CHAPTER 2

System Characteristics

Highway System Characteristics **2-2**

Roads by Ownership 2-2

Roads by Purpose 2-3

Review of Functional Classification Concepts 2-3

System Characteristics 2-5

Highway Travel 2-8

Federal-Aid Highways 2-11

National Highway System 2-12

Interstate System 2-14

Highway Freight System 2-14

Changes under MAP-21 2-15

Bridge System Characteristics **2-17**

Bridges by Owner 2-17

Interstate, STRAHNET, and NHS Bridges 2-18

Bridges by Roadway Functional Classification 2-19

Bridges by Traffic Volume 2-21

Transit System Characteristics **2-22**

System History 2-22

System Infrastructure 2-23

Urban Transit Agencies 2-23

Transit Fleet 2-27

Track, Stations, and Maintenance Facilities 2-28

Rural Transit Systems (Section 5311 Providers) 2-29

Transit System Characteristics for Americans With Disabilities and the Elderly 2-29

Transit System Characteristics: Alternative Fuel Vehicles 2-31

Highway System Characteristics

The Nation's extensive network of roadways facilitates the movement of people and goods, promotes the growth of the American economy, provides access to national and international markets, and supports national defense by providing the means for the rapid deployment of military forces and their support systems.

This section explores the characteristics of the Nation's roadways in terms of ownership, purpose, and usage. Information is presented for the National Highway System (NHS), including its Interstate Highway System component, and for the overall highway system. Separate statistics are also presented for Federal-aid highways, which include roadways that are generally eligible for Federal assistance under current law. Subsequent sections within this chapter explore the characteristics of bridges and transit systems.

Statistics reported in this section draw upon data collected from States through the Highway Performance Monitoring System (HPMS). The terms highways, roadways, and roads are generally used interchangeably in this section and elsewhere in the report. Roadways within a community with a population of 5,000 or more are classified as urban while roadways in areas outside urban boundaries are classified as rural. Some statistics in this section are presented separately for small urban areas that have populations of 5,000 to 49,999 and urbanized areas with populations over 50,000.

Are the 2010 HPMS data cited in this report fully consistent with those reported in the *Highway Statistics 2010* publication?

Q&A

No. The statistics reflected in this report are based on the latest available 2010 HPMS data as of the date the chapters were written, and include revisions that were not reflected in the *Highway Statistics 2010* publication.

The HPMS database is subject to further change on an ongoing basis if States identify a need to revise their data. Such changes will be reflected in the next edition of the C&P report.

Additional information on HPMS is available at http://www.fhwa.dot.gov/policy/ohpi/hpms/index.htm.

Roads by Ownership

As shown in *Exhibit 2-1*, local governments owned approximately 77.5 percent of the Nation's public road mileage in 2010. Local governments generally construct and maintain these roads themselves, but some enter into agreements with the State Departments of Transportation (DOTs) to perform these functions on their behalf. In 2010, State governments owned 19.1 percent of the Nation's public road mileage. The remaining 3.4 percent of total public road mileage was under the control of the Federal government in 2010 and was located primarily in National Parks and Forests, on Indian reservations, and on military bases. These figures do not reflect privately owned roads or roads not available for use by the general public.

The highway system in the Nation comprised nearly 4.08 million miles in 2010, up from 3.95 million miles in 2000. Total mileage in urban areas grew by an average annual rate of 2.5 percent between 2000 and 2010. However, highway miles in rural areas decreased at an average annual rate of 0.4 percent during the same time period.

In addition to the construction of new roads, two factors have continued to contribute to the increase of urban highway mileage. First, based on the 2000 decennial census, the boundaries of urban areas have expanded resulting in the reclassification of some mileage from rural to urban. States implemented these boundary changes in their HPMS data reporting gradually. As a result, the impact of the census-based changes on these statistics is not confined to a single year. Second, greater focus has been placed on Federal

Exhibit 2-1 Highway Miles by Owner and by Size of Area, 2000–2010

	2000	2002	2004	2006	2008	2010	Annual Rate of Change 2010/2000
Rural Areas (under 5,000 in population)							
Federal	116,707	117,775	117,762	123,393	124,482	128,004	0.9%
State *	663,763	664,814	649,582	636,142	632,679	626,823	-0.6%
Local	2,311,263	2,297,168	2,236,101	2,230,946	2,223,172	2,220,153	-0.4%
Subtotal Rural Areas	**3,091,733**	**3,079,757**	**3,003,445**	**2,990,481**	**2,980,333**	**2,974,980**	**-0.4%**
Urban Areas (5,000 or more in population)							
Federal	1,484	2,820	3,570	4,988	7,077	8,769	19.4%
State *	111,540	111,774	129,661	147,501	151,631	152,666	3.2%
Local	746,344	787,319	860,786	890,038	920,299	938,955	2.3%
Subtotal Urbanized Areas	**859,368**	**901,913**	**994,017**	**1,042,527**	**1,079,007**	**1,100,390**	**2.5%**
Total Highway Miles							
Federal	118,191	120,595	121,332	128,381	131,559	136,773	1.5%
State *	775,303	776,588	779,243	783,643	784,310	779,489	0.1%
Local	3,057,607	3,084,487	3,096,887	3,120,984	3,143,471	3,159,107	0.3%
Total	**3,951,101**	**3,981,670**	**3,997,462**	**4,033,008**	**4,059,340**	**4,075,370**	**0.3%**
Percentage of Total Highway Miles							
Federal	3.0%	3.0%	3.0%	3.2%	3.2%	3.4%	
State *	19.6%	19.5%	19.5%	19.4%	19.3%	19.1%	
Local	77.4%	77.5%	77.5%	77.4%	77.4%	77.5%	
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	

** Amounts shown include mileage owned by State highway agencies only; mileage owned by other State entities is combined with local mileage.*

Source: Highway Performance Monitoring System (as of November 2012).

agencies to provide a more complete reporting of Federally owned mileage. As a result, reported Federal mileage in urban areas increased at an average annual rate of 19.4 percent from 2000 to 2010. This is due primarily to more accurate reporting of Department of Defense mileage on military bases within urban areas. In rural areas, Federally owned mileage increased at an annual rate of 0.9 percent over the same period. Chapter 11 provides additional details on roads serving Federal Lands.

Roads by Purpose

Roads are often classified by the purpose they serve, which is commonly called functional classification. *Exhibit 2-2* shows the hierarchy of the Highway Functional Classification System (HFCS), which is used extensively in this report in the presentation of highway and bridge statistics.

Review of Functional Classification Concepts

Roads serve two important functions: providing access and providing mobility. Much like an equilibrium point, typically the better any individual segment is at serving one of these functions, the worse it is at serving the other. Routes on the Interstate Highway System allow a driver to travel long distances in a relatively short time, but do not allow the driver to enter each property along the way. Contrarily, a subdivision street allows a driver access to any address along its length, but does not allow the driver to travel at high speeds and involves frequent interruption by intersections that often contain traffic control devices.

The principal arterial system consists of Interstate, Other Freeways & Expressways, and Other Principal Arterial roads. These roads provide the highest level of mobility at the highest speed for long, uninterrupted travel. They typically have higher design standards than other roads because they often include multiple lanes and have some degree of access control. The principal arterial system provides interstate and intercounty service so that all developed areas are within a reasonable distance of an arterial highway. Most urban areas (with populations greater than 25,000) have rural principal arterial highways and rural other freeways and expressways connections with virtually all urbanized areas (with populations greater than 50,000). The principal arterial system serves major metropolitan centers, corridors with the highest traffic volumes, and trips of longer lengths. It carries most trips entering and leaving metropolitan areas and provides continuity for roadways that cross urban boundaries.

Exhibit 2-2 Revised Highway Functional Classification

Arterial
Principal Arterial
Interstate
Other Freeway & Expressway (OF&E)
Other Principal Arterial (OPA)
Minor Arterial
Collector
Major Collector
Minor Collector
Local
Local

Note: Rural and Urban classifications have now been synchronized. Previously, urban collectors were not broken down into separate categories for major and minor, and rural OF&Es were included as part of rural OPAs. Some exhibits presented in this report still use the old classifications.

Source: FHWA.

Minor arterial routes provide service for trips of moderate length at a lower level of mobility. They provide a connection between collector roadways and the principal arterial highways.

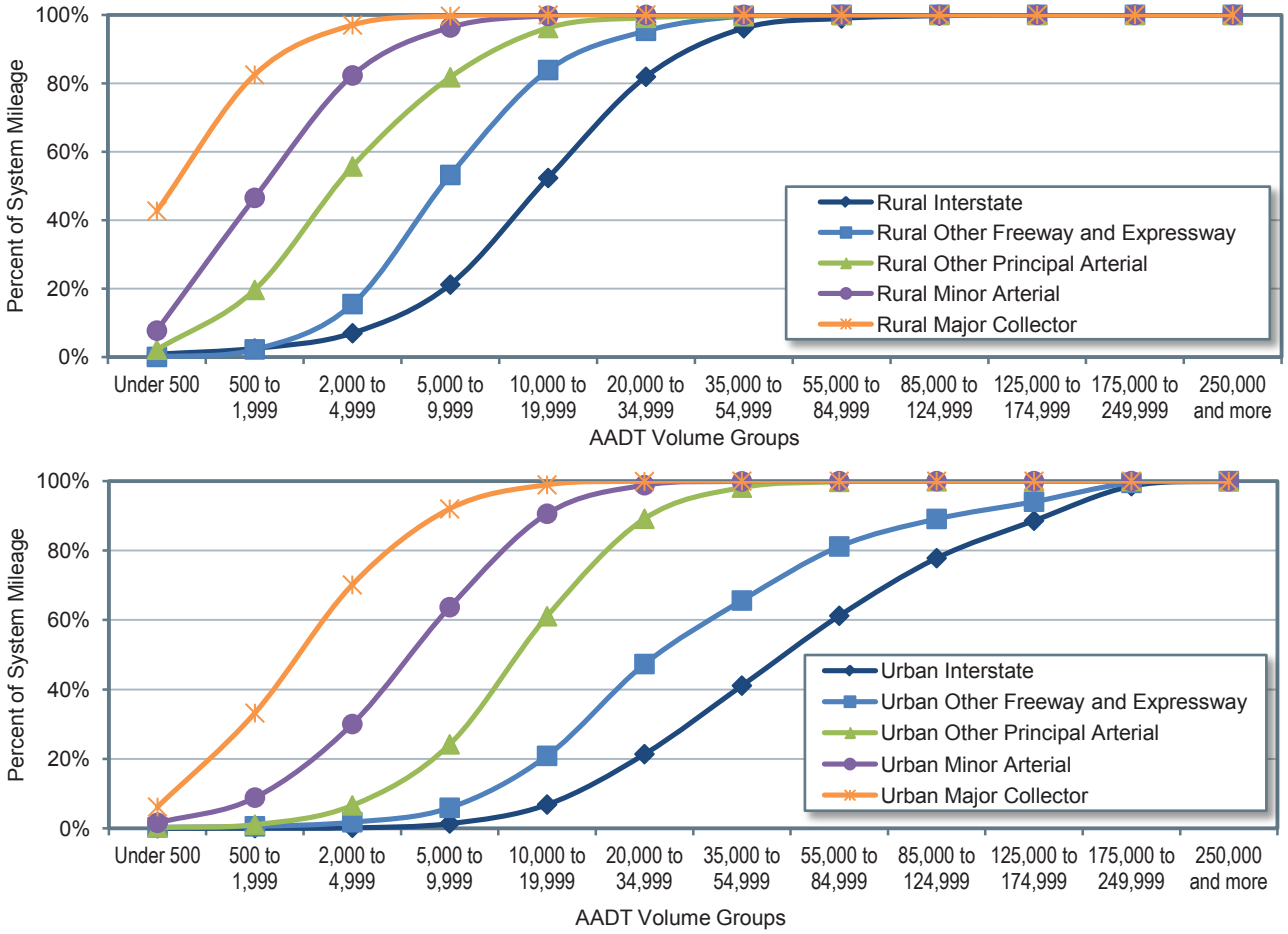
Collectors provide a lower degree of mobility than arterials. They are designed for travel at lower speeds and for shorter distances. Generally, collectors are two-lane roads that collect traffic from local roads and distribute it to the minor arterial system. The collector system is stratified into two subsystems: major and minor. Major collectors serve larger towns not accessed by higher-order roads, and important industrial, commercial, or agricultural areas that generate significant traffic but are not served by arterials. Minor collectors are typically spaced at intervals consistent with population density to collect traffic from local roads and to ensure that a collector road serves smaller population areas.

Unlike arterials, collector roads may penetrate residential communities, distributing traffic from the arterials to the ultimate destination for many motorists. Collectors also channel traffic from local streets onto the arterial system. Local roads represent the largest element in the American public road system in terms of mileage. All public roads below the collector system are considered local. Local roads provide basic access between residential and commercial properties, connecting with higher-order highways.

The distinction between those roads functionally classified as local and locally owned roads is important to note. Some roads functionally classified as local are owned by the Federal or State government, while local governments own some arterials and collectors as well as a large percentage of roads functionally classified as local.

Exhibit 2-3 provides a graphic representation of the percentage of the cumulative distribution of mileage by average annual daily traffic (AADT) volume group for some individual functional classes, ranging from major collectors to Interstates. Higher-ordered systems, such as Interstates, tend to carry more traffic than lower-ordered systems, and urban routes tend to carry more traffic than rural routes with comparable functional class designations.

Exhibit 2-3 Cumulative Percentage Distributions of Mileage by AADT Volume, by Functional System



Source: 2010 HPMS Database.

System Characteristics

Exhibit 2-4 summarizes the percentage of highway route miles, lane miles, and vehicle miles traveled (VMT) for 2010 broken down by functional system and by population area. Route miles represent the length of a roadway, while lane miles represent the length of the roadway multiplied by the number of lanes on that roadway. As noted earlier, rural areas have populations of less than 5,000, small urban areas have populations between 5,000 and 49,999, and urbanized areas have populations of 50,000 or more.

The majority of the Nation's highway miles and lane miles, 72.7 percent and 70.8 percent, respectively, were located in rural areas in 2010. However, only 32.9 percent of the VMT occurred on these roadways. Roads classified as rural local constituted slightly over one-half of all highway mileage, but carried only 4.5 percent of total VMT.

Roads in small urban areas accounted for 5.2 percent of highway mileage, 5.3 percent of lane miles, and 7.4 percent of VMT. Urbanized areas only constituted 22.1 percent of the Nation's total highway mileage and 23.9 percent of lane miles despite carrying 59.8 percent of the Nation's VMT in 2010. Urbanized Interstate System highways made up only 0.4 percent of total route mileage, but carried 14.9 percent of total VMT—the greatest amount of all functional classifications.

Exhibit 2-4 Percentage of Highway Miles, Lane Miles, and VMT by Functional System

Functional System	Miles	Lane Miles	VMT
Rural Areas (less than 5,000 in population)			
Interstate	0.7%	1.4%	8.2%
Other Freeway and Expressway	0.1%	0.2%	0.6%
Other Principal Arterial	2.2%	2.7%	6.8%
Minor Arterial	3.3%	3.3%	5.1%
Major Collector	10.2%	9.8%	6.0%
Minor Collector	6.4%	6.1%	1.8%
Local	49.7%	47.3%	4.5%
Subtotal Rural Areas	**72.7%**	**70.8%**	**32.9%**
Small Urban Areas (5,000–49,999 in population)			
Interstate	0.1%	0.1%	1.1%
Other Freeway and Expressway	0.0%	0.1%	0.3%
Other Principal Arterial	0.4%	0.5%	2.1%
Minor Arterial	0.5%	0.6%	1.7%
Major Collector	0.6%	0.6%	0.9%
Minor Collector	0.0%	0.0%	0.0%
Local	3.6%	3.4%	1.2%
Subtotal Small Urban Areas	**5.2%**	**5.3%**	**7.4%**
Urbanized Areas (50,000 or more in population)			
Interstate	0.4%	1.0%	14.9%
Other Freeway and Expressway	0.2%	0.5%	6.4%
Other Principal Arterial	1.2%	2.2%	13.4%
Minor Arterial	2.1%	2.7%	11.3%
Major Collector	2.2%	2.2%	5.2%
Minor Collector	0.0%	0.0%	0.0%
Local	16.0%	15.2%	8.5%
Subtotal Urbanized Areas	**22.1%**	**23.9%**	**59.8%**
Total	**100.0%**	**100.0%**	**100.0%**

Source: Highway Performance Monitoring System as of December 2011.

Pedestrian and Bicycle Elements

Improving pedestrian and bicycle data collection and analysis and developing quantitative analysis methods and tools are core elements of FHWA's programmatic efforts. FHWA has initiated several efforts to develop better pedestrian and bicycle data and to begin to incorporate multimodal data into existing data management systems. For example, the most recent release of the Traffic Monitoring Guide includes recommendations for conducting bicycle and pedestrian counts, and it specifies a standard set of data fields for reporting the counts. In addition, FHWA maintains a system called the Traffic Monitoring Analysis System (TMAS), which receives raw data and computes basic reports from those data. FHWA has funded a project that will modify TMAS to receive and report on bicycle and pedestrian counts based on the Traffic Monitoring Guide format. These enhancements will be included in the next version of TMAS (Version 3.0), which is scheduled to be released in early 2015. FHWA is also exploring the feasibility of building regional bicycle and pedestrian-count databases to simplify access to TMAS and to provide public access to the data.

Third-party efforts such as the Household Travel Survey and the National Bicycle and Pedestrian Documentation Project generate multimodal data and external benchmarking resources. For example, *Bicycling and Walking in the U.S.: 2012 Benchmarking Report* is an ongoing effort by the Alliance for Biking and Walking to collect and analyze data on bicycling and walking in all 50 states and the 51 largest U.S. cities. The biennial report includes data such as bicycling and walking levels and demographics, bicycle and pedestrian safety, funding for bicycle and pedestrian projects, written policies on bicycling and walking, bicycle infrastructure, bike-transit integration, bicycling and walking education and encouragement activities, public health indicators, and the economic impact of bicycling and walking.

Exhibit 2-5 shows trends in public road route mileage from 2000 to 2010. Overall route mileage increased by 132,667 between 2000 and 2010, an annual growth rate of 0.3 percent. From 2000 to 2010, the number of rural route miles declined by 111,253. Urban route miles increased 243,920 route miles during the same period. Among functional classes, rural local roads had the largest decrease in route mileage with a reduction of 78,303. Urban local roads had the largest growth in route mileage with an increase of 178,281.

As noted earlier, the decline in rural route mileage can be partially attributed to changes in urban boundaries resulting from the 2000 Census. These boundary changes have also affected the classification of lane mileage and VMT.

Exhibit 2-5 Highway Route Miles by Functional System, 2000–2010

Functional System	2000	2002	2004	2006	2008	2010	Annual Rate of Change 2010/2000
Rural Areas (less than 5,000 in population)							
Interstate	33,152	33,107	31,477	30,615	30,227	30,260	-0.9%
Other Freeway & Expressway*						3,299	N/A
Other Principal Arterial*						92,131	N/A
Other Principal Arterial*	99,023	98,945	95,998	95,009	95,002		N/A
Minor Arterial	137,863	137,855	135,683	135,589	135,256	135,681	-0.2%
Major Collector	433,926	431,754	420,293	419,289	418,473	418,848	-0.4%
Minor Collector	272,477	271,371	268,088	262,966	262,852	263,271	-0.3%
Local	2,115,293	2,106,725	2,051,902	2,046,796	2,038,517	2,036,990	-0.4%
Subtotal Rural Areas	**3,091,733**	**3,079,757**	**3,003,441**	**2,990,264**	**2,980,327**	**2,980,480**	**-0.4%**
Urban Areas (5,000 or more in population)							
Interstate	13,523	13,640	15,359	16,277	16,789	16,922	2.3%
Other Freeway and Expressway	9,196	9,377	10,305	10,817	11,401	11,371	2.1%
Other Principal Arterial	53,558	53,680	60,088	63,180	64,948	65,505	2.0%
Minor Arterial	90,302	90,922	98,447	103,678	107,182	108,375	1.8%
Collector*	88,798	89,846	103,387	109,639	115,087		N/A
Major Collector*						115,538	N/A
Minor Collector*						3,303	N/A
Local	603,992	644,449	706,436	738,156	763,618	782,273	2.6%
Subtotal Urban Areas	**859,368**	**901,913**	**994,021**	**1,041,747**	**1,079,025**	**1,103,288**	**2.5%**
Total Highway Route Miles	**3,951,101**	**3,981,670**	**3,997,462**	**4,032,011**	**4,059,352**	**4,083,768**	**0.3%**

** 2010 data reflects revised HPMS functional classifications. Rural Other Freeways and Expressways have been split out of the Rural Other Principal Arterial category, and Urban Collect has been split into Urban Major Collector and Urban Minor Collector.*

Source: Highway Performance Monitoring System (as of December 2011).

Tunnels

In 2003, FHWA conducted a survey regarding tunnel inventories. Of the 45 tunnel owners contacted, 40 responded; the survey results suggest that there are approximately 350 highway tunnel bores in the United States.

It should be noted that there is not a one-to-one correspondence between the number of bores and the number of tunnels. For example, while the Sumner Tunnel in Boston consists of a single bore, some tunnels, such as the Hampton Roads Bridge-Tunnel in Norfolk, include two bores.

A National Tunnel Inspection Standards regulation is under development and is scheduled for publication in the spring of 2014. Data gathered as part of this regulation are expected to provide the basis for improved reporting on tunnels in future editions of the C&P report.

Exhibit 2-6 shows the number of highway lane miles by functional system and by population area. Between 2000 and 2010, lane miles on the Nation's highways have grown at an average annual rate of 0.4 percent, from approximately 8.3 million to 8.6 million. The number of lane miles in rural areas decreased by 200,443 during this period, while urban area lane mileage increased by 561,133. Among individual functional classes, urban local roads had the largest increase in the number of lane miles, with 356,562 added between 2000 and 2010.

Exhibit 2-6 Highway Lane Miles by Functional System and by Size of Area, 2000–2010

Functional System	Highway Lane Miles 2000	2002	2004	2006	2008	2010	Annual Rate of Change 2010/2000
Rural Areas (less than 5,000 in population)							
Interstate	135,000	135,032	128,012	124,506	122,956	123,762	-0.9%
Other Freeway and Expressway*						11,907	N/A
Other Principal Arterial*						243,065	N/A
Other Principal Arterial*	253,586	256,458	249,480	248,334	250,153		N/A
Minor Arterial	287,750	288,391	283,173	282,397	281,071	287,761	0.0%
Major Collector	872,672	868,977	845,513	843,262	841,353	857,091	-0.2%
Minor Collector	544,954	542,739	536,177	525,932	525,705	526,540	-0.3%
Local	4,230,588	4,213,448	4,103,804	4,093,592	4,077,032	4,073,980	-0.4%
Subtotal Rural Areas	**6,324,550**	**6,305,044**	**6,146,159**	**6,118,023**	**6,098,270**	**6,124,107**	**-0.3%**
Urban Areas (5,000 or more in population)							
Interstate	74,647	75,864	84,016	89,036	91,924	93,403	2.3%
Other Freeway and Expressway	42,055	43,467	47,770	50,205	53,073	53,231	2.4%
Other Principal Arterial	187,030	188,525	210,506	221,622	228,792	235,127	2.3%
Minor Arterial	229,410	233,194	250,769	269,912	274,225	285,954	2.2%
Collector*	189,839	192,115	220,177	235,240	245,262		N/A
Major Collector*						252,435	N/A
Minor Collector*						7,404	N/A
Local	1,207,984	1,288,898	1,412,872	1,476,314	1,527,230	1,564,546	2.6%
Subtotal Urban Areas	**1,930,966**	**2,022,064**	**2,226,111**	**2,342,329**	**2,420,506**	**2,492,099**	**2.6%**
Total Highway Lane Miles	**8,255,516**	**8,327,108**	**8,372,270**	**8,460,352**	**8,518,776**	**8,616,206**	**0.4%**

** 2010 data reflects revised HPMS functional classifications. Rural Other Freeways and Expressways have been split out of the Rural Other Principal Arterial category, and Urban Collect has been split into Urban Major Collector and Urban Minor Collector.*

Source: Highway Performance Monitoring System - December 2011.

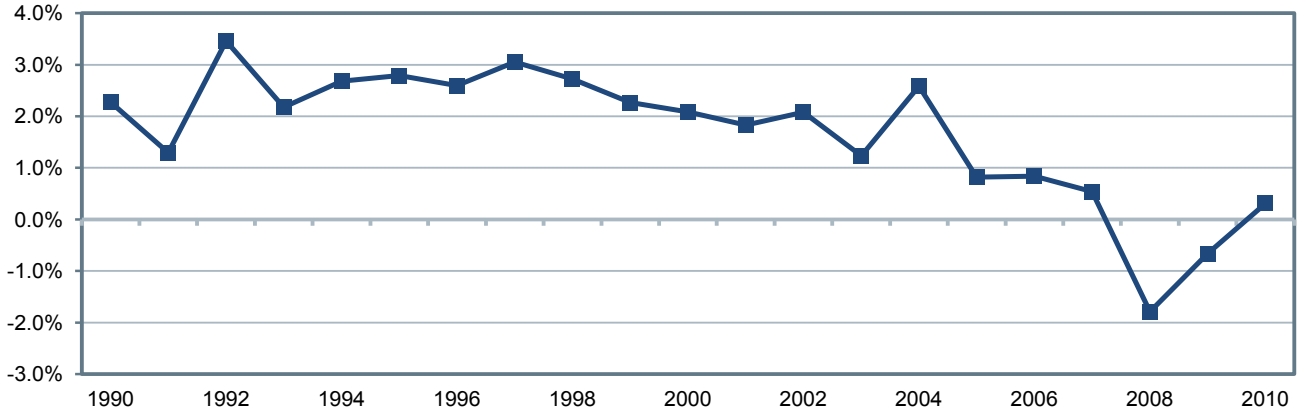
Highway Travel

Total highway VMT grew by 0.31 percent in 2010 relative to 2009. As shown in *Exhibit 2-7*, this small increase followed declines of 1.79 percent in 2008 and 0.66 percent in 2009. These negative growth rates can be partially attributed to the recent period of economic contraction from December 2007 to June 2009 identified by the Business Cycle Dating Committee of the National Bureau of Economic Research (NBER). However, it should be noted that VMT growth had previously been trending downwards; annual VMT growth rate last exceeded 3 percent in 1997 and has not exceeded 1 percent in any year since 2004.

Exhibit 2-8 shows trends in VMT and passenger miles traveled (PMT) by functional class since 2000; VMT measures the number of vehicle miles traveled and PMT weights the travel by the number of occupants of those vehicles. Between 2000 and 2010, VMT grew at an average annual rate of 0.8 percent per year from 2.76 trillion to 2.99 trillion. Estimated total PMT declined over this 10-year period by 0.3 percent per year, decreasing to a total of 4.2 trillion in 2010.

VMT in rural areas totaled 0.99 trillion in 2010. From 2000 to 2010, travel declined on all rural functional classifications except for roads classified as rural local. Rural major collectors experienced the largest percentage reduction in VMT, declining at an average annual rate of 1.8 percent over this period. As noted earlier, the decline in rural VMT can be partially attributed to the expansion of urban boundaries resulting from the 2000 Census.

Exhibit 2-7 Annual VMT Growth Rates, 1990–2010



Source: Highway Statistics, various years, Tables VM-1 (United States) and VM-2 (Puerto Rico).

Exhibit 2-8 Vehicle Miles Traveled (VMT) and Passenger Miles Traveled (PMT), 2000–2010

	Annual Travel Distance (Millions of Miles)						Annual Rate of Change
Functional System	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2010/2000**
Rural Areas (less than 5,000 in population)							
Interstate	269,533	281,461	267,397	258,324	243,693	246,109	-0.9%
Other Freeway & Expressway[2]						19,603	N/A
Other Principal Arterial[2]						205,961	N/A
Other Principal Arterial[2]	249,177	258,009	241,282	232,224	222,555		N/A
Minor Arterial	172,772	177,139	169,168	162,889	152,246	151,307	-1.3%
Major Collector	210,595	214,463	200,926	193,423	186,275	176,301	-1.8%
Minor Collector	58,183	62,144	60,278	58,229	55,164	53,339	-0.9%
Local	127,560	139,892	132,474	133,378	131,796	132,827	0.4%
Subtotal Rural Areas	**1,087,820**	**1,133,107**	**1,071,524**	**1,038,467**	**991,729**	**985,447**	**-1.0%**
Urban Areas (5,000 or more in population)							
Interstate	397,176	412,481	459,767	482,677	481,520	482,726	2.0%
Other Freeway and Expressway	178,185	190,641	209,084	218,411	223,837	221,902	2.2%
Other Principal Arterial	401,356	410,926	453,868	470,423	465,965	460,753	1.4%
Minor Arterial	326,889	341,958	365,807	380,069	380,734	378,048	1.5%
Collector[2]	137,007	143,621	164,330	175,516	177,665		N/A
Major Collector[2]						178,909	N/A
Minor Collector[2]						3,837	N/A
Local	236,051	241,721	257,617	268,394	271,329	273,474	1.5%
Subtotal Urban Areas	**1,676,664**	**1,741,348**	**1,910,473**	**1,995,489**	**2,001,050**	**1,999,648**	**1.8%**
Total VMT	**2,764,484**	**2,874,455**	**2,981,998**	**3,033,957**	**2,992,779**	**2,985,095**	**0.8%**
Total PMT[1]	**4,390,076**	**4,667,038**	**4,832,394**	**4,933,689**	**4,871,683**	**4,244,157**	**-0.3%**

[1] Assumes approximately 1.59 passengers per vehicle per mile in 2000 and approximately 1.63 passengers per vehicle per mile in 2002, 2004, 2006, and 2008 and approximately 1.42 passengers per vehicle mile for 2010.

[2] 2010 data reflects revised HPMS functional classifications. Rural Other Freeways and Expressways have been split out of the Rural Other Principal Arterial category, and Urban Collect has been split into Urban Major Collector and Urban Minor Collector.

Sources: VMT data from Highway Performance Monitoring System; PMT data from Highway Statistics, Table VM-1.

What has happened to highway travel since 2010?

Q&A

The December 2011 Traffic Volume Trends (TVT) report showed an estimated decrease in VMT of 1.2 percent between 2010 and 2011. VMT on rural Interstates and other rural arterials decreased by 1.5 percent and 1.4 percent, respectively. VMT on other rural roads increased by 1.8 percent, and VMT on urban Interstates decreased by 0.5 percent. VMT on other urban arterials decreased by 1.1 percent, while VMT on other urban roads decreased by 1.2 percent. These numbers are subject to revision when the 2011 HPMS submittals are processed and analyzed.

The May 2012 TVT report shows an increase in travel for the first 5 months of 2012 compared to the same months in 2011. Overall VMT is estimated to have increased by 1.2 percent. VMT on rural Interstate, other arterials, and other rural roads increased by 1.8 percent, 1.2 percent, and 1.8 percent, respectively. VMT on urban Interstates, other urban arterials, and other urban roads increased 1.6 percent, 1.0 percent, and 0.8 percent, respectively.

The TVT report is a monthly report based on hourly traffic count data. These data, collected at approximately 4,000 continuous traffic-counting locations nationwide, are used to calculate the percent change in traffic for the current month compared to the same month in the previous year. Because of limited TVT sample sizes, caution should be used with these estimates.

For additional information on ongoing traffic trends, visit http://www.fhwa.dot.gov/ohim/tvtw/tvtfaq.cfm.

Exhibit 2-9 Highway Travel by Functional System and by Vehicle Type, 2008–2010

Functional System	2008	2010	Annual Rate of Change 2010/2008
Rural			
Interstate			
PV	181,278	185,212	1.1%
SU	11,970	11,206	-3.2%
Combo	49,973	49,229	-0.7%
Other Arterial			
PV	322,288	324,467	0.3%
SU	20,176	18,922	-3.2%
Combo	31,771	33,023	2.0%
Other Rural			
PV	335,206	327,748	-1.1%
SU	19,286	18,059	-3.2%
Combo	16,287	16,281	0.0%
Total Rural			
PV	838,772	837,428	-0.1%
SU	51,431	48,188	-3.2%
Combo	98,031	98,532	0.3%
Urban			
Interstate			
PV	423,699	427,395	0.4%
SU	16,752	14,485	-7.0%
Combo	35,663	35,812	0.2%
Other Urban			
PV	1,403,376	1,415,087	0.4%
SU	58,672	48,001	-9.5%
Combo	50,131	41,567	-8.9%
Total Urban			
PV	1,827,075	1,842,482	0.4%
SU	75,423	62,486	-9.0%
Combo	85,794	77,379	-5.0%
Total			
PV	**2,665,848**	**2,679,910**	**0.3%**
SU	**126,855**	**110,674**	**-6.6%**
Combo	**183,826**	**175,911**	**-2.2%**

The procedures used to develop estimates of travel by vehicle type have been significantly revised; the data available do not support direct comparisons prior to 2007.

Data do not include Puerto Rico.

PV = Passenger Vehicles (including buses, motorcycles and two-axle, four-tire vehicles); SU = Single-Unit Trucks (6 or more tires); Combo = Combination Trucks (trailers and semitrailers).

Source: Highway Statistics, various years, Table VM-1.

VMT in urban areas totaled approximately 2.00 trillion in 2010. Urban VMT increased at an average annual rate of 1.8 percent over the 10-year period. In 2010, urban interstates carried a bit less than half a trillion VMT, the highest level among any functional class.

Exhibit 2-9 depicts highway travel by functional classification and vehicle type in 2008 and 2010. Three types of vehicles are identified: passenger vehicles which include motorcycles, buses, and light trucks (two-axle, four-tire models); single-unit trucks having six or more tires; and combination trucks, including trailers and semitrailers. Passenger vehicle travel accounted for 90.3 percent of total VMT in 2010; combination trucks accounted for 5.9 percent of VMT during this period and single-unit trucks accounted for the remaining 3.7 percent. The share of truck travel on the rural interstates is considerably higher; in 2010, single-unit and combination trucks together accounted for 24.6 percent of total VMT on the rural Interstates.

Passenger vehicle travel grew at an average annual rate of 0.3 percent from 2008 to 2010. Over the same period, combination truck traffic declined by 2.2 percent per year, and single-unit truck traffic declined by 6.6 percent per year. The decrease in combination truck traffic occurred mostly in urban areas; single-unit truck traffic decreased in both rural and urban areas, but the change was more pronounced in urban areas. Direct comparisons over a longer time period cannot be made due to significant revisions to the vehicle distribution estimation methodology implemented in 2007.

Toll Roads, HOT Lanes, and/or HOV Lanes

The best source of information regarding toll roads in the Nation is the Toll Facilities Report (FHWA-PL-11-032, July 2011) published by the Office of Highway Policy Information. The report contains selected information on toll facilities in the United States that has been provided to FHWA by the States and/or various toll authorities regarding toll facilities in operation, financed, or under construction as of July 2011. The report is based on voluntary responses received biennially. Since data submission is voluntary, the report may not contain complete information as to toll roads in the Nation. As of 2011, there were 3,088 miles of Interstate toll roads and 1,992 miles of non-Interstate toll roads reported.

The HPMS database contains very limited data on miles of HOT lanes and HOV lanes. The data available in the HPMS indicate that there were 1,065 miles of HOV lanes. However, since information regarding HOT/HOV lanes may be incomplete, this number may not accurately reflect actual mileage.

Federal-Aid Highways

The term "Federal-aid highways" includes roads that are generally eligible for Federal funding assistance under current law, which includes public roads that are not functionally classified as rural minor collector, rural local, or urban local. As shown in *Exhibit 2-10*, the extent of Federal-aid highways totaled slightly more than 1.0 million miles in 2010. Federal-aid highways included more than 2.4 million lane miles and carried more than 2.5 trillion VMT in 2010. VMT on Federal-aid highways grew at an average annual rate of 0.8 percent from 2000 to 2010. Lane miles on Federal-Aid Highways also grew at an annual average rate of 0.8 percent during the same period.

Federal-aid highway mileage made up 24.7 percent of the total highway miles on the Nation's roadways in 2010. The number of lane miles on Federal-aid highways was approximately 28.4 percent of the Nation's total lane mileage. The VMT carried on Federal-aid highways made up 84.6 percent of the VMT for the Nation.

While the system characteristics information presented in this chapter is available for all functional classes, some data pertaining to system conditions and performance presented in other chapters are not available in the HPMS for roads classified as rural minor collector, rural local, or urban local. Thus, some data presented in other chapters may reflect only Federal-aid highways.

Exhibit 2-10 **Federal-Aid Highway Miles, Lane Miles, and VMT, 2000–2010**

	2000	2002	2004	2006	2008	2010	Annual Rate of Change 2010/2000
Highway Miles	959,339	959,125	971,036	984,093	994,358	1,007,777	0.5%
Lane Miles	2,271,990	2,282,024	2,319,417	2,364,514	2,388,809	2,451,140	0.8%
VMT (millions)	2,342,690	2,430,698	2,531,629	2,573,956	2,534,490	2,525,455	0.8%

Source: Highway Performance Monitoring System.

National Highway System

With the Interstate System essentially complete, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) revised the Federal-aid highway program for the post-Interstate System era. The legislation authorized designation of an NHS that would prioritize Federal resources to roads most important for interstate travel, economic expansion, and national defense; that connect with other modes of transportation; and that are essential to the Nation's role in the international marketplace.

The NHS was designed to be a dynamic system capable of changing in response to future travel and trade demands. The U.S. Department of Transportation may approve modifications to the NHS without congressional approval. States must cooperate with local and regional officials in proposing modifications. In metropolitan areas, local and regional officials must act through metropolitan planning organizations and the State transportation department when proposing modifications. A number of such modifications are proposed and approved each year.

The NHS has five components. The first, the Interstate System, is the core of the NHS and includes the most traveled routes. The second component includes other principal arterials deemed most important for commerce and trade. The third is the Strategic Highway Network (STRAHNET), which consists of highways important to military mobilization. The fourth is the system of STRAHNET connectors that provides access between major military installations and routes that are part of STRAHNET. The final component consists of intermodal connectors, which were not included in the National Highway System Designation Act of 1995 but are eligible for NHS funds. These roads provide access between major intermodal passenger and freight facilities and the other four subsystems that make up the NHS.

Which governmental entities own the mileage that makes up the National Highway System?

Q&A

Approximately 96.9 percent of NHS mileage was State-owned in 2010. Only 3.0 percent was locally owned and the Federal government owned the remaining 0.1 percent. The NHS is concentrated on higher functional systems, which tend to have higher shares of State-owned mileage.

The Moving Ahead for Progress in the 21st Century Act of 2012 (MAP-21) modified the scope of the NHS to include some additional principal arterial and related connector mileage not previously designated as part of the NHS. The statistics presented in this chapter pertain to the NHS as it existed in 2010.

What changes will the National Highway System experience under MAP-21?

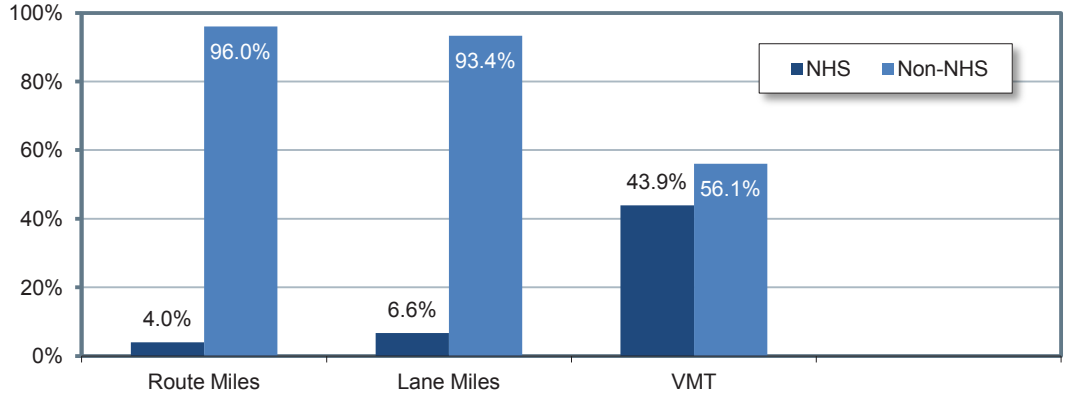
Q&A

The revised NHS criteria in MAP-21 would add to the NHS most of the principal arterial mileage that is not currently part of the system. If all principal arterial mileage were added, this would expand the length of the NHS by 37.7 percent, to over 224,300 miles from 162,876 miles prior to MAP-21. While this estimate includes some principal arterial mileage that may not ultimately be included in the NHS, it excludes additional intermodal connector mileage that may be added. This estimate of the extent of the future NHS is used in Part II of this report as the basis for 20-year NHS investment/performance projections.

Combining the current NHS with all other principal arterial mileage would cover 5.5 percent of the Nation's route miles, 8.9 percent of lane miles, and 55.2 percent of VMT.

Exhibit 2-11 summarizes NHS route miles, lane miles, and VMT for the NHS components. The NHS is overwhelmingly concentrated on higher functional systems. All Interstate System highways are part of the NHS, as are 96.0 percent of rural other freeways and expressways, 84.3 percent of urban other freeways and expressways, 79.9 percent of rural other principal arterials, and 39.6 percent of urban other principal arterials. The share of minor arterials, collectors, and local roads on the NHS is relatively small. As of 2010, there were 162,698 route miles on the NHS, excluding any sections not yet open to traffic. While only 4.0 percent of the Nation's total route mileage and 6.7 percent of the total lane miles were on the NHS, these roads carried 44.0 percent of VMT in 2010.

Exhibit 2-11 Highway Route Miles, Lane Miles, and VMT on the NHS Compared With All Roads, by Functional System, 2010



	Route Miles		Lane Miles		VMT (Millions)	
	Total on NHS	Percent of Functional System on NHS	Total on NHS	Percent of Functional System on NHS	Total on NHS	Percent of Functional System on NHS
Rural NHS						
Interstate	30,244	100.0%	123,653	100.0%	244,484	100.0%
Other Freeway and Expressway*	4,090	96.0%	15,074	95.8%	18,906	96.4%
Other Principal Arterial*	72,838	79.9%	195,336	82.0%	171,226	83.2%
Minor Arterial	3,124	2.3%	7,311	2.6%	5,338	3.5%
Major Collector	1,159	0.3%	2,619	0.3%	1,603	0.9%
Minor Collector	17	0.0%	33	0.0%	4	0.0%
Local	59	0.0%	197	0.0%	150	0.1%
Subtotal Rural NHS	**111,530**	**3.7%**	**344,223**	**5.6%**	**441,711**	**44.9%**
Urban NHS						
Interstate	16,657	100.0%	92,266	100.0%	477,591	100.0%
Other Freeway and Expressway*	9,575	84.3%	45,503	85.7%	196,079	88.8%
Other Principal Arterial*	22,774	35.0%	85,493	37.2%	180,778	39.6%
Minor Arterial	1,585	1.5%	4,831	1.7%	7,133	1.9%
Major Collector	466	0.4%	1,163	0.5%	1,329	0.8%
Minor Collector	15	0.5%	31	0.4%	6	0.1%
Local	95	0.0%	233	0.0%	160	0.0%
Subtotal Urban NHS	**51,167**	**4.7%**	**229,520**	**9.4%**	**863,074**	**43.5%**
Total NHS	**162,698**	**4.0%**	**573,744**	**6.7%**	**1,304,786**	**44.0%**

** Under MAP-21, most roads on these functional systems will become part of the NHS.*

Source: Highway Performance Monitoring System, December 2010.

Interstate System

With the strong support of President Dwight D. Eisenhower, the Federal-Aid Highway Act of 1956 declared that the completion of the "National System of Interstate and Defense Highways" was essential to the national interest. The Act made a national commitment to the completion of the Interstate System within the Federal–State partnership of the Federal-aid highway program, with the State responsible for construction to approved standards. The Act also resolved the challenging issue of how to pay for construction by establishing the Highway Trust Fund to ensure that revenue from highway user taxes, such as the motor fuels tax, would be dedicated to the Interstate System and other Federal-aid highway and bridge projects.

President Eisenhower wrote in his memoirs that "more than any single action by the government since the end of the war, this one would change the face of America. Its impact on the American economy . . . was beyond calculation." The Dwight D. Eisenhower National System of Interstate and Defense Highways, as it is now called, accelerated interstate and regional commerce, enhanced the country's competitiveness in international markets, increased personal mobility, facilitated military transportation, and accelerated metropolitan development throughout the United States. Although the Interstate System accounted for only 1.2 percent of the Nation's total roadway mileage in 2010, it carried 24.2 percent of all highway travel.

Exhibit 2-12 combines data presented earlier in this section for rural and urban Interstate System highways. From 2000 to 2010, Interstate System miles grew at an average annual rate of 0.1 percent to 47,182. Over this same period, Interstate System lane miles grew by 0.4 percent annually to 217,165, and the traffic carried by the Interstate System grew by 0.9 percent per year to over 0.7 trillion VMT.

Exhibit 2-12 Interstate Highway Miles, Lane Miles, and VMT, 2000–2010

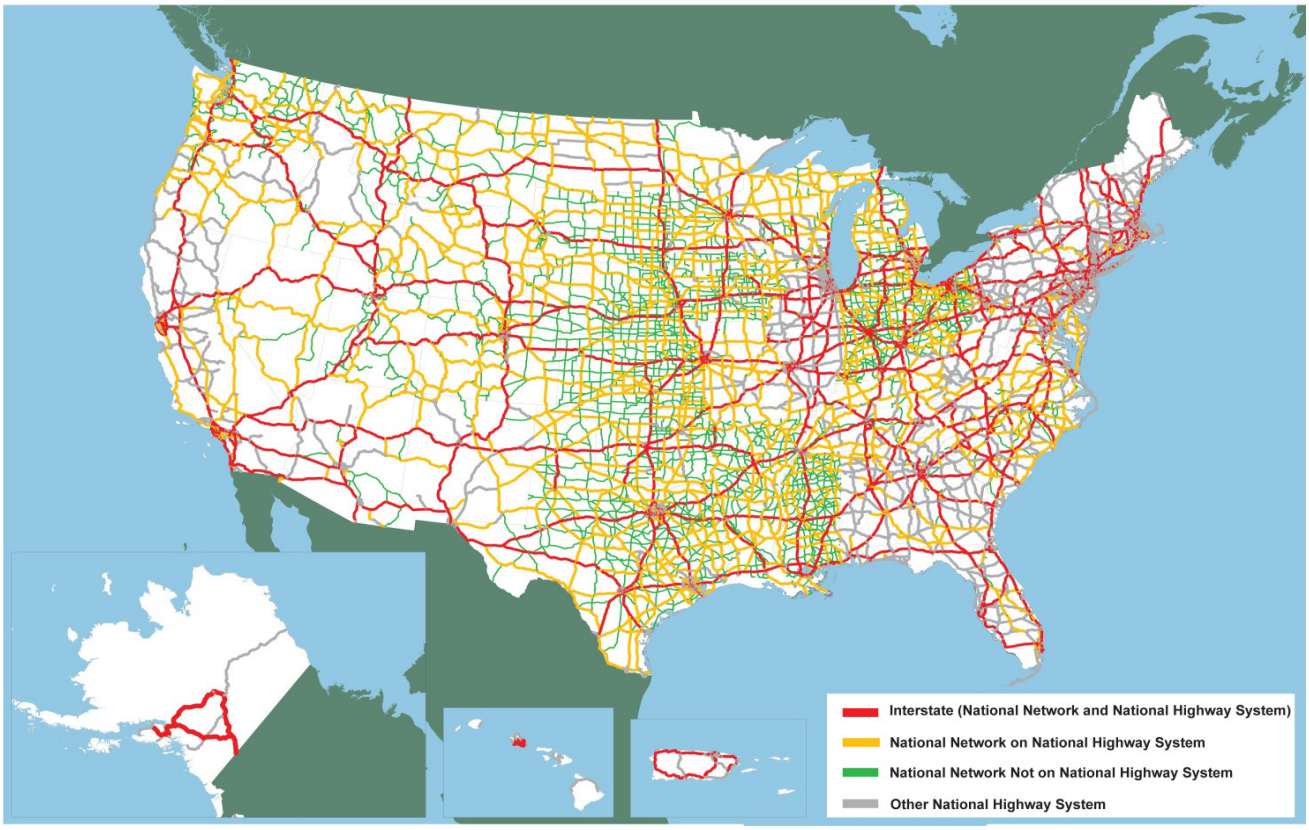
	2000	2002	2004	2006	2008	2010	Annual Rate of Change 2010/2000
Highway Miles	46,675	46,747	46,836	46,892	47,019	47,182	0.1%
Lane Miles	209,647	210,896	212,029	213,542	214,880	217,165	0.4%
VMT(millions)	666,708	693,941	727,163	741,002	725,213	731,095	0.9%

Source: Highway Performance Monitoring System, December 2011.

Highway Freight System

The U.S. freight highway transportation system is, at its fullest extent, composed of all Federal, State, local (county or municipal), and private roads that permit trucks and other commercial vehicles that haul freight. The National Network (shown in *Exhibit 2-13*) is a system composed of 200,000 miles of roadways that is officially designated to accommodate commercial freight-hauling vehicles. The National Network was designated under the Surface Transportation Assistance Act of 1982, which requires States to allow trucks of certain specific sizes and configurations on the "Interstate System and those portions of the Federal-aid Primary System … serving to link principal cities and densely developed portions of the States … utilized extensively by large vehicles for interstate commerce." National Network roadways are required to permit conventional combination trucks that are up to 102 inches wide, and accommodate truck tractors that have a single semi-trailer up to 48 feet in length or have two 28-foot trailers. Most States currently allow conventional combination trucks with single trailers up to 53 feet in length to operate without permits on their portions of the National Network.

Exhibit 2-13 National Network for Conventional Combination Trucks, 2009



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 NHS are approximately 200,000 miles in length, but the National Network includes 65,000 miles of highway 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.

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2009. ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/09factsfigures/figure3_3.htm.

Although there is significant overlap between the National Network and the NHS, they represent two distinct systems. The National Network has not changed significantly since its designation in 1982. Maintaining truck access to ports, industrial activities in central cities, supporting interstate commerce, and regulating the size of trucks are main priorities of the National Network.

Changes under MAP-21

The MAP-21 surface transportation reauthorization bill requires the creation and definition of a National Freight Network, which is intended to include the most important urban, rural, and intercity routes for commercial truck movements. This newly designated network, which does not have a specified roadway mileage, will likely be smaller than National Network or the NHS, and will overlap portions of both previously defined systems, though it will also include mileage that is not part of either the National Network or the NHS. The National Freight Network will consist of (1) a Primary Freight Network designated by the U.S. DOT, (2) the portions of the Interstate Highway System that are not selected to be part of the Primary Freight Network, and (3) Critical Rural Freight Corridors that are designated by the States. The Primary Freight Network will initially include no more than 27,000 centerline miles of existing

roadways, and will be determined based on eight freight-related factors identified in 23 USC 167(d)(1)(B): "(i) the origins and destinations of freight movement in the United States; (ii) the total freight tonnage and the value of freight movement by highways; (iii) the percentage of average annual daily truck traffic in the annual average daily traffic on principal arterials; (iv) the annual average daily truck traffic on principal arterials; (v) land and maritime ports of entry; (vi) access to energy exploration, development, installation, or production areas; (vii) population centers; and (viii) network connectivity." The Critical Rural Freight Corridors will need to meet at least one of the following three criteria: (1) is a rural, principal arterial that has trucks comprising a minimum of 25 percent of total AADT; (2) provides access to energy exploration, development, installation, or production; or (3) connects the primary freight network, a roadway meeting either (1) or (2) above, or an Interstate Highway System corridor to facilities that annually handle more than 50,000 twenty-foot equivalent (TEU) units or 500,000 tons of bulk commodities.

System Resiliency

An important aspect of system reliability (see Chapter 5) is the resiliency of the system. Resiliency measures the ability of the transportation system to minimize service disruptions despite variable and unexpected condition changes, such as extreme weather or a failure of infrastructure. Resiliency impacts both the physical infrastructure and operational solutions to overcome the sudden change. Events which test resiliency are of a low probability but are potentially highly disruptive to operations such as a hurricane, port/terminal closure, or bridge collapse, such as the Washington I-5 bridge collapse in May 2013. Resiliency is a factor of both the physical infrastructure (for example, how well a bridge responds to being hit) and the operations of the infrastructure (for example, how quickly responders are able to precipitate a safe detour and reconstruct the bridge). While the I-5 bridge did not demonstrate structural resilience to the strike of the truck that caused the collapse, Washington DOT used operational strategies to quickly operationalize a detour route, construct a temporary bridge in less than 1 month, and construct a replacement bridge in less than 5 months. System resiliency requires investments in both resilient infrastructure and emergency response plans by State DOTs.

Bridge System Characteristics

Bridges are vital components of the Nation's roadway system. Some allow for the unimpeded movement of traffic over barriers created by geographical features such as rivers; others are used in interchanges to facilitate the exchange of traffic between roadways.

The National Bridge Inventory (NBI) contains information detailing physical characteristics, traffic loads, and the evaluation of the condition of each bridge with a length greater than 20 feet (6.1 meters). As of December 2010, the NBI contained records for 604,493 bridges. Data for input to the NBI is collected on a regular basis as set forth in the National Bridge Inspection Standards.

Bridges by Owner

The owner of a particular bridge is responsible for the maintenance and activities required to keep the bridge safe for public use and can be a Federal, State, or local agency. Only 1.3 percent of the bridges in the Nation in 2010 were owned by agencies within the Federal government. The majority of these bridges are owned by the Department of the Interior and the Department of Defense. Among the bridges reported in the NBI, approximately 0.3 percent were coded as owned by private entities or coded with unknown or unclassified ownership.

Which governmental entities owned the bridges on the NHS in 2010?

Q&A

In 2010, approximately 97.5 percent of bridges on the NHS were State owned, 2.2 percent were locally owned, and 0.1 percent were owned by the Federal government. The remainder were privately owned, were owned by railroads, or had an owner that was not recorded.

In 2010, State agencies owned 291,145 bridges, or approximately 48.2 percent of the all bridges, which carried 87.5 percent of the total traffic on the Nation's bridge system. Local agencies owned 303,531 bridges in 2010, or approximately 50.2 percent of all bridges. Local agencies own slightly more bridges than State agencies, but many of them tend to be smaller structures concentrated on lower-volume routes compared to State inventories. These data are summarized in *Exhibit 2-14*.

Between 2000 and 2010, the total number of bridges grew at an average annual rate of 0.3 percent to 604,493 bridges on the Nation's roadways. This increase has been concentrated in State-owned and locally owned bridges. During this same timeframe, the percentage of bridges owned by the Federal government and private entities decreased.

Exhibit 2-14 Bridges by Owner, 2000–2010

Owner	2000	2002	2004	2006	2008	2010	Annual Rate of Change 2010/2000
Federal	8,221	9,371	8,425	8,355	8,383	8,150	-0.1%
State	277,106	280,266	282,552	284,668	289,051	291,145	0.5%
Local	298,889	299,354	300,444	301,912	302,278	303,531	0.2%
Private	2,299	1,502	1,497	1,490	1,427	1,366	-5.1%
Unknown/Unclassified	415	1,214	1,183	1,137	367	301	-3.2%
Total	**586,930**	**591,707**	**594,101**	**597,562**	**601,506**	**604,493**	**0.3%**

Source: National Bridge Inventory as of December 2010.

As shown in *Exhibit 2-15*, despite States owning 48.2 percent of total bridges in 2010, these bridges constituted 76.5 percent of total bridge deck area and carried 87.5 percent of total bridge traffic. In 2010, State agencies owned more than 3 times the bridge deck area of local agencies and carried more than 7 times the traffic of bridges owned by local agencies.

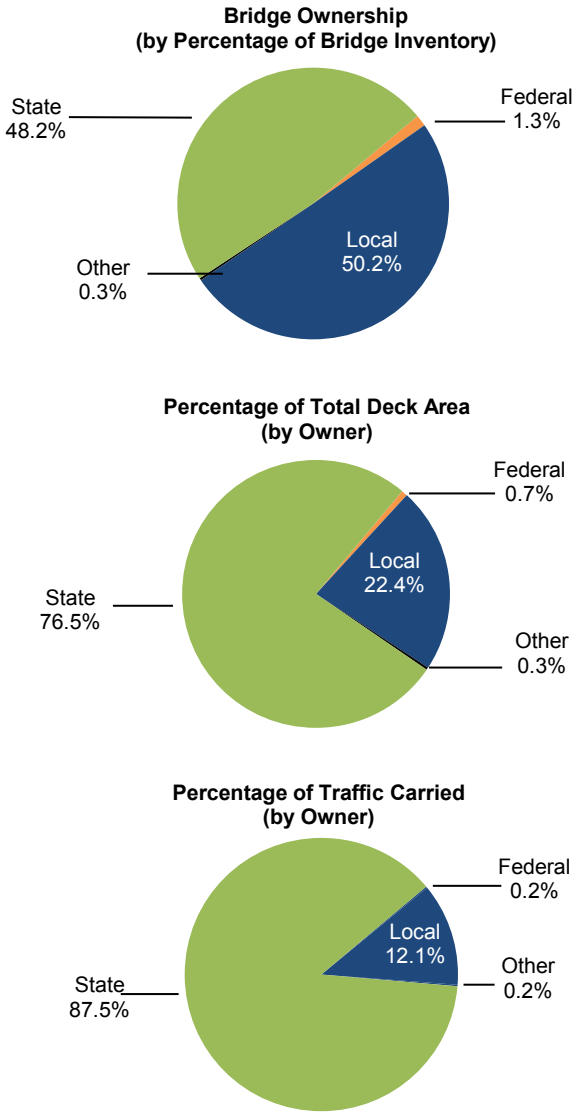
Interstate, STRAHNET, and NHS Bridges

Exhibit 2-16 shows that the Interstate system had 55,339 bridges, or 9.2 percent of the total bridges on the road system of the Nation, in 2010. Bridges on the Interstate make up 26.4 percent of the total deck area of bridges on the Nation's roadway system. Interstate bridges carry approximately 44.9 percent of average daily traffic and 58.3 percent of the Nation's Average Daily Truck Travel (ADTT).

The Strategic Highway Network (STRAHNET) system, including Interstate highways and other routes critical to national defense, included 68,529 bridges in 2010. All STRAHNET routes, including STRAHNET connectors, are included as part of the National Highway System (NHS).

As of 2010, the 116,669 bridges on the NHS constituted 19.3 percent of total bridges in the Nation. However, NHS bridges constituted 49.0 percent of total bridge deck area, carried 70.7 percent of total bridge traffic, and carried 81.0 percent of bridge truck traffic. As referenced earlier in this chapter, the NHS includes the entire Interstate System as well as additional critical routes.

Exhibit 2-15 Bridge Inventory Characteristics for Ownership, Traffic, and Deck Area, 2010



Source: National Bridge Inventory as of December 2010.

Exhibit 2-16 Interstate, STRAHNET, and NHS Bridges Weighted by Numbers, ADT, and Deck Area, 2010

Federal System*	Number of Bridges	Percent by Number of Bridges	Deck Area Sq Meters (1000)	Percent of Total Deck Area	ADT (1000)	Percent of Total ADT	Truck ADT (1000)	Percent of Total Truck ADT
Interstate System	55,339	9.2%	92,668	26.4%	1,992,392	44.9%	240,911	58.3%
STRAHNET	68,529	11.3%	108,690	30.9%	2,223,702	50.1%	262,512	63.6%
NHS	116,669	19.3%	172,167	49.0%	3,138,800	70.7%	334,973	81.1%
Federal-Aid Hwy	319,108	52.8%	293,485	83.5%	4,235,908	95.4%	402,992	97.6%
All Systems	604,493	100%	351,470	100%	4,438,757	100%	413,073	100%

** The NHS includes all of STRAHNET; STRAHNET includes the entire Interstate System.*

Source: National Bridge Inventory as of December 2010.

What is meant by "deck area" and how is the information about deck area used?

Q&A

The deck area of a bridge is the width of the roadway surface of a bridge multiplied by the length of the bridge. Pedestrian walkways and bike paths may be included in the roadway width.

Prior to MAP-21, the deck area of bridge was an essential calculation for use in the apportionment process of Highway Bridge Program funds.

The deck area of a bridge is an indicator as to the size of a bridge. Bridges with large deck areas are usually associated with having multiple lanes and large traffic volumes, and/or are over major geographical features requiring a great distance to span. The deck area of a bridge may be used to aid in determining the level of investment as part of a risk based prioritization process.

Example:

Bridge "A" carries two lanes of traffic on a local road that crosses a small stream. The bridge length is 30 feet and the roadway width is 26 feet for a total deck area of 780 square feet. The bridge has been rated as deficient.

Bridge "B" carries four lanes of traffic on the Interstate and crosses over a major river. The length of the bridge is 600 feet and the roadway width is 60 feet for a total deck area of 36,000 square feet. It has also been rated as deficient.

In a simple count reflecting deficient bridges both are equal in value, however, when deck area is considered, the difference between a 36,000 square foot bridge and a 780 square foot bridge indicates there is a potentially vast difference in the funding required to rehabilitate the Interstate bridge versus the bridge on the local road.

Bridges by Roadway Functional Classification

The NBI maintains the highway functional classification of the road on which a bridge is located. The NBI follows the hierarchy used for highway systems as previously described in this chapter. The number of bridges by roadway functional classification is summarized and compared with previous years in *Exhibit 2-17*.

As noted earlier in this chapter, changes in urban area boundaries resulting from the 2000 Census led to reductions in the number of rural bridges and an increase in urban bridges. As shown in *Exhibit 2-17*, the largest change in the number of bridges on a single functional class highway between 2000 and 2010 occurred on urban collectors with an annual increase of 3.1 percent.

Exhibit 2-18 shows the relationship between bridges among various rural and urban functional classes. In 2010, there were approximately 2.8 bridges on rural roadways for every bridge on the urban system. However, urban bridges carried more than 3.2 times the ADT of rural bridges and constituted slightly less than 1.3 times the deck area of rural bridges.

The greatest number of bridges on any functional system, rural or urban, is on rural local. In 2010 there were a total of 205,609 rural local functional class bridges constituting 34.0 percent of all bridges. Rural functional class bridges alone outnumber bridges in urban areas on all functional classifications. However, rural local bridges only account for 9.5 percent of the total bridge deck area in the Nation and carry only 1.4 percent of total bridge ADT.

The 30,116 urban Interstate bridges constitute only 5.0 percent of the Nation's bridges. However, urban Interstate bridges have the greatest share of deck area among the functional classes at 19.4 percent and carry the greatest share of ADT at 35.8 percent. Many urban Interstate bridges are part of interchanges and carry significant volumes of traffic.

Exhibit 2-17 Number of Bridges by Functional System, 2000–2010

Functional System	2000	2002	2004	2006	2008	2010	Annual Rate of Change 2010/2000
Rural							
Interstate	27,797	27,310	27,648	26,633	25,997	25,223	-1.0%
Other Principal Arterials	35,417	35,215	36,258	35,766	35,594	36,084	0.2%
Minor Arterial	39,377	39,571	40,197	39,521	39,079	39,048	-0.1%
Major Collector	95,559	94,766	94,079	93,609	93,118	93,059	-0.3%
Minor Collector	47,797	49,309	49,391	48,639	48,242	47,866	0.0%
Local	209,410	209,358	208,641	207,130	205,959	205,609	-0.2%
Subtotal Rural	455,357	455,529	456,214	451,298	447,989	446,889	-0.2%
Urban							
Interstate	27,882	27,924	27,667	28,637	29,629	30,116	0.8%
Other Expressways	16,011	16,843	17,112	17,988	19,168	19,791	2.1%
Other Principal Arterials	24,146	24,301	24,529	26,051	26,934	27,373	1.3%
Minor Arterial	23,020	24,510	24,802	26,239	27,561	28,103	2.0%
Collectors	15,036	15,169	15,548	17,618	18,932	20,311	3.1%
Local	25,683	26,592	27,940	29,508	31,183	31,877	2.2%
Subtotal Urban	131,778	135,339	137,598	146,041	153,407	157,571	1.8%
Unclassified	**600**	**375**	**288**	**222**	**110**	**33**	
Total	**587,735**	**591,243**	**594,100**	**597,561**	**601,506**	**604,493**	**0.3%**

Source: National Bridge Inventory as of December 2010.

Exhibit 2-18 Bridges by Functional System Weighted by Numbers, ADT, and Deck Area, 2010

Functional System	Number of Bridges	Percent by Total Number	Deck Area Sq Meters (1000)	Percent of Total Deck Area	ADT (1,000)	Percent of Total ADT
Rural						
Interstate	25,223	4.2%	24,656	7.0%	404,151	9.1%
Other Principal Arterial	36,084	6.0%	31,015	8.8%	259,639	5.8%
Minor Arterial	39,048	6.5%	21,576	6.1%	144,499	3.3%
Major Collector	93,059	15.4%	32,591	9.3%	142,267	3.2%
Minor Collector	47,866	7.9%	11,302	3.2%	34,828	0.8%
Local	205,609	34.0%	33,529	9.5%	63,373	1.4%
Subtotal Rural	**446,889**	**73.9%**	**154,668**	**44.0%**	**1,048,757**	**23.6%**
Urban						
Interstate	30,116	5.0%	68,012	19.4%	1,588,241	35.8%
Other Freeways & Expressways	19,791	3.3%	37,296	10.6%	720,988	16.2%
Other Principal Arterial	27,373	4.5%	39,333	11.2%	525,255	11.8%
Minor Arterial	28,103	4.6%	26,354	7.5%	327,646	7.4%
Collector	20,311	3.4%	12,652	3.6%	123,222	2.8%
Local	31,877	5.3%	13,124	3.7%	104,495	2.4%
Subtotal Urban	**157,571**	**26.1%**	**196,772**	**56.0%**	**3,389,846**	**76.4%**
Unclassified	**33**	**0.0%**	**30**	**0.0%**	**154**	**0.0%**
Total	**604,493**	**100.0%**	**351,470**	**100.0%**	**4,438,757**	**100.0%**

Source: National Bridge Inventory as of December 2010.

In 2010, there were 2.8 Interstate bridges on rural roadways for every Interstate bridge in urban areas. While there were fewer bridges in urban areas compared to rural areas, the volume of traffic carried by urban Interstate bridges was more than 3.9 times the ADT carried by rural Interstate bridges in 2010. As reported in the 2010 Conditions & Performance Report, the ADT carried on urban Interstate bridges in 2010 was more than 1.5 times the ADT carried on all rural bridges combined.

Bridges by Traffic Volume

As shown in *Exhibit 2-19*, many bridges carried relatively low volumes of traffic on a typical day in 2010. Approximately 319,196 bridges, or 52.8 percent of the total bridges in the Nation, had an ADT of 1,000 or less. An additional 180,371 bridges, or 29.8 percent of all bridges, had an ADT between 1,001 and 10,000. Only 17,793 of the Nation's bridges, or 2.9 percent, had an ADT higher than 50,000. The remaining 87,133 bridges, or 14.4 percent, had an ADT between 10,001 and 50,000.

Of the bridges which have an ADT higher than 50,000, approximately 2.0 percent, or 12,147 bridges, are on the Interstate system. Interstate bridges in urban areas account for slightly more than 93.6 percent of these bridges. When all bridges that carry the highest category of ADT are considered, the number of bridges in urban areas outnumber rural bridges by more than 100 to 1.

Exhibit 2-19 Number of Bridges by Functional Class and ADT Group, 2010

Functional System	Average Daily Traffic Category			
	< 1,000 ADT	1,001 to 10,000 ADT	10,001 to 50,000 ADT	> 50,000 ADT
Rural				
Interstate	394	10,078	13,979	772
Other Principal Arterial	1,342	27,742	6,879	121
Minor Arterial	7,616	29,131	2,287	14
Major Collector	54,334	37,589	1,133	3
Minor Collector	38,980	8,708	173	5
Local	195,682	9,429	481	17
Subtotal Rural	**298,348**	**122,677**	**24,932**	**932**
Urban				
Interstate	364	4,044	14,333	11,375
Other Freeways & Expressways	243	4,113	11,328	4,107
Other Principal Arterial	356	7,700	18,272	1,045
Minor Arterial	1,140	14,213	12,571	179
Collector	3,050	13,850	3,353	58
Local	15,670	13,771	2,339	97
Subtotal Urban	**20,823**	**57,691**	**62,196**	**16,861**
Unclassified	**25**	**3**	**5**	**0**
Total	**319,196**	**180,371**	**87,133**	**17,793**

Source: National Bridge Inventory as of December 2010.

Transit System Characteristics

System History

The first transit systems in the United States date to the late 19th century. These were privately owned, for-profit businesses that were instrumental in defining the urban communities of that time. By the postwar period, competition from the private automobile was making it impossible for transit businesses to operate at a profit. As they started to fail, local, State, and national government leaders began to realize the importance of sustaining transit services. In 1964, Congress passed the Urban Mass Transportation Act, which established the agency now known as the Federal Transit Administration (FTA) to administer Federal funding for transit systems. The Act also changed the character of the industry by specifying that Federal funds for transit were to be given to public agencies rather than private firms; this accelerated the transition from private to public ownership and operation of transit systems. The Act also required local governments to contribute matching funds in order to receive Federal aid for transit services, setting the stage for the multilevel governmental partnerships that continue to characterize the transit industry today.

State government involvement in the provision of transit services is usually through financial support and performance oversight. However, some States have undertaken outright ownership and operation of transit services. Connecticut, Georgia, Louisiana, Maryland, Ohio, and Washington all own and operate transit systems directly, as does Puerto Rico. Michigan and Pennsylvania contract for transit services.

Some Transit Vocabulary

Modal network refers to a system of routes and stops served by one type of transit technology; this could be a bus network, a light rail network, a ferry network, or a demand response system. Transit operators often maintain several different modal networks, most often motor bus systems augmented with demand response service.

Articulated bus is an extra-long (54- to 60-foot) bus with two connected passenger compartments. The rear body section is connected to the main body by a joint mechanism that allows the vehicles to bend when in operation for sharp turns and curves and yet have a continuous interior.

Automated Guideway Systems are driverless, rubber-tire vehicles usually running alone or in pairs on a single broad concrete rail, typical of most airport trains, although airport trains are not considered transit service by FTA.

Demand response service usually consists of passenger cars, vans, or small buses operating in response to calls from passengers or their agents to the transit operator, who then dispatches a vehicle to pick up the passengers and transport them to their destinations. The vehicles do not operate over a fixed route or on a fixed schedule, except on a temporary basis to satisfy a special need. A vehicle may be dispatched to pick up several passengers at different pickup points before taking them to their respective destinations.

Públicos or "public cars" are typically 17-passenger vans that serve towns throughout Puerto Rico, stopping in each community's main plaza or at a destination requested by a passenger. They generally operate without a set schedule, primarily during the day; the public service commission fixes routes and fares. San Juan-based Público companies include Blue Line for trips to Aguadilla and the northwest coast, Choferes Unidos de Ponce for Ponce, Línea Caborrojeña for Cabo Rojo and the southwest coast, Línea Boricua for the interior and the southwest, Línea Sultana for Mayagüez and the west coast, and Terminal de Transportación Pública for Fajardo and the east.

Jitneys are generally small-capacity vehicles that follow a rough service route but can go slightly out of their way to pick up and drop off passengers. In many U.S. cities (e.g., Pittsburgh and Detroit), the term "jitney" refers to an unlicensed taxicab. In some U.S. jurisdictions, the limit to a jitney is seven passengers.

Cutaways are vehicles comprising a bus body mounted on the chassis of a van or light-duty truck. The original van or light-duty truck chassis may be reinforced or extended. Cutaways typically seat 15 or more passengers and may accommodate some standing passengers.

Revenue service is the time when a vehicle is actively providing service to the general public and either is carrying passengers or is available to them. Revenue from fares is not necessary because vehicles are considered to be in revenue service even when the ride is free.

In 1962, the U.S. Congress passed legislation that required the formation of metropolitan planning organizations (MPOs) for urbanized areas with populations greater than 50,000. MPOs are composed of State and local officials who work to address the transportation planning needs of an urbanized area at a regional level. Twenty-nine years later, the Intermodal Surface Transportation Efficiency Act of 1991 made MPO coordination an essential prerequisite for Federal funding of many transit projects.

State and local transit agencies have evolved into a number of different institutional models. A transit provider may be a unit of a regional transportation agency; may be operated directly by the State, county, or city government; or may be an independent agency with an elected or appointed Board of Governors. Transit operators can provide service directly with their own equipment or they may purchase transit services through an agreement with a contractor. All public transit services must be open to the general public without discrimination and meet the accessibility requirements of the Americans with Disabilities Act of 1990 (ADA).

System Infrastructure

Urban Transit Agencies

In 2010, there were 728 agencies in urbanized areas that were required to submit data to the National Transit Database (NTD), of which 709 were public agencies, including eight State Departments of Transportation (DOTs). The remaining 19 agencies were either private operators or independent agencies (e.g., nonprofit organizations). One hundred thirty-one agencies received either a reporting exemption for operating nine or fewer vehicles or a temporary reporting waiver; 611 agencies reported providing service on 1,240 separate modal networks; all but 148 agencies operated more than one mode. In 2010, there were an additional 1,599 transit operators serving rural areas. Not all transit providers are included in these counts because those that do not receive grant funds from FTA are not required to report to NTD. Some, but not all, agencies report anyway, as this can help their region receive Federal transit funding.

The Nation's motor bus and demand response systems are much more extensive than the Nation's rail transit system. In 2010, there were 612 motor bus systems and 587 demand-response systems (not including demand-response taxi) in urban areas, compared with 18 heavy rail systems, 30 commuter rail systems, and 33 light rail systems (some of which are not yet in service). While motor bus and demand response systems were found in every major urbanized area in the United States, 44 urbanized areas were served by at least one of the three primary rail modes, including 20 by commuter rail, 30 by light rail, and 14 by heavy rail (rail systems are listed in *Exhibit 2-20*). In addition to these modes, there were 70 publicly operated transit vanpool systems, 20 ferryboat systems, five trolleybus systems, three automated guideway systems, three inclined plane systems, and one cable car system operating in urbanized areas of the United States and its territories.

The transit statistics presented in this report also include the San Francisco Cable Car, the Seattle Monorail, the Roosevelt Island Aerial Tramway in New York, and the Alaska Railroad (which is a long-distance passenger rail system included as public transportation by statutory exemption).

Urbanized Areas with Population over 1 Million in 2010 Census

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UZA Rank	UZA Name	2010 Population	2011 Unlinked Transit Trips
1	New York-Newark, NY-NJ-CT	18,351,295	4,017,665,768
2	Los Angeles-Long Beach-Anaheim, CA	12,150,996	661,822,454
3	Chicago, IL-IN	8,608,208	644,479,067
4	Miami, FL	5,502,379	158,711,484
5	Philadelphia, PA-NJ-DE-MD	5,441,567	403,855,701
6	Dallas-Fort Worth-Arlington, TX	5,121,892	71,341,858
7	Houston, TX	4,944,332	81,090,736
8	Washington, DC-VA-MD	4,586,770	487,325,732
9	Atlanta, GA	4,515,419	149,556,097
10	Boston, MA-NH-RI	4,181,019	389,568,759
11	Detroit, MI	3,734,090	49,824,000
12	Phoenix-Mesa, AZ	3,629,114	68,018,113
13	San Francisco-Oakland, CA	3,281,212	388,347,627
14	Seattle, WA	3,059,393	187,098,251
15	San Diego, CA	2,956,746	98,128,677
16	Minneapolis-St. Paul, MN-WI	2,650,890	93,892,746
17	Tampa-St. Petersburg, FL	2,441,770	29,116,395
18	Denver-Aurora, CO	2,374,203	89,614,960
19	Baltimore, MD	2,203,663	98,303,955
20	St. Louis, MO-IL	2,150,706	45,258,440
21	San Juan, PR	2,148,346	46,721,752
22	Riverside-San Bernardino, CA	1,932,666	18,495,303
23	Las Vegas-Henderson, NV	1,886,011	56,686,089
24	Portland, OR-WA	1,849,898	111,985,241
25	Cleveland, OH	1,780,673	47,764,261
26	San Antonio, TX	1,758,210	45,493,533
27	Pittsburgh, PA	1,733,853	65,501,247
28	Sacramento, CA	1,723,634	28,712,623
29	San Jose, CA	1,664,496	47,349,903
30	Cincinnati, OH-KY-IN	1,624,827	22,819,990
31	Kansas City, MO-KS	1,519,417	16,766,058
32	Orlando, FL	1,510,516	21,995,359
33	Indianapolis, IN	1,487,483	9,512,303
34	Virginia Beach, VA	1,439,666	16,654,615
35	Milwaukee, WI	1,376,476	46,489,545
36	Columbus, OH	1,368,035	19,049,187
37	Austin, TX	1,362,416	34,740,271
38	Charlotte, NC-SC	1,249,442	27,028,511
39	Providence, RI-MA	1,190,956	21,205,831
40	Jacksonville, FL	1,065,219	12,599,527
41	Memphis, TN-MS-AR	1,060,061	10,616,855
42	Salt Lake City-West Valley City, UT	1,021,243	30,566,260

Exhibit 2-20 Rail Modes Serving Urbanized Areas

Mode: Heavy Rail		
Rail System Name	**UZA Name**	**Vehicles**
MTA New York City Transit (NYCT)	New York-Newark, NY-NJ-CT	5,354
Chicago Transit Authority (CTA)	Chicago, IL-IN	980
Washington Metropolitan Area Transit Authority (WMATA)	Washington, DC-VA-MD	850
San Francisco Bay Area Rapid Transit District (BART)	San Francisco-Oakland, CA	534
Massachusetts Bay Transportation Authority (MBTA)	Boston, MA-NH-RI	342
Southeastern Pennsylvania Transportation Authority (SEPTA)	Philadelphia, PA-NJ-DE-MD	284
Port Authority Trans-Hudson Corporation (PATH)	New York-Newark, NY-NJ-CT	266
Metropolitan Atlanta Rapid Transit Authority (MARTA)	Atlanta, GA	188
Miami-Dade Transit (MDT)	Miami, FL	84
Port Authority Transit Corporation (PATCO)	Philadelphia, PA-NJ-DE-MD	84
Los Angeles County Metropolitan Transportation Authority (LACMTA)	Los Angeles-Long Beach-Santa Ana, CA	70
Maryland Transit Administration (MTA)	Baltimore, MD	54
Staten Island Rapid Transit Operating Authority (SIRTOA)	New York-Newark, NY-NJ-CT	46
Puerto Rico Highway and Transportation Authority (PRHTA)	San Juan, PR	40
The Greater Cleveland Regional Transit Authority (GCRTA)	Cleveland, OH	22
Santa Clara Valley Transportation Authority (VTA)	San Jose, CA	
City and County of Honolulu Department of Transportation Services (DTS)	Honolulu, HI	
Mode: Commuter Rail		
Rail System Name	**UZA Name**	**Vehicles**
New Jersey Transit Corporation (NJ TRANSIT)	New York-Newark, NY-NJ-CT	1,291
Metro-North Commuter Railroad Company (MTA-MNCR)	New York-Newark, NY-NJ-CT	1,075
Northeast Illinois Regional Commuter Railroad Corporation (Metra)	Chicago, IL-IN	1,057
MTA Long Island Rail Road (MTA LIRR)	New York-Newark, NY-NJ-CT	1,014
Massachusetts Bay Transportation Authority (MBTA)	Boston, MA-NH-RI	418
Southeastern Pennsylvania Transportation Authority (SEPTA)	Philadelphia, PA-NJ-DE-MD	325
Southern California Regional Rail Authority (Metrolink)	Los Angeles-Long Beach-Santa Ana, CA	169
Maryland Transit Administration (MTA)	Baltimore, MD	132
Peninsula Corridor Joint Powers Board (PCJPB)	San Francisco-Oakland, CA	95
Virginia Railway Express (VRE)	Washington, DC-VA-MD	78
Northern Indiana Commuter Transportation District (NICTD)	Chicago, IL-IN	66
Central Puget Sound Regional Transit Authority (ST)	Seattle, WA	56
Trinity Railway Express	Dallas-Fort Worth-Arlington, TX	36
South Florida Regional Transportation Authority (TRI-Rail)	Miami, FL	34
Utah Transit Authority (UTA)	Salt Lake City, UT	34
Connecticut Department of Transportation (CDOT)	Hartford, CT	28
North County Transit District (NCTD)	San Diego, CA	26
Rio Metro Regional Transit District (RMRTD)	Albuquerque, NM	25
Metro Transit	Minneapolis-St. Paul, MN	23
Altamont Commuter Express (ACE)	Stockton, CA	21
Pennsylvania Department of Transportation (PENNDOT)	Philadelphia, PA-NJ-DE-MD	20
Northern New England Passenger Rail Authority (NNEPRA)	Boston, MA-NH-RI	14
Regional Transportation Authority (RTA)	Nashville-Davidson, TN	7
Tri-County Metropolitan Transportation District of Oregon (TriMet)	Portland, OR-WA	4
Capital Metropolitan Transportation Authority (CMTA)	Austin, TX	4

Exhibit 2-20 Rail Modes Serving Urbanized Areas

Mode: Light Rail		
Rail System Name	**UZA Name**	**Vehicles**
Massachusetts Bay Transportation Authority (MBTA)	Boston, MA-NH-RI	156
San Francisco Municipal Railway (MUNI)	San Francisco-Oakland, CA	139
Southeastern Pennsylvania Transportation Authority (SEPTA)	Philadelphia, PA-NJ-DE-MD	124
Los Angeles County Metropolitan Transportation Authority (LACMTA)	Los Angeles-Long Beach-Santa Ana, CA	118
Tri-County Metropolitan Transportation District of Oregon (TriMet)	Portland, OR-WA	110
Denver Regional Transportation District (RTD)	Denver-Aurora, CO	104
San Diego Metropolitan Transit System (MTS)	San Diego, CA	93
Dallas Area Rapid Transit (DART)	Dallas-Fort Worth-Arlington, TX	76
New Jersey Transit Corporation (NJ TRANSIT)	New York-Newark, NY-NJ-CT	73
Sacramento Regional Transit District (Sacramento RT)	Sacramento, CA	56
Port Authority of Allegheny County (Port Authority)	Pittsburgh, PA	51
Bi-State Development Agency (METRO)	St. Louis, MO-IL	50
Santa Clara Valley Transportation Authority (VTA)	San Jose, CA	47
Utah Transit Authority (UTA)	Salt Lake City, UT	43
Maryland Transit Administration (MTA)	Baltimore, MD	38
Valley Metro Rail, Inc. (VMR)	Phoenix-Mesa, AZ	32
Metro Transit	Minneapolis-St. Paul, MN	27
Central Puget Sound Regional Transit Authority (ST)	Seattle, WA	26
Niagara Frontier Transportation Authority (NFT Metro)	Buffalo, NY	23
New Orleans Regional Transit Authority (NORTA)	New Orleans, LA	21
The Greater Cleveland Regional Transit Authority (GCRTA)	Cleveland, OH	17
Metropolitan Transit Authority of Harris County, Texas (Metro)	Houston, TX	17
Charlotte Area Transit System (CATS)	Charlotte, NC-SC	16
Memphis Area Transit Authority (MATA)	Memphis, TN-MS-AR	12
North County Transit District (NCTD)	San Diego, CA	6
Hillsborough Area Regional Transit Authority (HART)	Tampa-St. Petersburg, FL	4
Island Transit (IT)*	Galveston, TX	4
Central Arkansas Transit Authority (CATA)	Little Rock, AR	3
Kenosha Transit (KT)	Kenosha, WI	3
Central Puget Sound Regional Transit Authority (ST)	Seattle, WA	2
King County Department of Transportation (King County Metro)	Seattle, WA	2

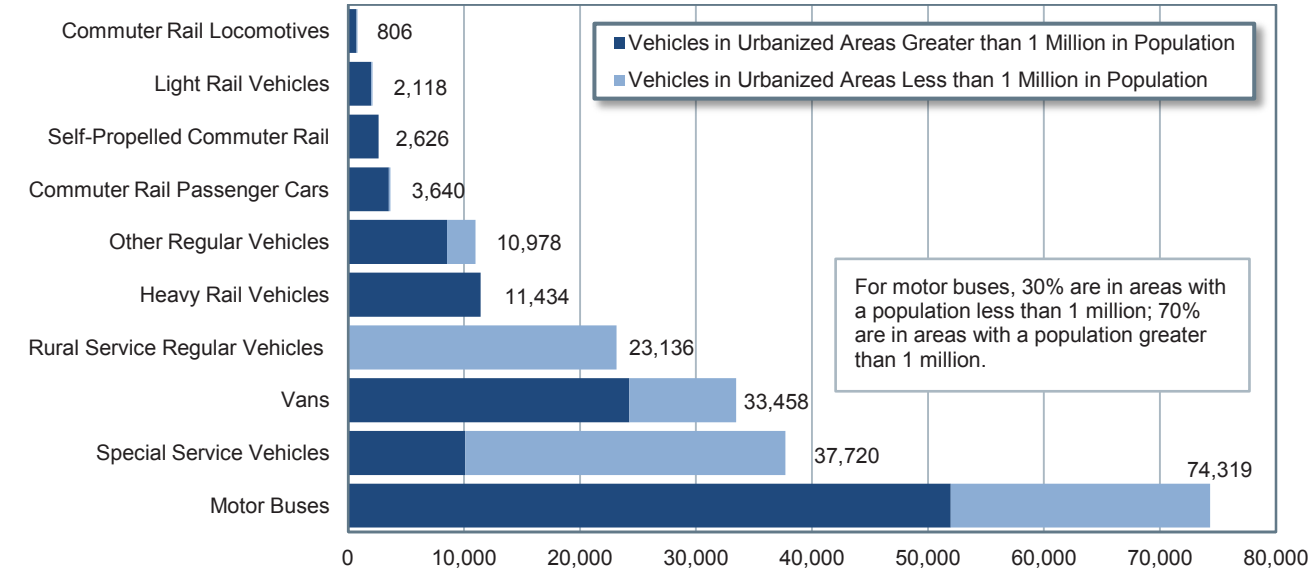
**Island Transit (IT) was not operating in 2010.*

Source: National Transit Database.

Transit Fleet

Exhibit 2-21 provides an overview of the Nation's 200,235 transit vehicles in 2010 by type of vehicle and size of urbanized area. Although some types of vehicles are specific to certain modes, many vehicles—particularly small buses and vans—are used by several different transit modes. For example, vans may be used to provide vanpool, demand response, Público, or motor bus services.

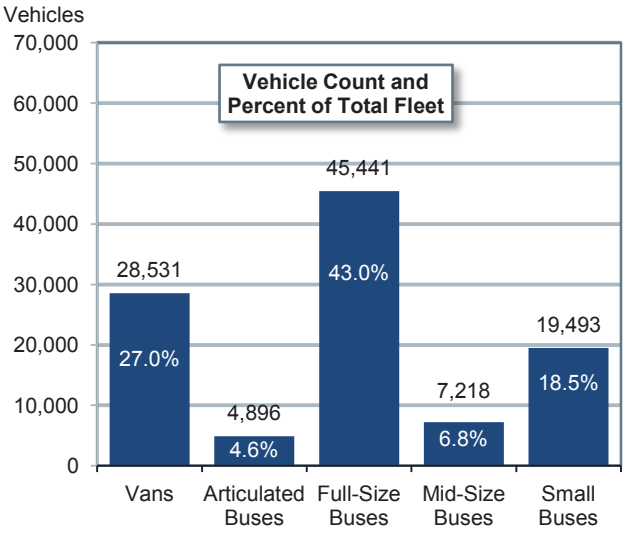
Exhibit 2-21 Transit Active Fleet by Vehicle Type, 2010



Source: National Transit Database.

Exhibit 2-22 shows the composition of the Nation's urban transit road vehicle fleet in 2010. More than one- third of these vehicles, or 43 percent, are full-sized motor buses. Additional information on trends in the number and condition of vehicles over time is included in Chapter 3. Vans here are the familiar 10-seat passenger vans. Articulated buses are the long vehicles articulated for better maneuverability on city streets. Full-sized buses are the standard 40-foot, 40-seat city buses. Mid-sized buses are in the 30-foot, 30-seat range. Small buses, typically built on truck chassis ("cut-aways"), are shorter and seat around 20 people.

Exhibit 2-22 Composition of Urban Transit Road Vehicle Fleet, 2010



Source: Transit Economic Requirements Model and National Transit Database.

Track, Stations, and Maintenance Facilities

Maintenance facility counts are broken down by mode and by size of urbanized area in *Exhibit 2-23*. Additional data on the age and condition of these facilities is included in Chapter 3.

As shown in *Exhibit 2-24*, in 2010, transit providers operated 12,438 miles of track and served 3,175 stations, compared with 11,864 miles of track and 3,078 stations in 2008. Expansion in light rail track mileage (8.1 percent) and stations (7.8 percent) accounted for most of the increase, a trend that continues from the recent past. The Nation's rail system mileage is dominated by the longer distances generally covered by commuter rail. Light and heavy rail typically operate in more densely developed areas and have more stations per track mile.

Transit System Resiliency

Transit systems practice resiliency by operating through all but the worst weather on a daily basis. Most play a key role in community emergency response plans. Dispatchers and vehicle operators receive special training for these circumstances. Bus systems all have reserve fleets that can replace damaged vehicles on short notice. Rail systems have contingency plans for loss of key assets and most can muster local resources to operate bus bridges in emergency situations. Operationally speaking, transit providers are some of the most resilient community institutions. However, much transit infrastructure has not yet been upgraded to address changing climactic patterns. FTA does not collect systematic data on this, but a significant amount of grant money has been made available for transit systems to upgrade their structures and guideways to be more resistant to extreme precipitation events, sea level rise, storm surge, heat waves, and other environmental stress. This is particularly evident in the aftermath of "superstorm" Sandy. Addressing these issues is a common use of FTA grant funds.

Exhibit 2-23 Maintenance Facilities for Directly Operated Services, 2010

Maintenance Facility Type[1]	Population Category: Over 1 Million	Under 1 Million	Total
Heavy Rail	59	0	59
Commuter Rail	51	1	52
Light Rail	37	6	43
Other Rail[2]	3	4	7
Motorbus	316	245	561
Demand Response	37	84	122
Ferryboat	8	1	9
Other Nonrail[3]	6	3	8
Total Urban Maintenance Facilities	**516**	**344**	**860**
Rural Transit [4]		**682**	**682**
Total Maintenance Facilities	**516**	**1,026**	**1,542**

[1] Includes owned and leased facilities.

[2] Alaska railroad, automated guideway, cable car, inclined plane, and monorail.

[3] Aerial tramway, jitney, Público, and vanpool.

[4] Vehicles owned by operators receiving funding from FTA as directed by 49 USC Section 5311. These funds are for transit services in areas with populations of less than 50,000. (Section 5311 Status of Rural Public Transportation 2000, Community Transportation Association of America, April 2001.)

Source: National Transit Database.

Exhibit 2-24 Transit Rail Mileage and Stations, 2010

Urbanized Area Track Mileage	
Heavy Rail	2,272
Commuter Rail	7,786
Light Rail	1,664
Other Rail and Tramway*	715
Total Urbanized Area Track Mileage	**12,438**
Urbanized Area Transit Rail Stations Count	
Heavy Rail	1,041
Commuter Rail	1,225
Light Rail	848
Other Rail and Tramway	61
Total Urbanized Area Transit Rail Stations	**3,175**

** Alaska railroad, automated guideway, cable car, inclined plane, monorail, and aerial tramway.*

Source: National Transit Database.

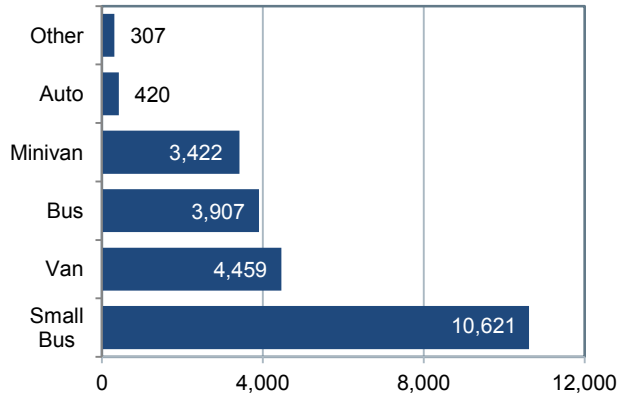
Rural Transit Systems (Section 5311 Providers)

The FTA first instituted rural data reporting to the NTD in 2006. In 2010, 1,582 transit operators reported providing rural service. They reported 123.2 million unlinked passenger trips and 570 million vehicle revenue miles. This included 61 Indian tribes that provided 1,008,701 unlinked passenger trips. There are 327 urbanized areas that report providing rural service; they added another 24 million unlinked passenger trips and 37 million vehicle revenue miles.

The data indicates that rural transit service has been growing rapidly; however, because the NTD is still adding rural reporters, this cannot yet be validated. The data also indicate every State and four territories provide some form of rural transit service.

Rural systems provide both traditional fixed-route and demand response services, with 1,180 demand response services, 530 motor bus services, and 16 vanpool services. They reported 23,136 vehicles in 2010. *Exhibit 2-25* shows the number of rural transit vehicles in service.

Exhibit 2-25 Rural Transit Vehicles, 2010



Note: Other includes over-the-road bus, school bus, sport utility vehicle, and other similar vehicles.

Source: National Transit Database.

Transit System Characteristics for Americans with Disabilities and the Elderly

The Americans with Disabilities Act (ADA) is intended to ensure that persons with disabilities have access to the same facilities and services as other Americans, including transit vehicles and facilities. This equality of access is brought about through the upgrading of transit vehicles and facilities on regular routes, through the provision of demand response transit service for those individuals who are still unable to use regular transit service, and through special service vehicles operated by private entities and some public organizations, often with the assistance of FTA funding.

Since the passage of the ADA in 1990, transit operators have been working to upgrade their regular vehicle fleets and improve their demand response services in order to meet the ADA's requirement to provide persons with disabilities with a level of service comparable to that of fixed-route systems. U.S. DOT regulations provide minimum guidelines and accessibility standards for buses; vans; and heavy, light, and commuter rail vehicles. For example, commuter rail transportation systems are required to have at least one accessible car per train and all new cars must be accessible. The ADA deems it discriminatory for a public entity providing a fixed-route transit service to provide disabled individuals with services that are inferior to those provided to nondisabled individuals.

The overall percentage of transit vehicles that are ADA compliant has not significantly changed in recent years. In 2010, 79.3 percent of all transit vehicles reported in the NTD were ADA compliant. This percentage has increased slightly from 79.0 percent in 2008 and, more substantially, from 73.3 percent reported for 2000. The percentage of vehicles compliant with the ADA for each mode is shown in *Exhibit 2-26*.

In addition to the services provided by urban transit operators, a recent survey by the University of Montana found that, in 2002, there were 4,836 private and nonprofit agencies that received funding from FTA for Transportation for Elderly Persons and Persons with Disabilities. This funding supports "special" transit

services (i.e., demand response) to persons with disabilities and the elderly. These providers include religious organizations, senior citizen centers, rehabilitation centers, nursing homes, community action centers, sheltered workshops, and coordinated human services transportation providers.

In 2002, the most recent year for which data are available, these providers were estimated to be using 37,720 special service vehicles. Approximately 62 percent of these special service providers were in rural areas and 38 percent were in urbanized areas. Data collected by FTA show that approximately 76 percent of the vehicles purchased in fiscal year (FY) 2002 were wheelchair accessible, about the same as in the previous few years.

The ADA requires that new transit facilities and alterations to existing facilities be accessible to the disabled. In 2010, 75.9 percent of total transit stations were ADA compliant. This is an increase from the 2008 count, in which 73.7 percent were compliant. Earlier data on this issue may not be comparable to data provided in this report due to improvements in reporting quality *Exhibit 2-27* gives data on the number of urban transit ADA stations by mode.

Under the ADA, FTA was given responsibility for identifying key rail stations and facilitating the accessibility of these stations to disabled persons by July 26, 1993. Key rail stations are identified on the basis of the following criteria:

- The number of passengers boarding at the key station exceeds the average number of passengers boarding on the rail system as a whole by at least 15 percent.
- The station is a major point where passengers shift to other transit modes.
- The station is at the end of a rail line, unless it is close to another accessible station.
- The station serves a "major" center of activities, including employment or government centers, institutions of higher education, and major health facilities.

Although ADA legislation required all key stations to be accessible by July 26, 1993, the U.S. DOT ADA regulation—Title 49 Code of Federal

Exhibit 2-26 Urban Transit Operators' ADA Vehicle Fleets by Mode, 2010

Transit Mode	Active Vehicles	ADA-Compliant Vehicles	Percent of Active Vehicles ADA Compliant
Rail			
Heavy Rail	11,434	11,035	96.5%
Commuter Rail	6,976	3,776	54.1%
Light Rail	2,155	1,803	83.7%
Alaska Railroad	96	30	31.3%
Automated Guideway	51	51	100.0%
Cable Car	39	0	0.0%
Inclined Plane	8	6	75.0%
Monorail	8	8	100.0%
Total Rail	**20,767**	**16,709**	**80.5%**
Nonrail			
Motor Bus	64,552	63,780	98.8%
Demand Response	30,512	24,821	81.3%
Vanpool	11,711	136	1.2%
Ferryboat	131	104	79.4%
Trolleybus	571	571	100.0%
Público	5,620	0	0.0%
Total Nonrail	**113,097**	**89,412**	**79.1%**
Total All Modes	**133,864**	**106,121**	**79.3%**

Source: National Transit Database.

Exhibit 2-27 Urban Transit Operators' ADA-Compliant Stations by Mode, 2010

Transit Mode	Total Stations	ADA-Compliant Stations	Percent of Stations ADA Compliant
Rail			
Heavy Rail	1,041	522	50.1%
Commuter Rail	1,225	798	65.1%
Light Rail	848	734	86.6%
Alaska Railroad	10	10	100.0%
Automated Guideway	41	40	97.6%
Inclined Plane	8	7	87.5%
Monorail	2	2	100.0%
Total Rail	**3,175**	**2,113**	**66.6%**
Nonrail			
Motor Bus	1,462	1,395	95.4%
Ferryboat	82	77	93.9%
Trolleybus	5	5	100.0%
Total Nonrail	**1,549**	**1,477**	**95.4%**
Total All Modes	**4,724**	**3,590**	**76.0%**

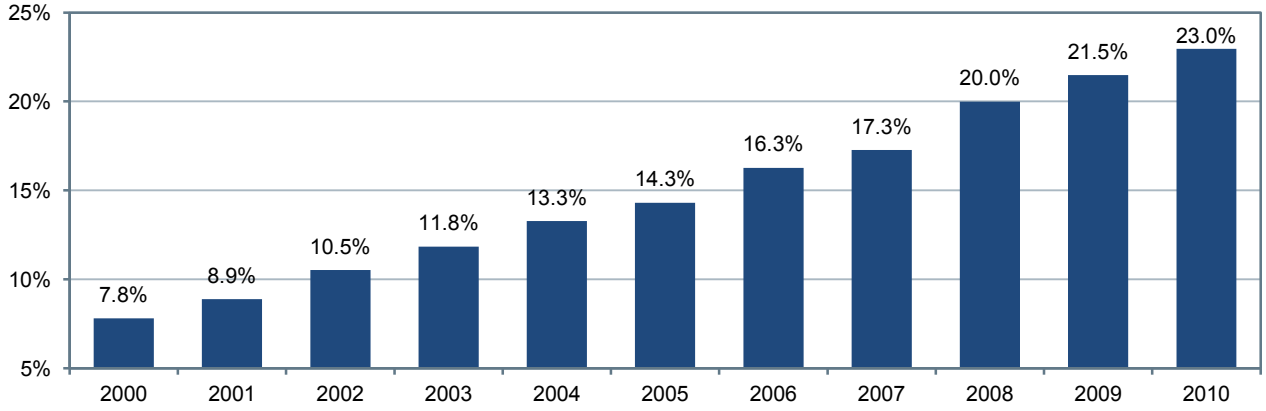
Source: National Transit Database.

Regulations (CFR) Part 37.47(c)(2)—permitted the FTA Administrator to grant extensions up to July 26, 2020, for stations that required extraordinarily expensive structural modifications to achieve compliance. In 2008, there were 687 key rail stations, of which 27 stations (3.9 percent) were under FTA-approved time extensions. The total number of key rail stations has changed slightly over the years as certain stations have closed. As of February 8, 2012, there were 680 key rail stations, 664 stations were accessible and compliant or accessible but not fully compliant (97.6 percent). "Accessible but not fully compliant" means that these stations are functionally accessible (i.e., persons with disabilities, including wheelchair users, can make use of the station), but there are still minor outstanding issues that must be addressed in order to be fully compliant; these usually involve things like missing or mislocated signage and parking-lot striping errors. There are 16 key rail stations that are not yet compliant and are in the planning, design, or construction stage at this time. Of these, eight stations are under FTA-approved time extensions up to 2020 (as provided under 49 CFR §37.47[c][2]), one of which will expire on June 26, 2012. The FTA continues to focus its attention on the eight stations that are not fully accessible and are not under a time extension, as well as on the eight stations with time extensions that will be expiring in the coming years.

Transit System Characteristics: Alternative Fuel Vehicles

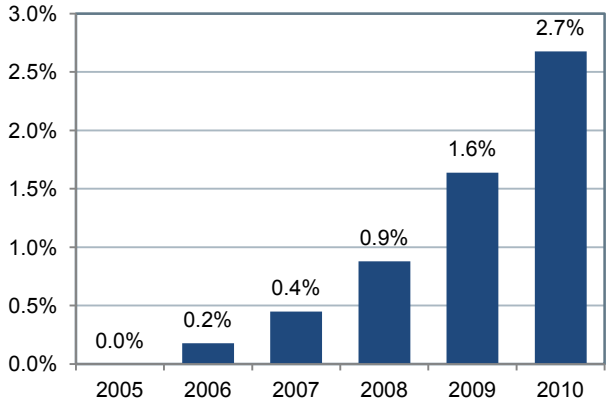
Exhibit 2-28 indicates that the share of alternative fuel buses increased from 7.8 percent in 2000 to 23.0 percent in 2010. In 2010, 12.9 percent of buses used compressed natural gas, 7.9 percent used biodiesel, and 2.0 percent used liquefied natural or petroleum gas. Conventional fuel buses, which make up the majority of the U.S. bus fleet, utilized diesel fuel and gasoline. In 2010, hybrid buses made up 2.7 percent of urban bus fleets as shown in *Exhibit 2-29*. These hybrid vehicles are more efficient than conventional fuel buses, but they are not technically counted as alternative-fuel vehicles.

Exhibit 2-28 Percentage of Urban Bus Fleet Using Alternative Fuels, 2000–2010



Source: National Transit Database.

Exhibit 2-29 Hybrid Buses as a Percentage of Urban Bus Fleet, 2005–2010



Source: National Transit Database.