gas pipelines:** American Gas Association, *Gas Facts* (Arlington, VA: annual issues).

Table 3-2. Number of U.S. Vehicles, Vessels, and Other Conveyances: 1980-2006

	1980	1990	2000	2006
Highway	161,490,159	193,057,376	225,821,241	250,851,833
Truck, single-unit 2-axle 6-tire or more	4,373,784	4,486,981	5,926,030	6,649,337
Truck, combination	1,416,869	1,708,895	2,096,619	2,169,670
Truck, total	5,790,653	6,195,876	8,022,649	8,819,007
Trucks as percent of all highway vehicles	3.6	3.2	3.6	3.5
Rail				
Class I, locomotive	28,094	18,835	20,028	23,732
Class I, freight cars ¹	1,168,114	658,902	560,154	475,415
Nonclass I freight cars ¹	102,161	103,527	132,448	120,688
Car companies and shippers freight cars ¹	440,552	449,832	688,194	750,404
Water	38,788	39,445	41,354	41,109
Nonself-propelled vessels ²	31,662	31,209	33,152	32,211
Self-propelled vessels ³	7,126	8,236	8,202	8,898
Oceangoing steam and motor ships ⁴	864	636	454	347
U.S. Flag fleet as percent of world fleet ⁴	3.5	2.7	1.6	1.1

¹Beginning with 2001 data, Canadian-owned U.S. railroads are excluded. This accounted for approximately 47,000 cars in 2000.

²Nonself-propelled vessels include dry-cargo barges, tank barges, and railroad-car floats.

³Self-propelled vessels include dry cargo, passenger, off-shore support, tankers, and towboats.

⁴1,000 gross tons and over.

A vast number of vehicles and vessels move goods over the transportation network. The number of commercial trucks climbed 52 percent between 1980 and 2006. In comparison, the number of

rail freight cars has declined since 1980 with improved utilization and the deployment of larger cars. The number of U.S.-flag water vessels decreased by 59 percent over the same period while the world fleet expanded by 29 percent.

The growing demand for goods and services contributes to the increase in travel by trucks at a slightly faster rate than for all vehicles.

Figure 3-1. Highway Vehicle Miles Traveled by Trucks and All Vehicles: 1980-2006

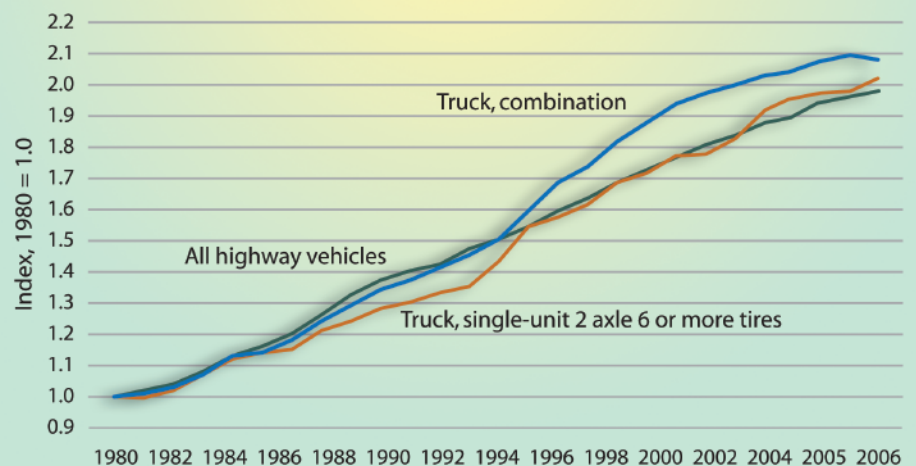


TABLE 3-2. NUMBER OF U.S. VEHICLES, VESSELS, AND OTHER CONVEYANCES: 1980-2006

Sources: **Highway:** U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: annual issues). **Rail:** Association of American Railroads, *Railroad Facts* (Washington, DC: annual issues). **Water: Nonself-propelled vessels and self-propelled vessels:** U.S. Army, Corps of Engineers, *Waterborne Transportation Lines of the United States, Volume 1, National Summaries* (New Orleans, LA: annual issues). **Oceangoing steam motor ships and U.S. Flag fleet:** U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics* (Washington, DC: annual issues).

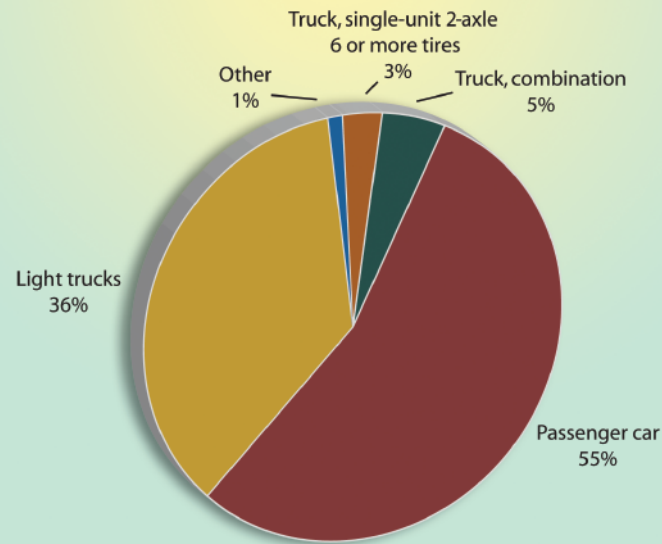
FIGURE 3-1. HIGHWAY VEHICLE MILES TRAVELED BY TRUCKS AND ALL VEHICLES: 1980-2006

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: annual issues), table VM-1, available at www.fhwa.dot.gov/policy/ohpi/hss/index.htm as of April 21, 2008.

Despite doubling over the past two decades, truck traffic remains a relatively small share of highway traffic as a whole. In 2006, commercial trucks accounted for about 8 percent of highway vehicle miles traveled. Approximately two-thirds of commercial truck travel is by truck tractors hauling semitrailers and by other combinations, while the remaining one-third is by single-unit trucks with 6 or more tires.

The nation's truck fleet has grown significantly in number and distance driven. Of trucks weighing more

Figure 3-2. Highway Vehicle Miles Traveled by Vehicle Type: 2006



Notes: "Other" comprises bus and motorcycle. Light trucks include sport utility vehicles, minivans, and pickup trucks.

Table 3-3. Trucks and Truck Miles by Average Weight: 1987-2002¹

Average weight (pounds)	1987		1992		1997		2002		Percent change, 1987-2002	
	Number (thousands)	VMT (millions)	Number (thousands)	VMT (millions)	Number (thousands)	VMT (millions)	Number (thousands)	VMT (millions)	Number	VMT
Total	3,624	89,972	4,008	104,987	4,701	147,876	5,415	145,624	49	62
Light-heavy	1,030	10,768	1,259	14,012	1,436	19,815	1,914	26,256	86	144
10,001 to 14,000	525	5,440	694	8,000	819	11,502	1,142	15,186	118	179
14,001 to 16,000	242	2,738	282	2,977	316	3,951	396	5,908	64	116
16,001 to 19,500	263	2,590	282	3,035	301	4,362	376	5,161	43	99
Medium-heavy	766	7,581	732	8,143	729	10,129	910	11,766	19	55
19,501 to 26,000	766	7,581	732	8,143	729	10,129	910	11,766	19	55
Heavy-heavy	1,829	71,623	2,017	82,832	2,536	117,931	2,591	107,602	42	50
26,001 to 33,000	377	5,411	387	5,694	428	7,093	437	5,845	16	8
33,001 to 40,000	209	4,113	233	5,285	257	6,594	229	3,770	10	-8
40,001 to 50,000	292	7,625	339	9,622	400	13,078	318	6,698	9	-12
50,001 to 60,000	188	7,157	227	8,699	311	12,653	327	8,950	74	25
60,001 to 80,000	723	45,439	781	51,044	1,070	74,724	1,179	77,489	63	71
80,001 to 100,000	28	1,254	33	1,529	46	2,427	69	2,950	144	135
100,001 to 130,000	8	440	12	734	18	1,051	26	1,571	238	257
130,001 or more	4	185	5	227	6	312	6	329	43	78

Key: VMT = vehicle miles traveled.

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

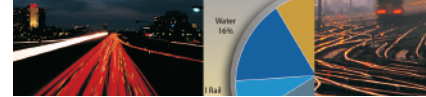
Notes: Weight includes the empty weight of the vehicle plus the average weight of the load carried. Numbers may not add to totals due to rounding.

FIGURE 3-2. HIGHWAY VEHICLE MILES TRAVELED BY VEHICLE TYPE: 2006

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: annual issues), table VM-1, available at www.fhwa.dot.gov/policy/ohpi/hss/index.htm of April 21, 2008.

TABLE 3-3. TRUCKS AND TRUCK MILES BY AVERAGE WEIGHT 1987-2002¹

Sources: U.S. Department of Commerce, Census Bureau, *2002 Vehicle Inventory and Use Survey: United States* (Washington, DC: 2004), available at www.census.gov/svsd/www/vius/products.html as of April 24, 2008; U.S. Department of Commerce, Census Bureau, *1992 Truck Inventory and Use Survey: United States* (Washington, DC: 1995), available at www.census.gov/svsd/www/vius/products.html as of April 24, 2008.



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 has more than doubled in 15 years 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.

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, approximately 200 million weighs

Table 3-4. Commercial Vehicle Weight Enforcement Activities: 2005-2007

	2005	2006	2007
All weighs	230,464,926	229,435,113	217,444,117
Weigh-in-motion	136,380,657	142,587,134	132,257,618
Static weighs, total¹	94,084,269	86,847,979	85,186,499
Semiportable scales	493,574	422,860	425,731
Fixed scales	93,038,479	85,897,099	84,213,507
Portable scales	552,216	528,020	547,261
Violations, total²	567,949	622,806	530,350
Axle weight violations	275,442	271,121	233,563
Gross weight violations	118,328	149,678	126,761
Bridge weight violations	174,179	202,007	170,026
Permits, total³	3,625,898	4,598,227	4,827,668
Non-divisible trip permits	2,711,500	3,399,435	3,743,323
Non-divisible annual permits	233,160	250,505	332,148
Divisible trip permits	288,145	426,381	398,003
Divisible annual permits	393,093	521,906	354,194

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

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

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

Note: Data are not complete for Indiana (2005), Pennsylvania (2005 and 2006), and South Dakota (2006 and 2007).

are made each year, about 60 percent are weight-in motion and nearly 40 percent are static. Weigh-in-motion technology is used as a screening tool to determine which vehicles need closer scrutiny. Violations are taken from static weighs only. Less than 1 percent of static weighs result in violations.

TABLE 3-4. COMMERCIAL VEHICLE WEIGHT ENFORCEMENT ACTIVITIES: 2005-2007

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, personal communication, August 20, 2008.



In addition to weight restrictions, Federal and state governments place limits on the length and other characteristics of commercial trucks using the road system. Twenty-nine states have semitrailer length limitations on the National Network for conventional combination trucks other than the 48-foot limit set by Federal law for a semitrailer operating in a truck tractor-semi-trailer combination.

Table 3-5. Semitrailer Length Limitations on the National Network by State: 2008

State	Length limitation (feet and inches)
States not listed	48-0
Alabama	53-6
Arizona	57-6
Arkansas	53-6
California ¹	48-0
Colorado	57-4
Delaware	53-0
Illinois	53-0
Indiana ²	48-6
Iowa	53-0
Kansas	57-6
Kentucky	53-0
Louisiana	59-6
Mississippi	53-0
Missouri	53-0
Montana	53-0
Nebraska	53-0
Nevada	53-0
New Mexico	57-6
North Dakota	53-0
Ohio	53-0
Oklahoma	59-6
Oregon	53-0
Pennsylvania	53-0
Rhode Island	48-6
South Dakota	53-0
Tennessee	50-0
Texas	59-0
Wisconsin ³	48-0
Wyoming	57-4

¹Semitrailers up to 53 feet may also operate without a permit by conforming to a kingpin-to-rearmost axle distance of 38 feet.

²Semitrailers up to 53 feet in length may operate without a permit by conforming to a kingpin-to-rearmost axle distance of 40 feet and 6 inches. Semitrailers that are consistent with 23 CFR 23 658.13(h) may operate without a permit provided the distance from the kingpin to the center of the rear axle is 46 feet or less.

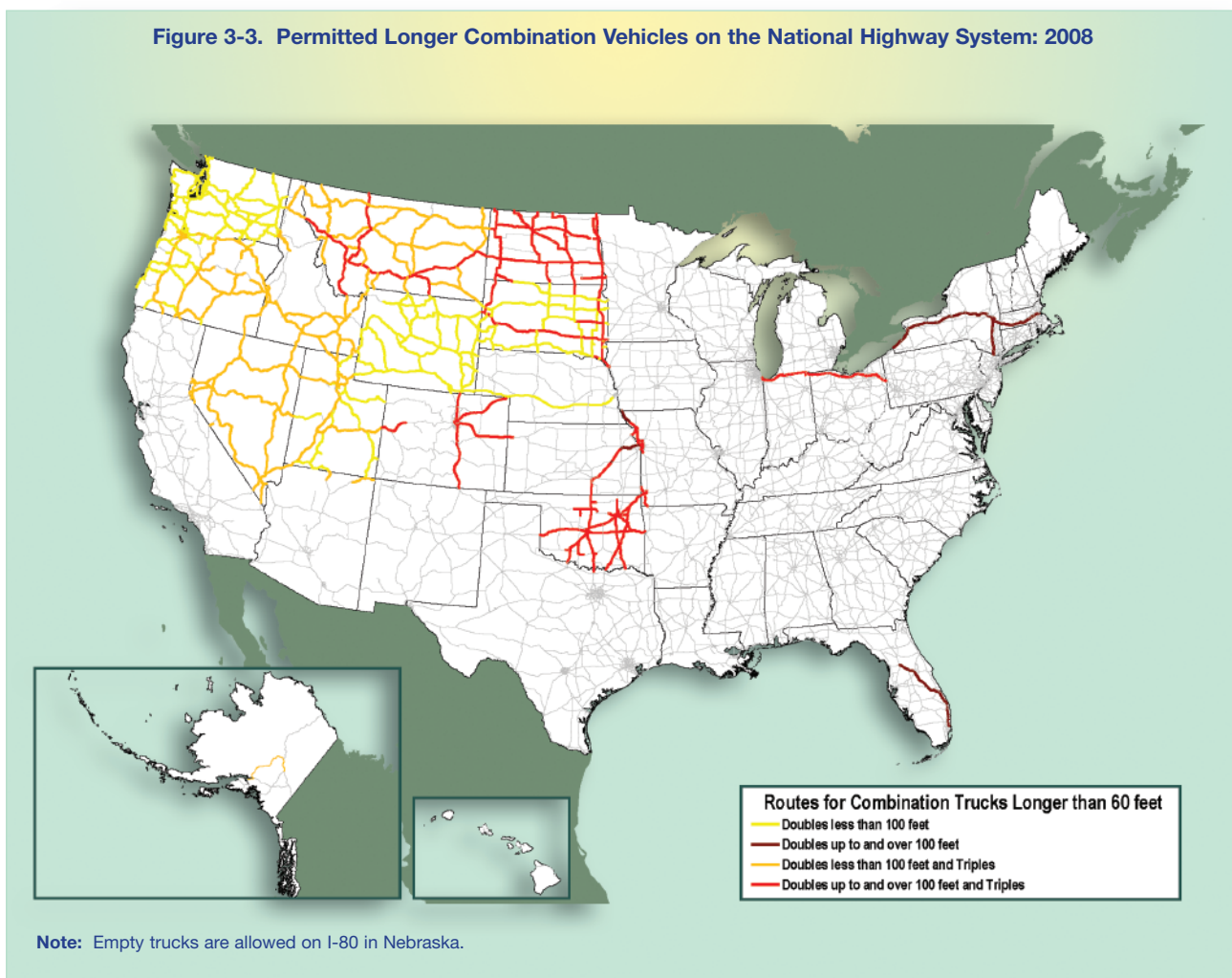
³Semitrailers up to 53 feet in length may operate without a permit by conforming to a kingpin-to-rearmost axle distance of 41 feet, measured to the center of the rear tandem assembly. Semitrailers that are consistent with 23 CFR 658.13(h) may operate without a permit provided the distance from the kingpin to the center of the rear axle is 46 feet or less.

Note: The National Network, established by the Surface Transportation Assistance Act of 1982 (PL 97-424) and designated in U.S. Code of Federal Regulations (23 CFR 658), are the routes over which states must allow conventional combination trucks to operate.

TABLE 3-5. SEMITRAILER LENGTH LIMITATIONS ON THE NATIONAL NETWORK BY STATE: 2008

Source: National Archives and Records Administration, Office of Federal Register, *Code of Federal Regulations, Title 23: Highways, Part 658, Appendix B.*

Figure 3-3. Permitted Longer Combination Vehicles on the National Highway System: 2008



Longer Combination Vehicles (LCVs) are tractors pulling a semitrailer longer than 28 feet and a trailer longer than 28 feet, a semitrailer longer than 28 feet and a trailer no more than 28 feet long, or a 28-foot semitrailer and two 28-foot trailers. Although all states allow conventional combinations consisting of a 28-foot semitrailer and a 28-foot trailer, only fourteen states and six state turnpike authorities allow LCVs on at least some parts of their road networks. Allowable routes for LCVs have been frozen since 1991.

FIGURE 3-3. PERMITTED LONGER COMBINATION VEHICLES ON THE NATIONAL HIGHWAY SYSTEM: 2008

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, special compilation by the Freight Operations and Technology Team, 2008.

Three-fourths of the miles traveled by trucks larger than panels, pickups, minivans, other light vans, and government-owned vehicles are for the movement of products from electronics to sand and gravel. Most of the remaining mileage is for empty backhauls and empty shipping containers.

Table 3-6. Truck Miles by Products Carried: 2002¹

Products carried	Millions of miles
Total²	145,173
Animals and fish, live	735
Animal feed and products of animal origin	2,088
Grains, cereal	1,368
All other agricultural products	2,661
Basic chemicals	876
Fertilizers and fertilizer materials	1,666
Pharmaceutical products	305
All other chemical products and preparations	1,351
Alcoholic beverages	1,124
Bakery and milled grain products	3,553
Meat, seafood, and their preparations	3,056
Tobacco products	445
All other products foodstuff	7,428
Logs and other wood in the rough	1,149
Paper or paperboard articles	3,140
Printed products	765
Pulp, newsprint, paper, paperboard	1,936
Wood products	3,561
Articles of base metal	3,294
Base metal in primary or semifinished forms	2,881
Nonmetallic mineral products	3,049
Tools, nonpowered	7,759
Tools, powered	6,478
Electronic and other electrical equipment	3,024
Furniture, mattresses, lamps, etc.	2,043
Machinery	3,225
Miscellaneous manufactured products	4,008
Precision instruments and apparatus	734
Textile, leather, and related articles	1,538
Vehicles, including parts	3,844
All other transportation equipment	636
Coal	301
Crude petroleum	132
Gravel or crushed stone	2,790
Metallic ores and concentrates	45
Monumental or building stone	462
Natural sands	1,089
All other nonmetallic minerals	499
Fuel oils	1,232
Gasoline and aviation turbine fuel	849
Plastic and rubber	2,393
All other coal and refined petroleum products	1,172
Hazardous waste (EPA manifest)	190
All other waste and scrape (non-EPA manifest)	2,647
Recyclable products	922
Mail and courier parcels	4,760
Empty shipping containers	794
Passengers	274
Mixed freight	14,659
Products, equipment, or materials not elsewhere classified	265
Products not specified	6,358
Not applicable ³	150
No product carried	28,977

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

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

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

TABLE 3-6. 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 April 24, 2008.



Table 3-7. 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	5,520.5	145,172.5	26.3
Off the road	182.9	2,262.8	12.4
50 miles or less	2,942.4	42,531.1	14.5
51 to 100 miles	684.7	19,161.6	28.0
101 to 200 miles	243.5	11,779.9	48.4
201 to 500 miles	231.6	17,519.7	75.7
501 miles or more	293.0	26,706.4	91.2
Not reported	716.3	25,061.1	35.0
Not applicable	226.1	149.9	0.7
Operated in Canada	1.7	72.0	42.7
Operated in Mexico	1.6	29.3	18.5
Operated within the home base state	4,196.4	84,973.9	20.2
Operated in states other than the home base state	495.6	40,901.2	82.5
Not reported	599.1	19,046.1	31.8
Not applicable	226.1	149.9	0.7

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

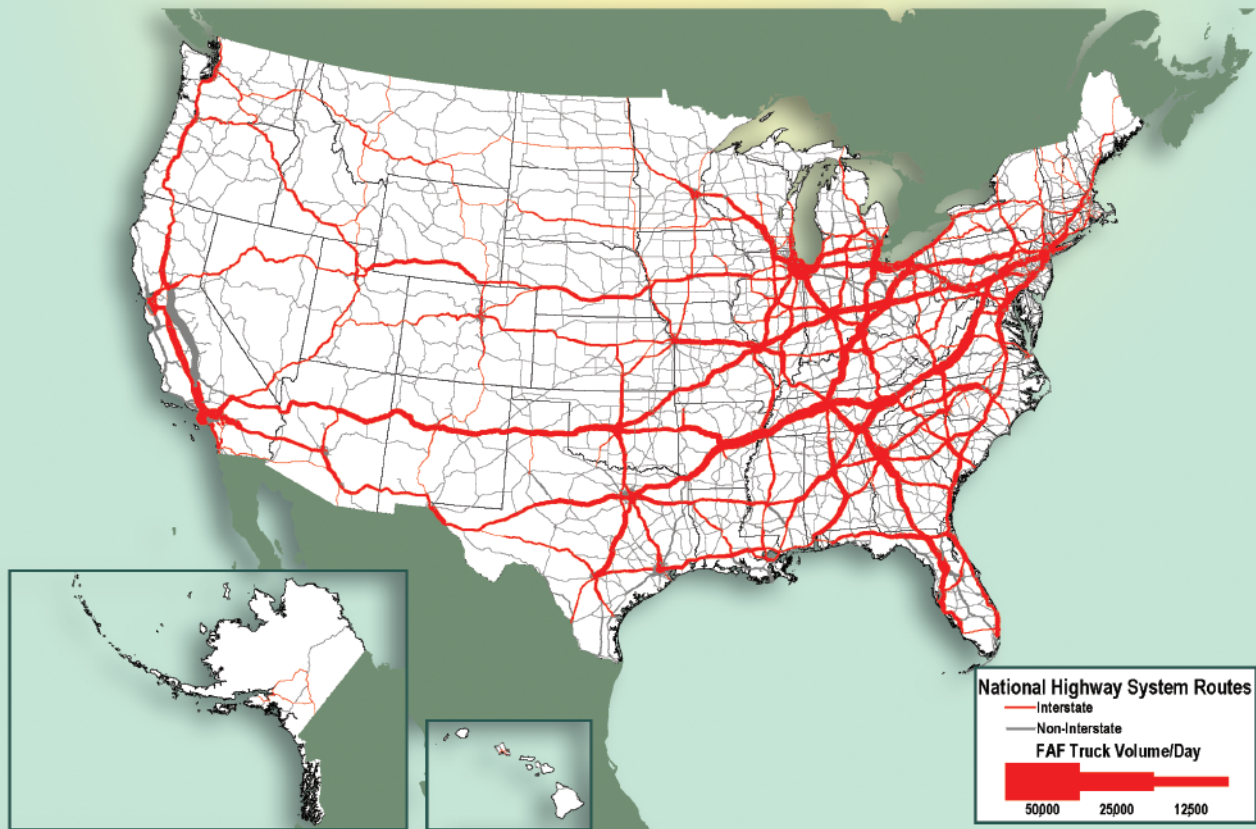
Most trucks larger than pickups, minivans, other light vans, and sport utility vehicles typically operate close to home. About one-half of all trucks typically travel to destinations within 50 miles of their base, and almost three-fourths stayed within their base state. Less than 10 percent of trucks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

TABLE 3-7. 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 April 24, 2008.

Long-haul truck traffic carrying commodities between places at least 50 miles apart is concentrated on major routes connecting population centers, ports, border crossings, and other major hubs of activity. Except for Route 99 in California, most of the heaviest traveled routes are on the Interstate System.

Figure 3-4. Average Daily Long-Haul Truck Traffic on the National Highway System: 2002

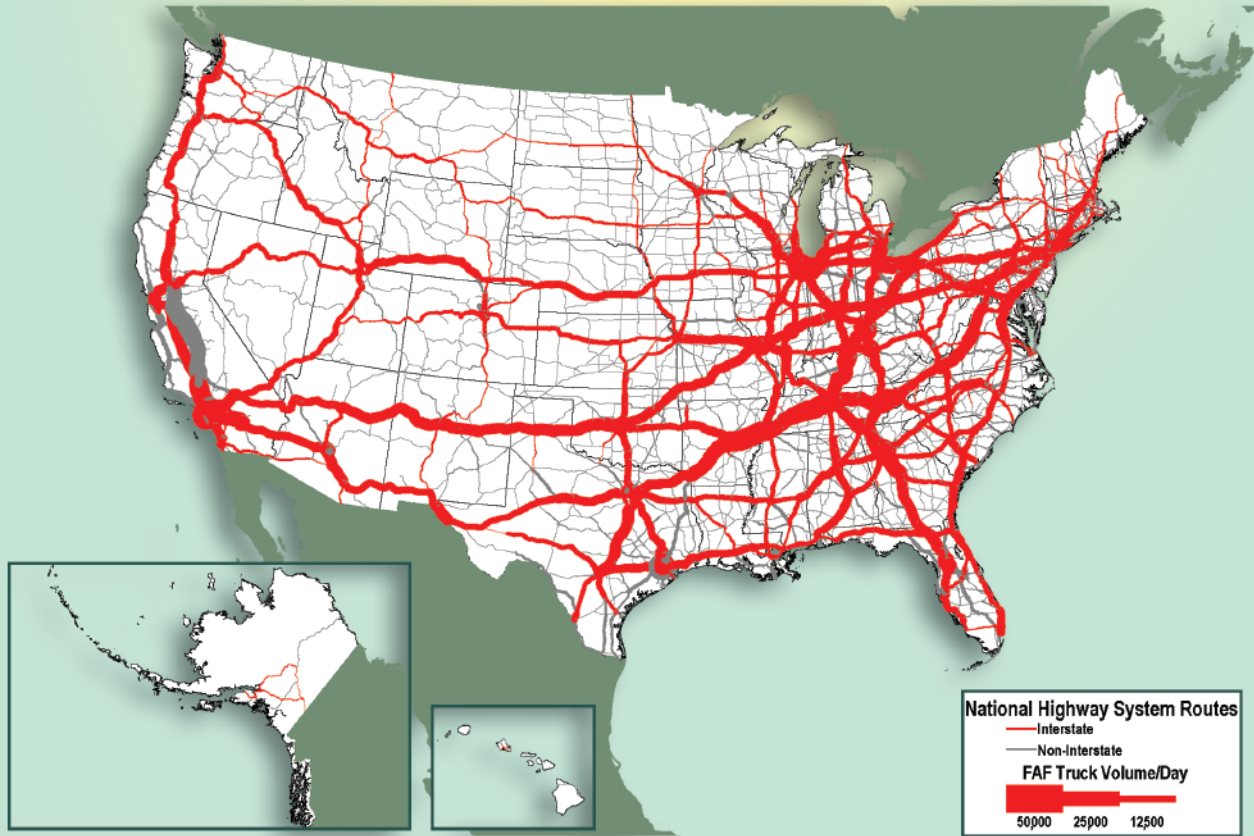


Note: Long-haul freight trucks serve locations at least 50 miles apart, excluding trucks that are used in intermodal movements.

FIGURE 3-4. AVERAGE DAILY LONG-HAUL TRUCK TRAFFIC ON THE NATIONAL HIGHWAY SYSTEM: 2002

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

Figure 3-5. Average Daily Long-Haul Truck Traffic on the National Highway System: 2035



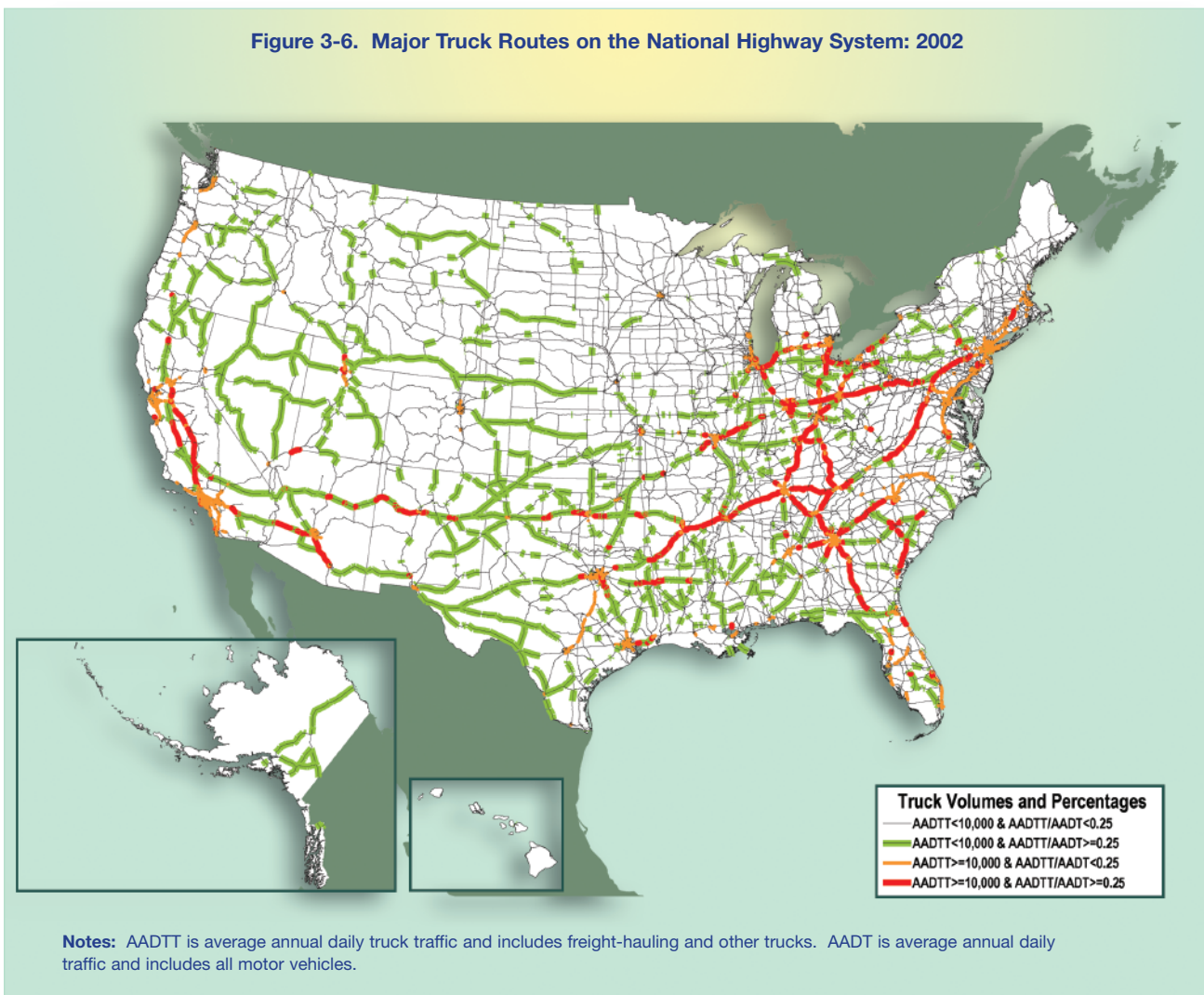
Note: Long-haul freight trucks serve locations at least 50 miles apart, excluding trucks that are used in intermodal movements.

By 2035, long-haul truck traffic between places at least 50 miles apart is expected to increase dramatically on Interstate highways and other arterials throughout the nation. These trucks are expected to travel 600 million miles per day.

FIGURE 3-5. AVERAGE DAILY LONG-HAUL TRUCK TRAFFIC ON THE NATIONAL HIGHWAY SYSTEM: 2035

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

Figure 3-6. Major Truck Routes on the National Highway System: 2002

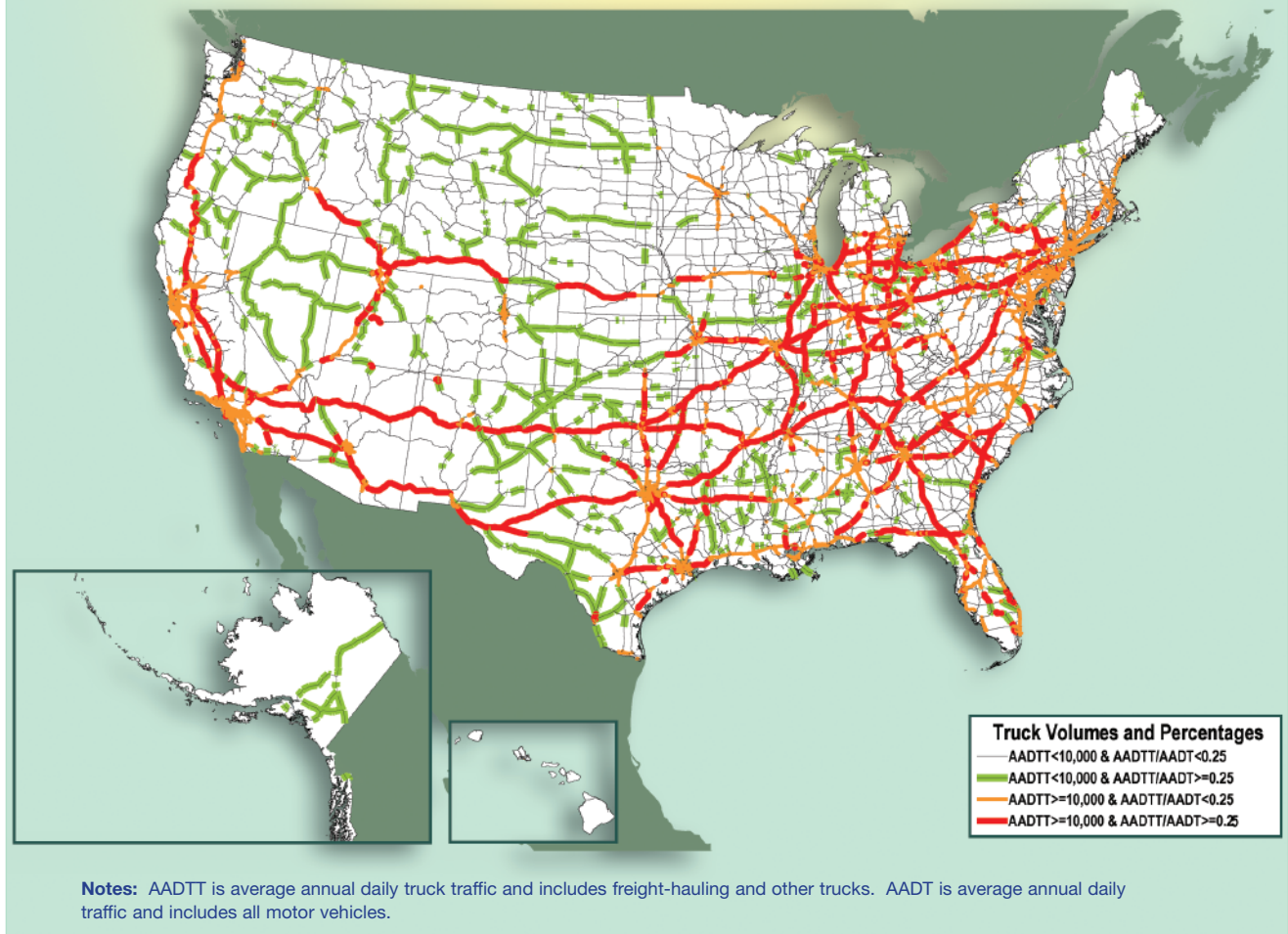


Selected routes carry a significant concentration of trucks, either as an absolute number or as a percentage of the traffic stream. More than 4,000 miles of the National Highway System (NHS) carry more than 10,000 trucks per day on sections where at least every fourth vehicle is a truck.

FIGURE 3-6. MAJOR TRUCK ROUTES ON THE NATIONAL HIGHWAY SYSTEM: 2002

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

Figure 3-7. Major Truck Routes on the National Highway System: 2035



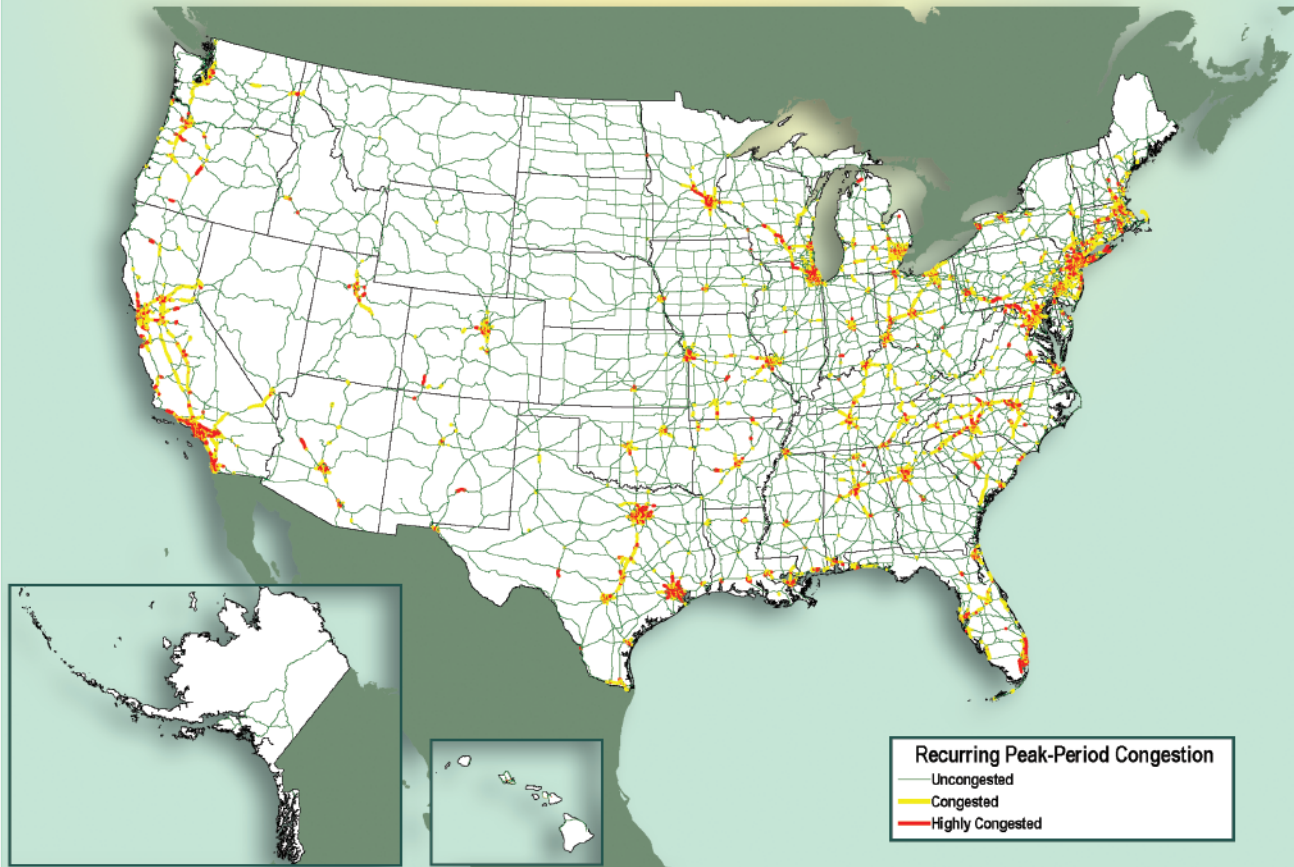
The number of NHS miles carrying large volumes and high percentages of trucks is forecast to increase dramatically by 2035. Segments with more than 10,000 trucks per day and where at least every fourth vehicle is a truck are forecast to exceed 14,000 miles, an increase of almost 230 percent from 2002.

FIGURE 3-7. MAJOR TRUCK ROUTES ON THE NATIONAL HIGHWAY SYSTEM: 2035

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

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 2002, peak-period congestion resulted in traffic slowing below posted speed limits on more than 10,600 miles of the NHS and created stop-and-go conditions on an additional 6,700 miles.

Figure 3-8. Peak-Period Congestion on the National Highway System: 2002

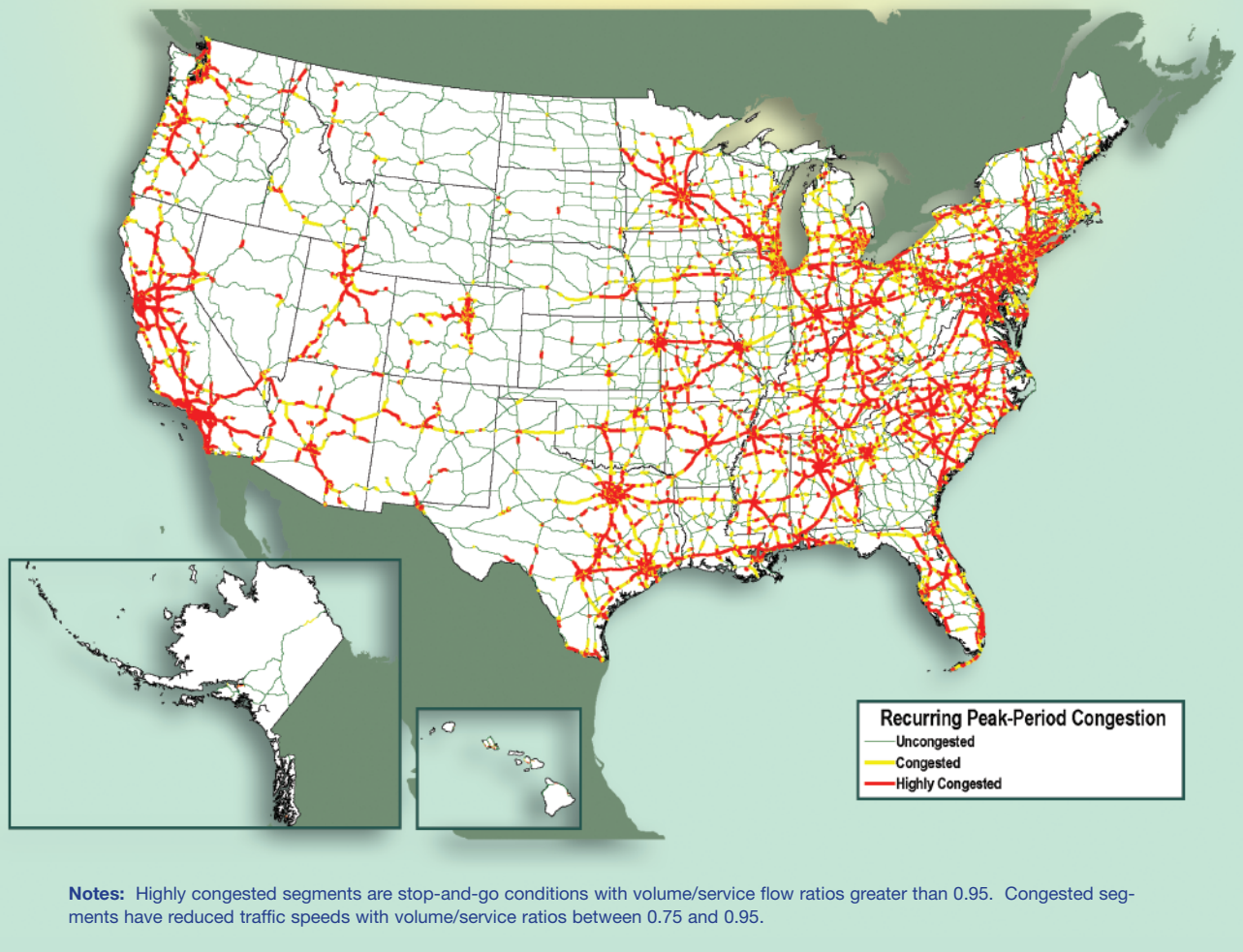


Notes: Highly congested segments are stop-and-go conditions with volume/service flow ratios greater than 0.95. Congested segments have reduced traffic speeds with volume/service ratios between 0.75 and 0.95.

FIGURE 3-8. PEAK-PERIOD CONGESTION ON THE NATIONAL HIGHWAY SYSTEM: 2002

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

Figure 3-9. Peak-Period Congestion on the National Highway System: 2035



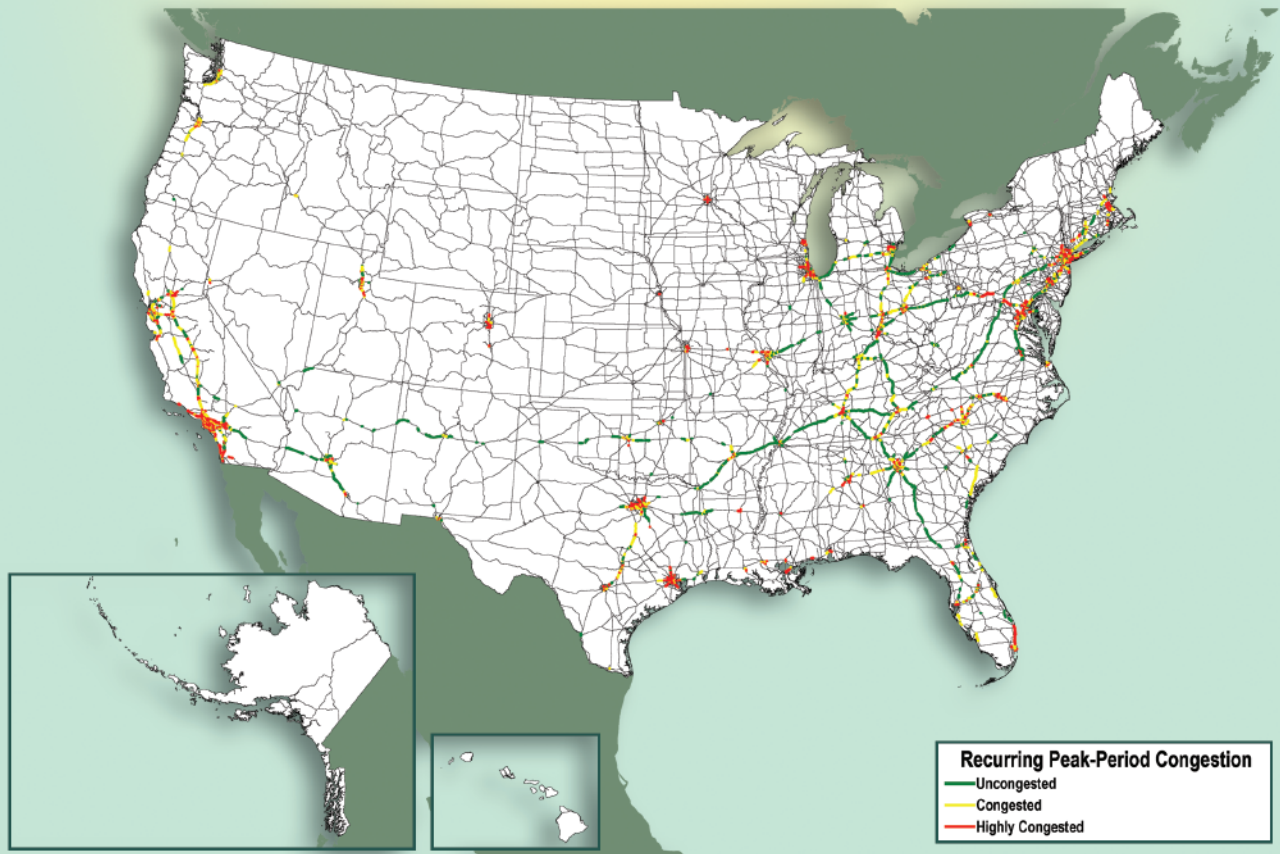
Assuming no changes in network capacity, increases in truck and passenger vehicle traffic are forecast to expand recurring, peak- period congestion to 40 percent of the NHS in 2035 compared with 11 percent in 2002. This will slow traffic on nearly 20,000 miles of the NHS and create stop-and-go conditions on an additional 45,000 miles.

FIGURE 3-9. PEAK-PERIOD CONGESTION ON THE NATIONAL HIGHWAY SYSTEM: 2035

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

Congested highways carrying a large number of trucks substantially impede interstate commerce, and trucks on those segments contribute significantly to congestion. Recurring congestion slows or stops traffic on over 6,300 miles of the NHS that carry more than 10,000 trucks per day.

Figure 3-10. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2002

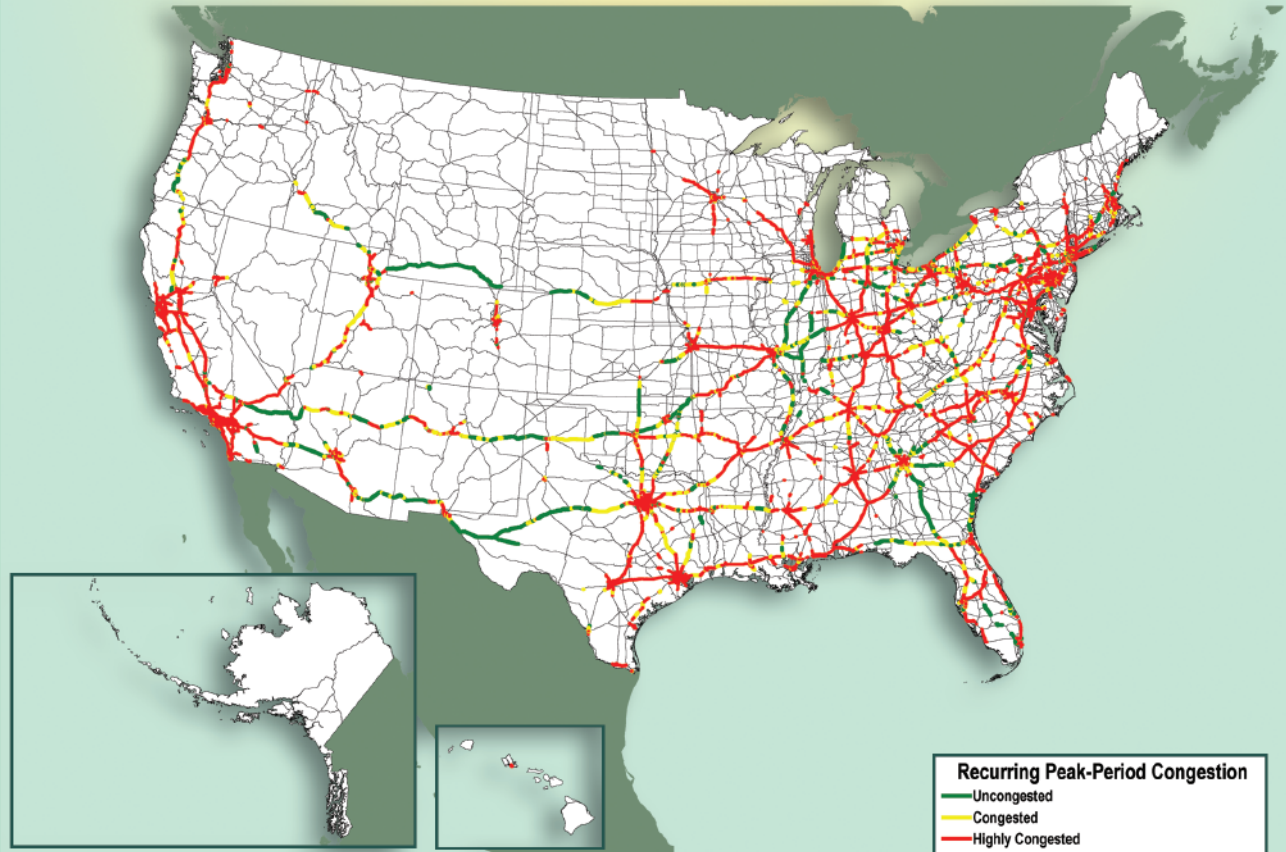


Notes: High-volume truck portions of the National Highway System carry more than 10,000 trucks per day, including freight-hauling long-distance trucks, freight-hauling local trucks, and other trucks with six or more tires. Highly congested segments are stop-and-go conditions with volume/service flow ratios greater than 0.95. Congested segments have reduced traffic speeds with volume/service flow ratios between 0.75 and 0.95.

FIGURE 3-10. PEAK-PERIOD CONGESTION ON HIGH-VOLUME TRUCK PORTIONS OF THE NATIONAL HIGHWAY SYSTEM: 2002

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

Figure 3-11. Peak-Period Congestion on High-Volume Truck Portions of the National Highway System: 2035



Notes: High-volume truck portions of the National Highway System carry more than 10,000 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.

Assuming no change in network capacity, the number of NHS miles with recurring congestion and a large number of trucks is forecast to increase four fold between 2002 and 2035. On highways carrying more than 10,000 trucks per day, recurring congestion will slow traffic on more than 4,800 miles and create stop-and-go conditions on an additional 23,300 miles.

FIGURE 3-10. PEAK-PERIOD CONGESTION ON HIGH-VOLUME TRUCK PORTIONS OF THE NATIONAL HIGHWAY SYSTEM: 2002
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007.



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 often differ from limits set for passenger vehicles.

Table 3-8. Maximum Posted Speed Limits on Rural Interstates: 2008 (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	55	65
Indiana	65	70
Iowa	70	70
Kansas	70	70
Kentucky	² 65	² 65
Louisiana	70	70
Maine	65	65
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	³ 55	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 65	⁴ 75
Utah	⁵ 75	⁵ 75
Vermont	65	65
Virginia	⁶ 65	⁶ 65
Washington	60	70
West Virginia	70	70
Wisconsin	65	65
Wyoming	75	75

¹Urban Interstate.

²Effective July 10, 2007, the posted speed limit is 70 miles per hour (mph) in designated areas on I-75 and I-71.

³The maximum speed for trucks on the Ohio Turnpike is 65 mph.

⁴In sections of I-10 and I-20 in rural West Texas, the speed limit for passenger cars and light trucks is 80 mph. For large trucks, the speed limit is 70 mph in the daytime and 65 mph at night.

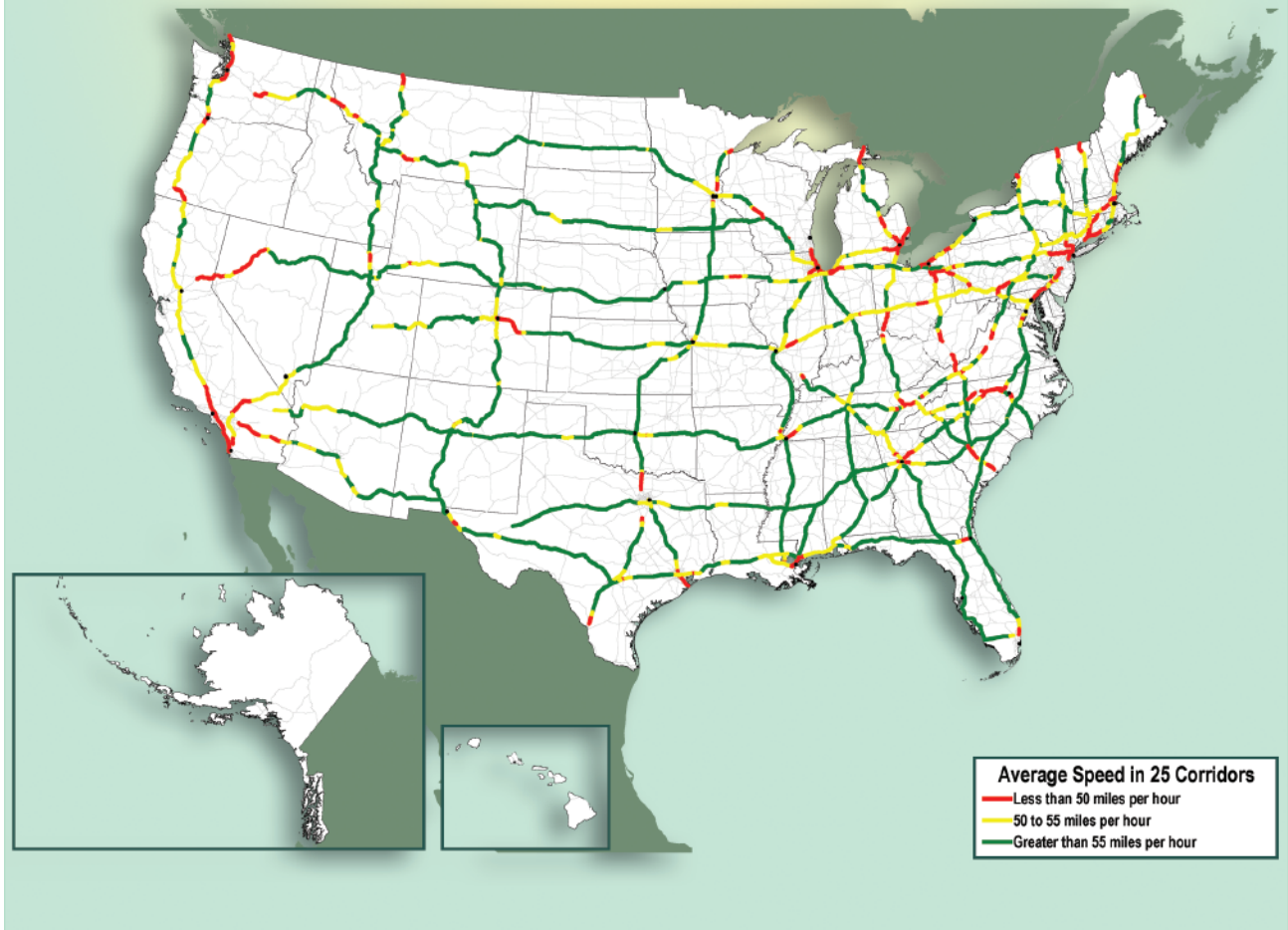
⁵Effective May 5, 2008, the portion of I-15 between milepost 222 and milepost 64 may be posted with a speed limit of more than 75 mph if warranted by a safety study and a consideration of roadway geometry and population density.

⁶Effective July 1, 2006, the posted speed limit on I-85 may be as high as 70 mph.

TABLE 3-8. MAXIMUM POSTED SPEED LIMITS ON RURAL INTERSTATES: 2008

Source: Insurance Institute for Highway Safety, Maximum Posted Speed Limits for Passenger Vehicles as of May 2007, available at www.iihs.org/laws/state_laws/speed_limit_laws.html as of June 3, 2008.

Figure 3-12. Average Truck Speeds on Selected Interstate Highways: 2007



In addition to calculating peak-period congestion from traffic volumes, as shown in Figures 3-8 through 3-11, the Federal Highway Administration (FHWA) directly measures operating speeds and reliability on major truck routes by tracking more than 500,000 commercial vehicles. Average truck speeds drop below 55 miles per hour near major urban areas, border crossings and gateways, and in mountainous terrain.

FIGURE 3-12. AVERAGE TRUCK SPEEDS ON SELECTED INTERSTATE HIGHWAYS: 2007

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Performance Measurement Program, 2008.

Truck speed and travel time reliability statistics from the cooperative research initiative between private industry and FHWA can be summarized by location, date, and time of day. As expected, average speeds in the peak period between 6 a.m. and 9 a.m. and between 4 p.m. and 7 p.m. are less than those recorded in the non-peak period between 10 a.m. and 2 p.m. on all routes.

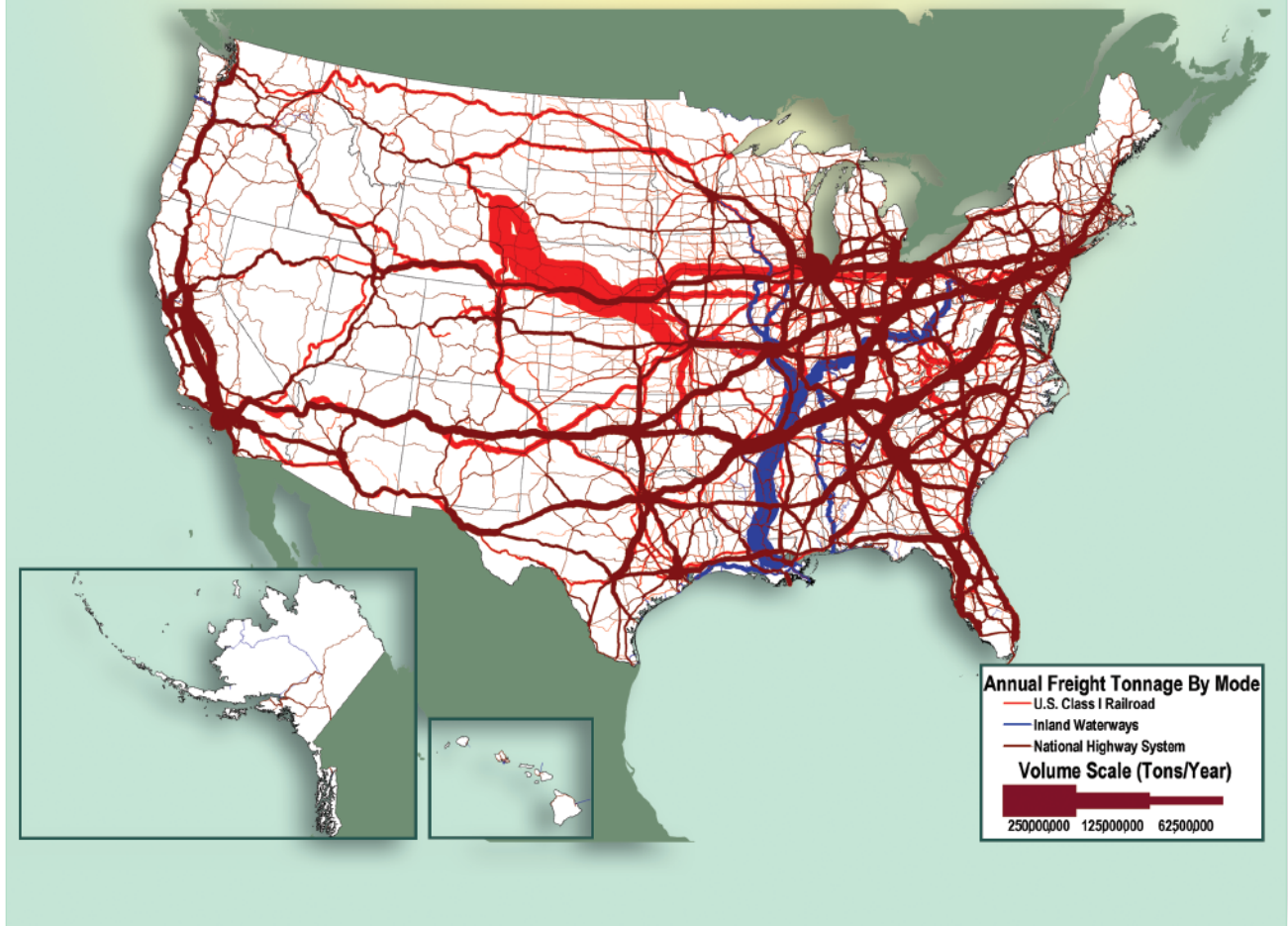
Table 3-9. Average Truck Speeds on Selected Interstate Highways: January-March 2008

Interstate Route	Average Operating Speed	Peak Period Average Speed	Non-Peak Period Average Speed
5	51.72	50.63	52.38
10	55.60	54.95	56.20
15	55.45	54.91	55.85
20	57.45	57.12	57.91
24	55.37	54.86	56.13
25	58.55	58.01	59.42
26	53.33	52.94	54.32
35	56.31	55.74	56.98
40	56.29	55.98	56.82
45	55.05	55.36	57.21
55	56.78	56.54	57.53
65	57.42	56.88	58.19
70	53.57	53.21	54.36
75	55.53	54.95	56.28
76	50.23	50.04	53.40
77	52.59	52.38	53.40
80	54.94	54.53	55.79
81	53.91	53.73	54.59
84	51.75	50.73	52.74
85	55.25	53.32	54.42
87	53.87	53.72	54.93
90	54.11	53.79	55.07
91	52.48	52.66	54.83
94	53.17	52.67	53.89
95	54.88	54.00	55.60

TABLE 3-9. AVERAGE TRUCK SPEEDS ON SELECTED INTERSTATE HIGHWAYS: JANUARY-MARCH 2008

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Performance Measurement Program, 2008.

Figure 3-13. Tonnage on Highways, Railroads, and Inland Waterways: 2002



Although trucks carry most of the tonnage and value of freight, railroads and waterways carry significant volumes over long distances. The biggest rail volume is coal between the Powder River Basin and the Midwest, and the largest inland waterways volume is along the Lower Mississippi River.

FIGURE 3-13. TONNAGE ON HIGHWAYS, RAILROAD, AND INLAND WATERWAYS: 2002

Source: Highways: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007. **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 (USACE), Annual Vessel Operating Activity and Lock Performance Monitoring System data, as processed for USACE by the Tennessee Valley Authority; and USACE, Institute for Water Resources, Waterborne Foreign Trade Data. Water flow assignments done by Oak Ridge National Laboratory.

The classic forms of rail intermodal transportation, trailer-on-flatcar and container-on-flatcar, are spread throughout the United States. The largest concentrations are on routes between the Pacific Coast ports and Chicago and between Chicago and New York.

Figure 3-14: Tonnage of Trailer-on-Flatcar and Container-on-Flatcar Rail Intermodal Moves: 2006

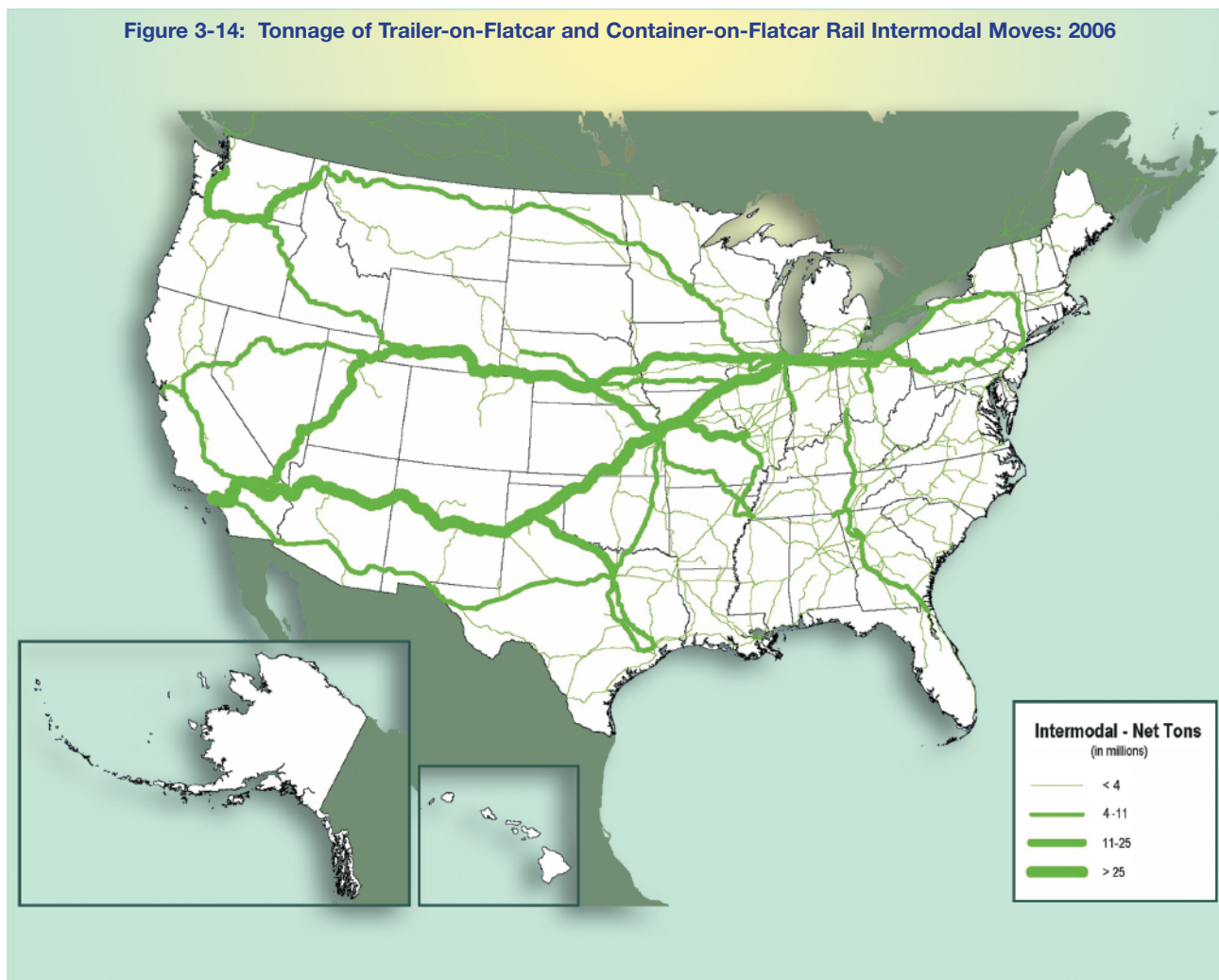
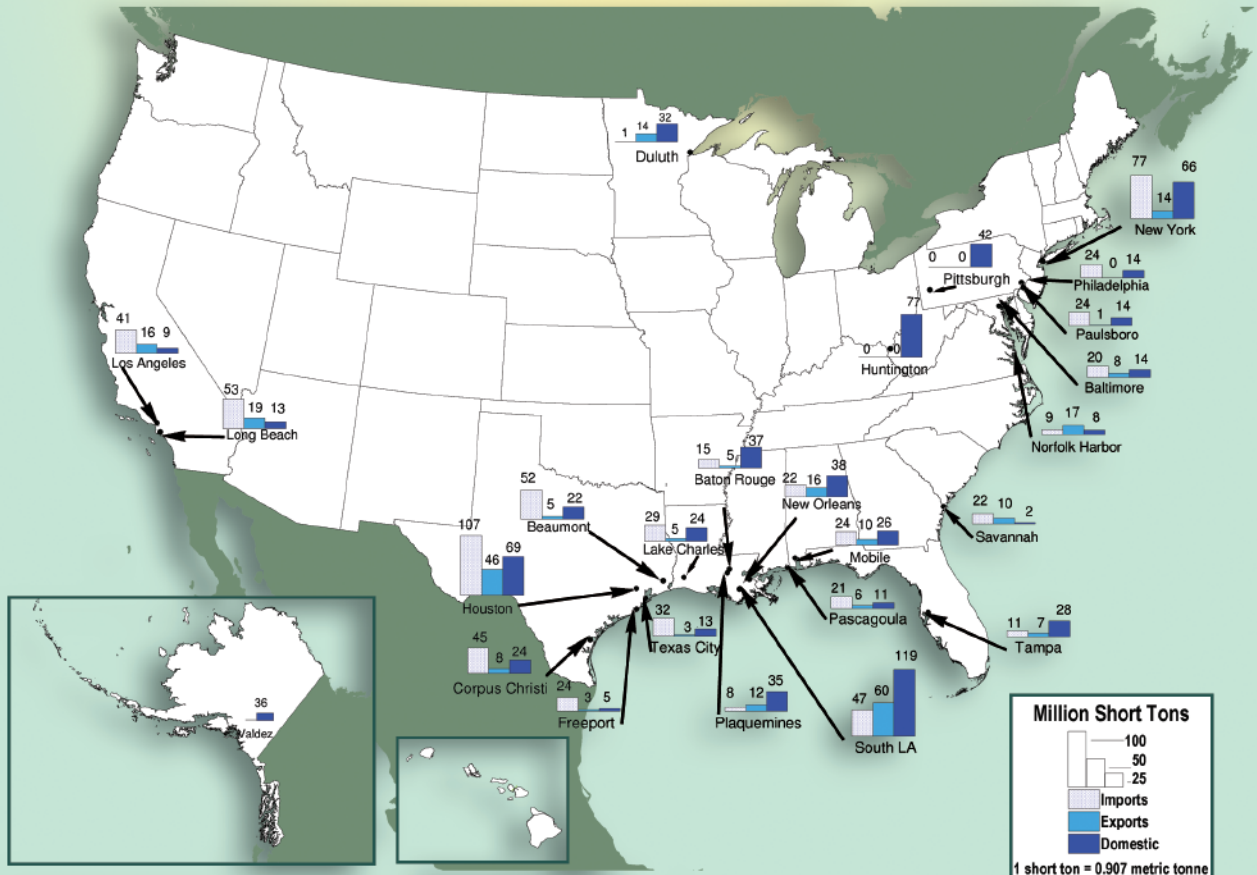


Figure 3-15. Top 25 Water Ports by Tonnage: 2006

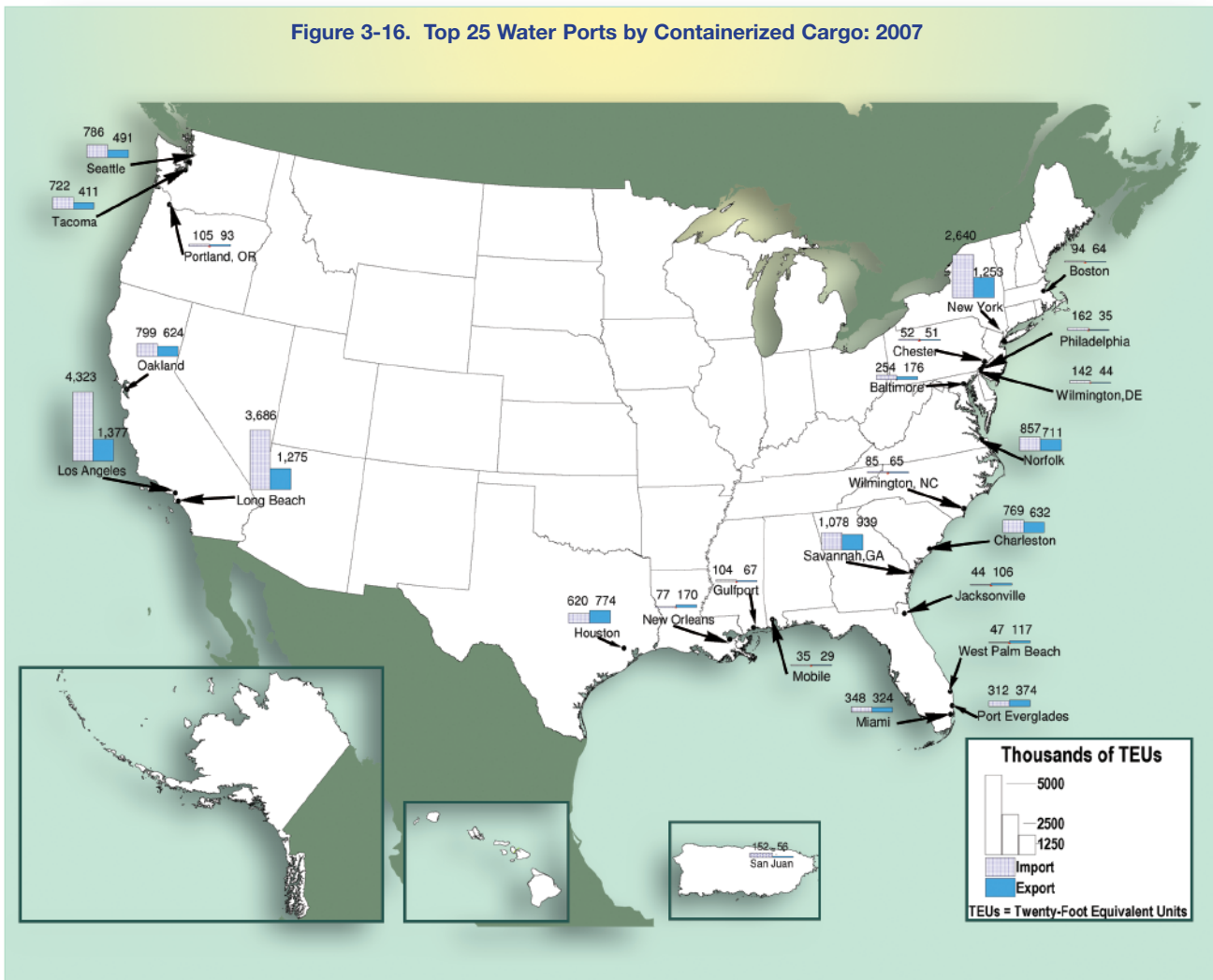


The top 25 water ports handle about two-thirds of the weight of all foreign and domestic goods moved by water. These goods are primarily bulk commodities such as coal, crude petroleum, and grain.



FIGURE 3-15. TOP 25 WATER PORTS BY TONNAGE: 2006
 Source: U.S. Army Corps of Engineers, 2006 *Waterborne Commerce of the United States, Part 5, National Summaries* (New Orleans, LA: 2007), table 5-2.

Figure 3-16. Top 25 Water Ports by Containerized Cargo: 2007



Containerized cargo has grown rapidly over the past few 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 doubled between 1997 and 2007, slightly higher than the growth rate reported for container cargo overall.

FIGURE 3-16. TOP 25 WATER PORTS BY CONTAINERIZED CARGO: 2007

Source: U.S. Department of Transportation, Maritime Administration, U.S. Waterborne Container Trade by U.S.

Custom Ports, 1997-2007, based on data provided by Port Import/Export Reporting Service, available at

www.marad.dot.gov/MARAD_statistics/index.html as of June 20, 2008.

Table 3-10. Top 25 Airports by Landed Weight of All-Cargo Operations: 2000-2006¹

Airport	2006 Rank	Landed weight (thousands of short tons)				
		2000	2003	2004	2005	2006
Anchorage, AK (Ted Stevens Anchorage International) ²	1	8,084	9,007	9,844	10,364	10,588
Memphis, TN (Memphis International)	2	6,318	8,760	8,885	9,343	9,425
Louisville, KY (Louisville International-Standiford Field)	3	3,987	4,172	4,388	4,591	5,015
Los Angeles, CA (Los Angeles International)	4	2,892	3,120	3,062	2,927	3,627
Miami, FL (Miami International)	5	2,929	3,239	3,423	3,550	3,591
Indianapolis, IN (Indianapolis International)	6	2,884	2,277	2,314	2,545	2,627
New York, NY (John F. Kennedy International)	7	2,793	2,937	2,898	2,811	2,615
Chicago, IL (O'Hare International)	8	2,062	2,351	2,359	2,412	2,208
Newark, NJ (Newark Liberty International)	9	1,961	1,835	1,765	1,870	1,867
Oakland, CA (Metropolitan Oakland International)	10	1,811	1,695	1,703	1,797	1,798
Fort Worth, TX (Dallas/Fort Worth International)	11	1,691	1,481	1,431	1,655	1,722
Ontario, CA (Ontario International)	12	1,220	1,338	1,326	1,344	1,401
Philadelphia, PA (Philadelphia International)	13	1,454	1,365	1,371	1,401	1,363
Atlanta, GA (William B. Hartsfield International)	14	1,090	1,194	1,162	1,014	1,180
Honolulu, HI (Honolulu International)	15	692	1,017	970	828	979
San Francisco, CA (San Francisco International)	16	1,267	1,200	740	797	829
Portland, OR (Portland International)	17	882	749	718	747	730
Phoenix, AZ (Sky Harbor International)	18	920	779	801	778	726
Denver, CO (Denver International)	19	900	747	763	763	711
Seattle, WA (Seattle-Tacoma International)	20	1,060	796	531	709	709
Houston, TX (George Bush Intercontinental)	21	480	666	697	710	696
Chicago/Rockford, IL (Chicago/Rockford International)	22	654	625	677	696	696
Fort Worth, TX (Fort Worth Alliance)	23	508	348	374	501	644
Minneapolis, MN (Minneapolis-St Paul International/Wold-Chamberlain)	24	622	687	678	702	620
San Juan, PR (Luis Munoz Marin International)	25	485	652	452	625	606
Top 25 airports³		(R) 52,381	(R) 53,947	(R) 54,526	55,955	56,973
United States, all airports⁴		(R) 74,753	73,072	74,297	76,091	76,207
Top 25 as % of U.S. total		(R) 70.1	73.8	(R) 73.4	73.5	74.8

Key: R = revised.

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

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

³Airport rankings change each year. Totals represent the top 25 airports for each year, not necessarily the top 25 airports listed here for 2006.

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

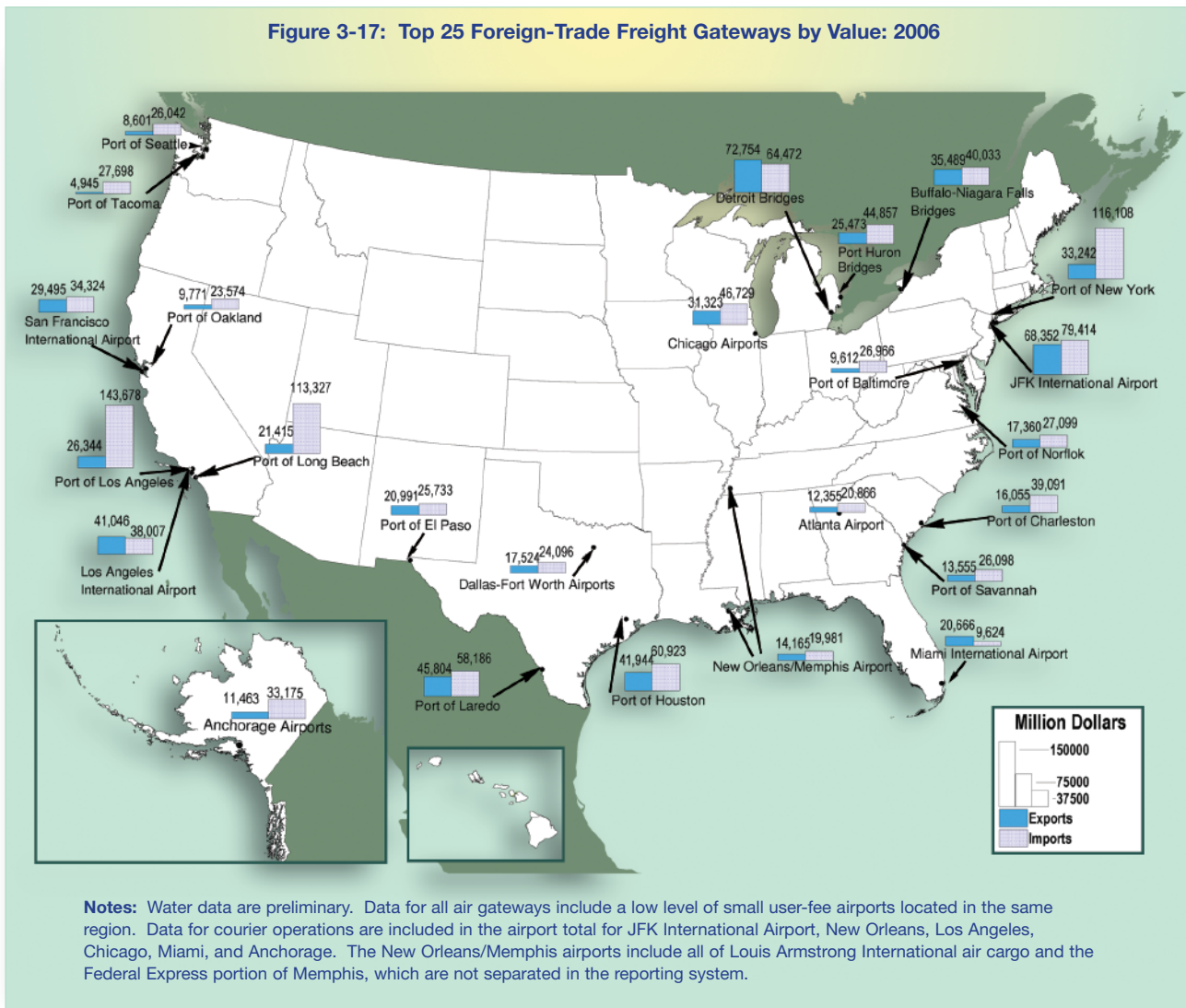
Note: 1 short ton = 2,000 pounds.

The Federal Aviation Administration (FAA) reports that Anchorage International and Memphis International are two of the most important U.S. airports that handle all-cargo aircraft. All-cargo aircraft do not include aircraft carrying passengers as well as cargo.

TABLE 3-10. TOP 25 AIRPORTS BY LANDED WEIGHT OF ALL-CARGO OPERATIONS: 2000-2006

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_airtraffic/airports/planning_capacity/passenger_allcargo_stats/passenger/index as of May 29, 2008.

Figure 3-17: Top 25 Foreign-Trade Freight Gateways by Value: 2006



Notes: Water data are preliminary. Data for all air gateways include a low level of small user-fee airports located in the same region. Data for courier operations are included in the airport total for JFK International Airport, New Orleans, Los Angeles, Chicago, Miami, and Anchorage. The New Orleans/Memphis airports include all of Louis Armstrong International air cargo and the Federal Express portion of Memphis, which are not separated in the reporting system.

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 are comprised of 9 airports, 11 water ports, and 5 land-border crossings.

FIGURE 3-17: TOP 25 FOREIGN-TRADE FREIGHT GATEWAYS BY VALUE: 2006

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2007* (Washington, DC: 2007), available at www.bts.gov as of June 3, 2008.



