TRANSPORTATION STATISTICS ANNUAL REPORT

NOVEMBER 2005

U.S. Department of Transportation
Research and Innovative Technology Administration
Bureau of Transportation Statistics

Transportation Statistics Annual Report

November 2005

Bureau of Transportation Statistics
Research and Innovative Technology Administration
U.S. Department of Transportation

To obtain *Transportation Statistics Annual Report* and other BTS publications

Mail: Product Orders
Bureau of Transportation Statistics
Research and Innovative Technology Administration
U.S. Department of Transportation
400 Seventh Street, SW, Room 4117
Washington, DC 20590

Phone: 202-366-DATA
FInternet: www.bts.dot.gov

BTS Information Service

E-mail: answers@bts.gov
Phone: 800-853-1351

Recommended citation

U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Transportation Statistics Annual Report* (Washington, DC: 2005)

Acknowledgments

U.S. Department of Transportation

Norman Y. Mineta
Secretary

Maria Cino
Deputy Secretary

Research and Innovative Technology Administration

Ashok G. Kaveeshwar
Administrator

Eric C. Peterson
Deputy Administrator

Bureau of Transportation Statistics

Mary J. Hutzler
Acting Deputy Director

Produced under the direction of:
Wendell Fletcher
Assistant Director for Transportation Analysis

Project Manager
Kirsten Oldenburg

Major Contributors
Jennifer Brady
Maha Khan
Shana Johnson
William Mallett
Felix Ammah-Tagoe
David Chesser
Scott Dennis
Bingsong Fang
Wendell Fletcher
Michael Sprung
Bruce Goldberg
Xiaoli Han
Getachew Mekonnen
Craig Morris
Matthew Sheppard
Jie Zhang
Jeffery Memmott
Ken Notis

Other Contributors
Bill Bannister
Jonaki Bose
Don Bright
Michael Cohen
Kay Drucker
Ron Duych
Lee Giesbrecht
Anthony Apostolides
Deborah Johnson
Janice Lent
Ivy Harrison
Long Nguyen
Marianne Seguin
Alan Jeeves
Carol Brandt
Steve Anderson
Marline Reese

Editors
Marsha Fenn
Chip Moore

Report Layout, Production, and Cover Design
Dorinda Edmondson
Alpha Glass

Preface

Congress requires the Bureau of Transportation Statistics (BTS) of the Research and Innovative Technology Administration to report on transportation statistics to the President and Congress. This *Transportation Statistics Annual Report (TSAR)* is the eleventh such report prepared in response to this congressional mandate, laid out in 49 U.S.C. 111 (j). In addition to presenting the state of transportation statistics, the report focuses on transportation indicators related to 15 topics. Most of these topics were specified in the Intermodal Surface Transportation Efficiency Act; one was added by the Transportation Equity Act for the 21st Century.

The BTS publication, *National Transportation Statistics (NTS)*, a companion to this annual report, has more comprehensive and longer time series data than could be accommodated here. NTS is available both in print and online at www.bts.gov.

Table of Contents

Chapter 1

Summary

Summary

In this edition of the *Transportation Statistics Annual Report*, the Bureau of Transportation Statistics (BTS) of the U.S. Department of Transportation, Research and Innovative Technology Administration (RITA), focuses on transportation indicators related to 15 specific topics (chapter 2) and on the state of transportation statistics (chapter 3).

SUMMARY OF TRANSPORTATION INDICATORS (CHAPTER 2)

Chapter 2 contains transportation data and information on the following topics:[1]

1. traffic flows (B),
2. the condition of the transportation system (K),
3. accidents (I),
4. variables influencing traveling behavior (E),
5. travel times (C),
6. availability of mass transit and number of passengers served (G),
7. travel costs of intracity commuting and intercity trips (F),
8. productivity in the transportation sector (A),
9. transportation and economic growth,
10. government transportation finance,
11. transportation-related variables that influence global competitiveness (L),
12. frequency of vehicle and transportation facility repairs and other interruptions of transportation service (H),
13. vehicle weights (D),
14. transportation energy, and
15. collateral damage to the human and natural environment (J).

Each of these topics is represented by a series of key indicators in chapter 2. The indicators are presented graphically along with analyses; supporting data tables are in appendix B (box 1).

[1] See 49 U.S. Code 111(c)(1), subsections A through L. Topics are listed here in the order in which they appear in this report; the letter in parentheses is the subsection in the legislation. Topics 9, 10, and 14 are not in the legislation but were added by RITA/BTS.

BOX 1 About the Data in this Report

The data in this report come from a variety of sources, principally from the Bureau of Transportation Statistics (BTS) and other operating administrations of the U.S. Department of Transportation. However, other sources are federal government agencies, such as the U.S. Census Bureau, the Bureau of Economic Analysis, the U.S. Environmental Protection Agency, the U.S. Coast Guard, and the Energy Information Administration. To supplement government sources, the report occasionally uses data and information from trade associations, such as the Association of American Railroads and the American Public Transportation Association. Data from any of these sources may be subject to omissions and errors in reporting, recording, and processing. Sample data are subject to sampling variability. Documents cited as sources in this report often provide detailed information about definitions, methodologies, and statistical reliability.

To be consistent, when trend data are used in this report they are shown, if possible, for at least a 10-year period. Because of the differing availability of data among all the indicators included, it has not been possible to use the same span of 10 years for each indicator without sacrificing timeliness. Instead, the data span a decade up to the year of the most recent data available when this report was prepared. There are some instances where less than 10 years of data are presented—either because the data are not comparable over the period or are not available.

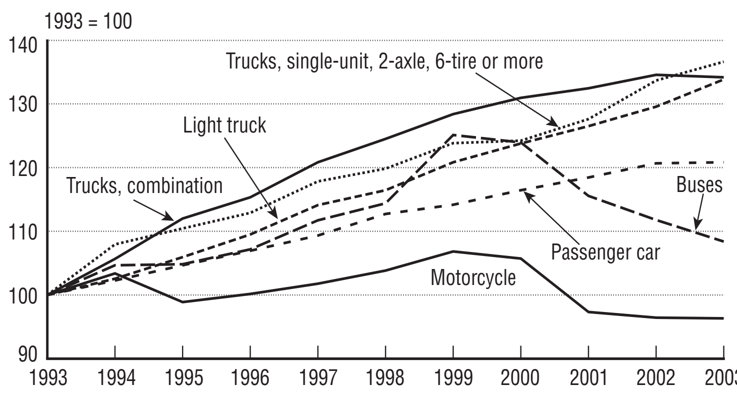
Source information in the report details where BTS obtained data used (e.g., from a printed document, website, or by direct communication with an individual). The same data BTS obtained from websites and used in this report may not be available to readers because of frequent changes in such postings. However, the day and month of the BTS download is included in the source information, along with the website address (url) at that time.

1. Traffic Flows

Tracking the volume and geographic flow of traffic on America's roads, rails, and waterways and at airports helps to ensure that transportation infrastructure is properly maintained and has adequate capacity to meet demand. Data on traffic flows also help to evaluate congestion trends by mode or a combination of modes and the potential for shifts in traffic within the route structure of a particular mode and from one mode to another. Aggregate traffic flow data, used to evaluate trends over time, can be helpful in measuring transportation-related safety and environmental trends.

Passenger and freight flows are measured in a variety of ways (figure 1). Vehicle-miles of travel (vmt) for both passenger and freight are calculated by multiplying the number of vehicles by miles of travel. Passenger travel can also be measured by estimating the number of miles traveled per person for each mode. This method takes into account not only the distance traveled by a vehicle but also the number of people in the vehicle. In addition to vmt, freight flows are measured in ton-miles—the movement of one ton of cargo one mile. Each of these measurements allows for comparisons across modes and between passenger and freight traffic, although these comparisons are affected by data-collection methods and definitions.

FIGURE 1 Change in Highway Vehicle-Miles of Travel by Vehicle Type: 1993–2003



See chapter 2, figure 1-21, for notes and sources.

BOX 2 Data on Passenger-Miles of Travel

Total passenger-miles of travel (pmt) excludes travel in heavy trucks, by bicycle, by walking, and by boat (including recreational boat). Pmt in heavy trucks is excluded because such travel is assumed to be incidental to the hauling of freight, the main purpose of this travel. Bicycle, pedestrian, and boat travel are excluded because national estimates are not available on an annual basis. The Bureau of Transportation Statistics (BTS) compiles pmt data primarily using mode-by-mode data derived in various ways by BTS and others. For instance, pmt for large air carriers and intercity trains are estimated from ticket sales and trip lengths; for transit, data are reported by transit authorities. Each method used to estimate these data has differing strengths and weaknesses.

BTS has another set of national pmt, the National Household Travel Survey (NHTS), last conducted jointly by BTS and the Federal Highway Administration in 2001 and 2002. As survey data, they are collected using a single methodology. This provides a coherence and comparability not available with data compiled by individual modes. However, the survey data are not collected annually, making them unsuitable for year-to-year trend analyses. Another difference between NHTS data and the data compiled by BTS is the extent of their coverage among modes. It can be expected, then, that because of methodological and coverage issues the two sources of pmt data will differ. In section 4, Variables Influencing Traveling Behavior, the report uses data from the 2001 NHTS.

Passenger-miles of travel (pmt) in the United States totaled an estimated 5.0 trillion in 2002, or about 17,000 miles for every man, woman, and child (box 2). Over the decade 1992 to 2002, pmt increased 27 percent. Almost 86 percent of pmt in 2002 was in personal vehicles (passenger cars and light trucks, which include sport utility vehicles (SUVs), pickup trucks, and minivans). Air carriers accounted for another 10 percent of pmt.

Trucking moved the majority of freight by tonnage and by shipment value in 2002: 9.2 billon tons (58 percent of the total tonnage) and $6,660 billion (64 percent of the total value). There were 15.8 billion tons of commodities shipped in 2002 (up 18 percent since 1993) at a value of $10.5 trillion (in chained 2000 dollars),[2] up 46 percent since 1993. These data are preliminary Commodity Flow Survey (CFS) estimates augmented by supplemental data, providing a more complete accounting of the Nation's goods movements.[3] An alternative methodology, developed by BTS using a variety of data sources, estimates that freight transportation generated 4.4 trillion domestic ton-miles in 2002, 18 percent more than in 1992 (box 3).

Highway passenger vmt dominates total highway vmt and amounted to 2.9 trillion in 2003, up 26 percent since 1993. Meanwhile, domestic service air carrier (aircraft) vmt rose 46 percent to total 6.1 billion in 2003. Freight highway vmt totaled 215.9 billion in 2003, a 35 percent increase since 1993.

BOX 3 Domestic Freight Ton-Miles Data

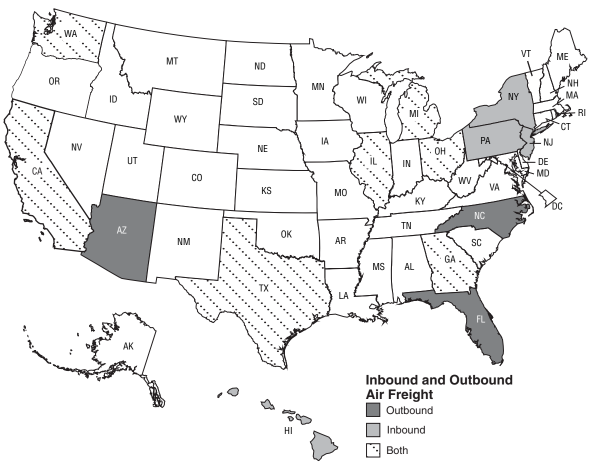
This report uses two datasets on freight ton-miles. For one source, the Bureau of Transportation Statistics (BTS) compiled the data from a variety of modal and other sources to produce annual trend data. The coverage of the modal data is often incomplete, and the BTS process of developing these data attempts to provide a more comprehensive estimate of all domestic freight ton-miles. For instance, while ton-miles data are readily available for the large Class I railroads, BTS estimates ton-miles for smaller railroads to arrive at total freight rail ton-miles.

The other set of freight ton-miles data come from the Commodity Flow Survey (CFS) conducted every five years by BTS and the U.S. Census Bureau of the Department of Commerce. As a survey, the methodology and coverage of this dataset differ from the above and the data are not comparable. For instance, according to the CFS, total 2002 ton-miles are 3.1 trillion and with supplemental estimates added rise to 4.5 trillion ton-miles.

[2] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified, to eliminate the effects of inflation over time. See the Glossary for definitions of constant, chained, and current dollars.

[3] Preliminary data are used here because, while final 2002 CFS data were available at the time this report was prepared, supplemental data were still forthcoming.

FIGURE 2 Leading States for Inbound and Outbound Air Freight Shipments: 2002



See chapter 2, figure 1-17, for notes and sources.

In addition to studying freight and passenger volumes, it is also important to track changes in the geographic and modal distribution of freight and passenger travel in order to anticipate and alleviate areas of high congestion and for other purposes. Truck, rail, air, and waterborne freight flow maps help planners pinpoint potential problem areas in the transportation system. (figure 2).

2. Condition of the Transportation System

Two major components of the transportation system—vehicles and infrastructure—are prone to deterioration due to wear, aging, and damage. Measures of the net capital stock of the transportation system—the value in dollars of vehicles, infrastructure, and other components—provide comprehensive indicators that combine system condition (quality) with capacity (quantity) and allow for comparisons across modes.

Highway-related capital stock (highway infrastructure, consumer motor vehicles, and commercial trucks) represented the majority ($2,917 billion in chained 2000 dollars) of the nation's transportation capital stock in 2003, rising 38 percent since 1993. The combined value of privately owned capital stock ($609 billion in 2003) for other individual modes of the transportation system, including rail, water, air, and pipeline, is less than the value of consumer motor vehicles alone ($1,325 billion). The only mode with declining values during the period was railroad transportation (down 6 percent). BTS has been developing data on airports, waterways, and transit systems that will enhance the available data on publicly owned capital stock.

Other infrastructure data reflect qualitative evaluations of the pavement and associated structures. The condition of highways, bridges, and airport runways has mostly improved in recent years. The percentage of rural Interstate mileage in poor or mediocre condition declined from 35 percent in 1993 to 11 percent in 2003. However, while poor or mediocre urban Interstate mileage decreased from 42 to 27 percent during this same period, urban minor arterial and collector conditions worsened. In contrast, of the nearly 600,000 roadway bridges existing in 2003, 14 percent were deemed structurally deficient and 14 percent functionally obsolete. Ten years earlier, about 33 percent of bridges were either structurally deficient or functionally obsolete. At the nation's commercial service airports, pavement in poor condition remained at 2 percent of runways from 1997 to 2004. For the larger group of several thousand National Plan of Integrated Airport Systems airports, poor conditions existed on 4 percent of runways in 2004, down from 5 percent in 1997.

The age of various transportation fleets is another measure of condition, although not a very precise one. The equipment in air, rail, highway, water, and transit transportation fleets varies widely in terms of scheduled maintenance, reliability, and expected life span. Additional information, such as fleet maintenance standards, actual hours of vehicle use, and durability, would provide a more thorough means for analyzing the condition of a vehicle fleet and comparing fleets across modes.

The median age of the automobile fleet in the United States has increased 19 percent since 1994, from 7.5 years to 8.9 years in 2004. The median age of the truck fleet,[4] by contrast, began to increase in the early 1990s but has been declining since 1997 as new purchases of light trucks (including SUVs, pickups, and minivans) have increased substantially.

The age of transit vehicles varies by transit and vehicle type. For instance, from 1993 to 2003, ferryboat fleets aged from an average of 24.7 years to 27.1 years. The average age of full-size transit buses decreased from 8.5 years to 7.3 years during the same period. Similarly, the age of vessels varies by type. While over 30 percent of the overall U.S.-flag vessel fleet was 25 years old or more in 2003, 60 percent of towboats and 48 percent of tank barges were 25 years old or older in 2003. The average age of Amtrak locomotives was 14 years in fiscal year 2001, up 7 percent since fiscal year 1991. The average age of Amtrak railcars declined by 2.5 years during the same period. Finally, the average age of all U.S. commercial aircraft was 12 years in 2002, up from 11 years in 1992.

3. Accidents

Crashes involving motor vehicles and other transportation accidents in the United States result in tens of thousands of fatalities and millions of injuries each year. The number of fatalities and injuries per year represents a common means for evaluating the safety of each transportation mode. Presenting data in the form of the number of fatalities or injuries per 100,000 residents or by pmt or vmt can enable useful comparisons across time and modes. However, care must be taken in doing so, because definitions of fatalities and injuries vary by mode and estimates of vmt and, especially, pmt are inexact.

There were more than 44,000 fatalities related to transportation in 2003, almost 16 fatalities per 100,000 U.S. residents. This is the same rate as in 1993, when there were just over 42,000 deaths. About 94 percent of all transportation fatalities in 2003 were highway-related.

An estimated 2.9 million people suffered some kind of injury involving passenger and freight transportation in 2003. Most of these injuries, about 99 percent, resulted from highway crashes. However, injuries per pmt for most highway vehicle types declined between 1993 and 2003. One exception was the rate for light-truck occupants, which rose 7 percent, from 48 per 100 million pmt in 1993 to 51 per 100 million pmt in 2003.

A RITA/BTS analysis of motor vehicle-related injury data for 2003[5] shows that there were sharp peaks in injuries associated with youth. For motor vehicle occupants and motorcyclists, the peak spanned ages 15 to 24 years. Young males exhibited a substantially greater peak in serious injuries than did young females (figure 3). In addition, the percentage of injuries classified as serious was greater for motorcyclists (20 percent of all motorcyclist injuries were serious), pedestrians (18 percent), and pedalcyclists (13 percent) than it was for motor vehicle occupants (7 percent).

4. Variables Influencing Traveling Behavior

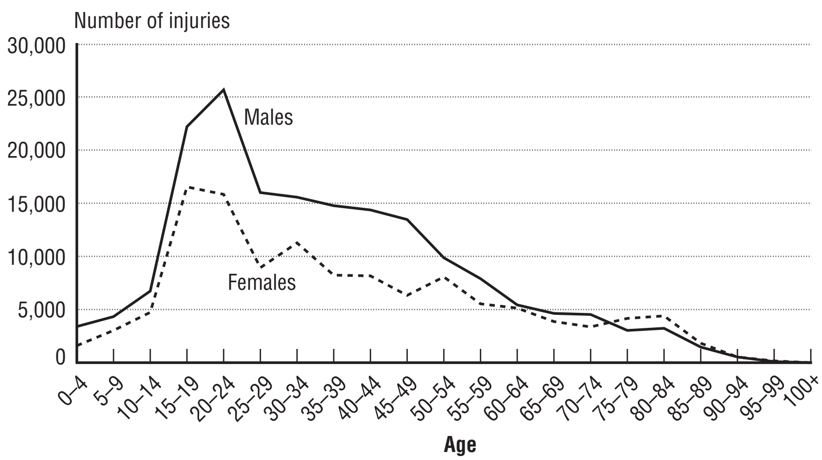
Travel patterns across the nation are the result of a combination of decisions by individuals and

[4] This includes all truck categories: light, heavy, and heavy-heavy.

[5] This analysis was based on data from the U.S. Consumer Product Safety Commission's National Electronic Injury Surveillance System. Due to methodological differences, these data are not necessarily consistent with other injury data in this report that come from the U.S. Department of Transportation, National Highway Traffic Safety Administration's National Automotive Sampling System General Estimates System.

businesses. Travel behavior both shapes and is shaped by available transportation options. Hence, understanding the variables that influence travel behavior is important in evaluating transportation needs and making appropriate decisions about changes in the system.

FIGURE 3 Serious Motor Vehicle-Related Injuries by Age and Gender: 2003



See chapter 2, figure 3-7, for notes and source.

Results from the 2001 National Household Travel Survey (NHTS), sponsored by BTS and the Federal Highway Administration, show that daily travel in the United States averages about 14,500 miles per person per year. On a daily basis, each person traveled an average of 40 miles, almost 90 percent of it in a personal vehicle. The largest percentage of daily trips (28 percent) was to work. The majority of work trips take place between 7 a.m. and 9 a.m. and between 3 p.m. and 6 p.m.

On average, each person made 9 roundtrip long-distance trips of at least 50 miles per year. Nearly 90 percent of long-distance trips were in personal vehicles; most of the other trips were by airplane. Females and males make a similar number of long-distance trips for pleasure and personal business, but males take 84 percent of long-distance commuting trips and 77 percent of long-distance business trips.

Proximity to transportation options can also affect the modal choices that people make. For instance, in the heavily urban northeast region, 17 percent of households in 2003 did not have a passenger vehicle. A geospatial analysis conducted by RITA/BTS in April 2005 concluded that 93 percent of rural residents in the United States live within a 25-mile radius of an intercity rail station, an intercity bus terminal, or a nonhub or small airport or within a 75-mile radius of a large or medium hub airport.

5. Travel Times

How long it takes people and goods to get from their starting point to their final destination is a key measure of transportation system performance. Current measures of travel time trends tend to focus on delay, congestion, and whether or not scheduled trips arrive on time. While delay and congestion measures are important, they are by no means the only consideration in evaluating these trends.

For those using personal vehicles, highway travel times increased between 1993 and 2003 in all but 2 of the 85 urban areas (98 percent) studied by the Texas Transportation Institute. It took 37 percent longer, on average, in 2003 to make a peak period trip in these urban areas compared with the time it would take if traffic were flowing freely.

The U.S. Department of Homeland Security collects data on the average wait time for over 100 land ports at the U.S.-Canada and U.S.-Mexico borders. The average wait time in 2004 for passenger vehicles crossing the border between the United States and Canada was 6 minutes and 15 minutes for those between the United States and Mexico (figure 4). The average wait time in 2004 for commercial vehicles entering the United States from Canada was 8.5 minutes and 7.3 minutes for those entering from Mexico.

Nearly 78 percent of domestic air flights arrived on time in 2004, compared with 79 percent in 1995. On average, 26 percent of delays in 2004 occurred because of circumstances within an airline's control, such as maintenance or crew problems, while 30 percent happened because a previous flight arrived late. Security delays caused less than 1 percent of delays, on average, and extreme weather 5 percent.

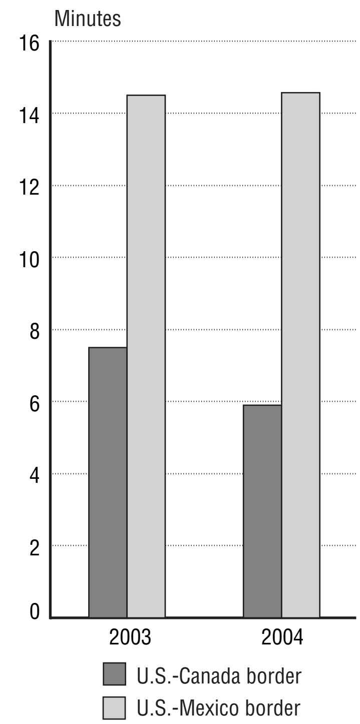
New research at RITA/BTS on an Air Travel Time Index aims to improve the measurement of air travel time and reliability. In preliminary results, the index rose by 4 percent per year between 1990 and 2000 and then fell by 3 percent per year between 2000 and 2004, indicating that the actual travel time for a typical flight became more uncertain and took longer, on average, between 1990 and 2000 and then improved starting in 2001.

Seventy-one percent of Amtrak trains arrived at their final destination on time in 2004, below the system's performance peak of 76 percent in 2002. Short-distance trains—those with runs of less than 400 miles—consistently registered better on-time performance than long-distance trains—those of 400 miles or more from 1994 to 2000 and from 2001 to 2004.[6]

6. Availability of Mass Transit and Number of Passengers Served

Transit service can be measured in a variety of ways, including passenger-miles of travel and linked and unlinked trips.[7] There were 45.6 billion transit pmt in 2003 compared with 36.2 billion pmt in 1993, an increase of 26 percent. As they have historically, buses had the largest pmt share in 2003, generating 19.1 billion pmt or 42 percent of all transit pmt.

FIGURE 4 Average Daytime Wait Times for Personal Vehicles at U.S. Surface Border Gateways: 2003 and 2004



See chapter 2, figure 5-5, for notes and source.

Measured in unlinked trips, transit ridership has grown 19 percent since 1993 to 8.9 billion unlinked trips in 2003. Bus ridership comprised the majority of unlinked trips (5.1 billion) in 2003. However, rail transit ridership, with 3.4 billion trips in 2003, posted stronger growth (34 percent) between 1993 and 2003.

Transit use continues to be concentrated in specific markets, such as communities where households do not tend to own cars, in certain large cities, and among lower income households. Approximately 78 percent of all unlinked transit passenger trips (6.9 billion trips in 2003)

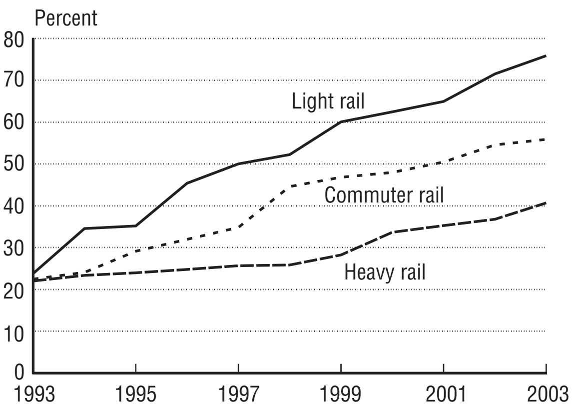
[6] Amtrak revised its methodology for collecting and calculating on-time performance data in 2001.

[7] For a discussion of linked vs. unlinked trips, see section 6 in chapter 2.

were within the service area of only 30 transit authorities. New York City alone accounted for 30 percent of all transit trips in 2003.

As of 2003, 55 percent of transit rail stations had complied with the American with Disabilities Act (ADA) accessibility requirements (figure 5). This represented a 178 percent increase from 1993. Ninety-five percent of transit buses, also subject to ADA requirements, were equipped with lifts or ramps by 2003.

FIGURE 5 Transit Rail Stations that are ADA-Compliant by Service Type: 1993–2003



See chapter 2, figure 6-7, for sources.

7. Travel Costs of Intracity Commuting and Intercity Trips[8]

On average, U.S. households spent $7,681 (in chained 2000 dollars) on transportation (including vehicle purchases) in 2003 compared with $6,025 in 1993, an increase of 27 percent. Costs related to motor vehicles rose 49 percent between 1993 and 2003, while other transportation expenditures decreased 1 percent. Transportation costs were 20 percent of all household expenditures in 2003; only housing cost more (31 percent).

Driving an automobile 15,000 miles per year cost 53¢ per mile in 2003, or 20 percent more than it did in 1993, when total costs were 44¢ (in chained 2000 dollars). For those using transit, the average fare ranged from 17¢ to 19¢ per passenger-mile (in chained 2000 dollars) between 1993 and 2003. Increases in fares per passenger-mile for some types of transit service were offset by lower fares per passenger-mile for other types.

On average, intercity trips via Amtrak cost 23¢ per revenue passenger-mile in 2003, up 46 percent from 16¢ per revenue passenger-mile in 1993 (in chained 2000 dollars). Meanwhile, average intercity Class I bus fares rose 23 percent, from $23 to $28, between 1992 and 2002 (in chained 2000 dollars).

The RITA/BTS Air Travel Price Index (ATPI) comprises three indexes: U.S. origin flights, foreign origin flights, and combined U.S and foreign origin flights. The ATPI "U.S. origin only" index increased 2.2 percent between the first quarter of 1995 and the fourth quarter of 2004. During the same period, the ATPI "Foreign origin only" index decreased 9.8 percent.

8. Productivity in the Transportation Sector

Two differing indicators of economic productivity exist: multifactor and labor productivity. Labor productivity relates output to labor input, while multifactor productivity relates changes in output to changes in a complete set of inputs, including capital, labor, energy, materials, and services. Multifactor productivity is, thus, a more comprehensive indicator. However, air and rail are the only components of the transportation sector for which multifactor productivity estimates are currently available (from the Bureau of Labor Statistics—BLS); BTS has been developing them for other modes using BLS methodologies.

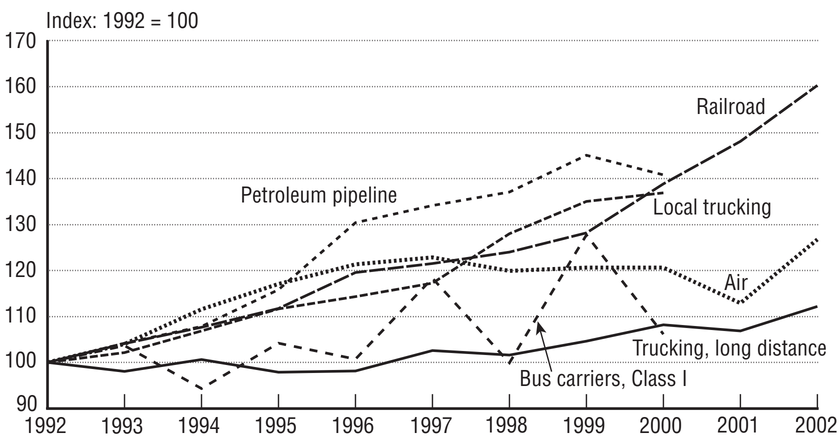
[8] To eliminate the effects of inflation over time, all dollar amounts in this section and throughout most of the report are expressed in chained 2000 dollars, unless otherwise specified.

Labor productivity in the for-hire transportation services and petroleum pipeline industries increased 18 percent between 1992 and 2002, a slower rate than the entire business sector, which rose 24 percent. Among transportation modes, rail increased the most, by 60 percent from 1992 to 2002. Despite a decline of 7 percent between 2000 and 2001, air transportation labor productivity grew 27 percent over the entire period (figure 6).

Multifactor productivity of all business sectors combined increased 10 percent between 1991 and 2001, while multifactor productivity in air transportation increased 16 percent. Data are not available for the same period for rail transportation, but between 1991 and 1999, multifactor productivity in this industry increased by 26 percent (an annual rate of 3 percent).

FIGURE 6 Labor Productivity of For-Hire Transportation Industries: 1992–2002

Output per hour (petroleum pipeline is per employee)



See chapter 2, figure 8-2, for notes and sources.

9. Transportation and Economic Growth

Transportation comprises a sizable segment of the U.S. economy. Total transportation-related final demand rose by 33 percent between 1993 and 2003 (in chained 2000 dollars), from $833.8 billion to $1,112.8 billion. This measure—the value of transportation-related goods and services sold to the final users—is a component of the Gross Domestic Product (GDP) and a broad measure of the importance of transportation to the economy. In 2003, the share of transportation-related final demand in the GDP was 10.7 percent compared with 11.1 percent in 1993.

The contribution of for-hire transportation industries to the U.S. economy, as measured by their value added (or net output), increased (in chained 2000 dollars) from $217.2 billion in 1993 to $314.3 billion in 2003. In the same time period, this segment's share in the GDP fluctuated slightly, remaining at around 3 percent.

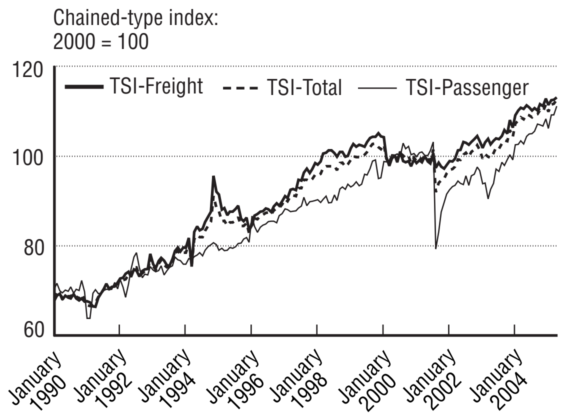
The Transportation Services Index (TSI) is a RITA/BTS experimental, seasonally adjusted index of monthly changes in the output of services of the for-hire transportation industries, including railroad, air, truck, inland waterways, pipeline, and local transit (figure 7). The TSI rose to 112.6 in May 2005.[9] The separate freight TSI rose to 113.5, while the passenger TSI was at 111.2 in May 2005.

10. Government Transportation Finance

Governments collect revenues and spend money on transportation-related infrastructure and equipment. Federal, state, and local government transportation revenues targeted to finance transportation programs increased 25 percent

[9] The TSI is a chained-type index where the year 2000 = 100.

FIGURE 7 Transportation Services Index: January 1990–May 2005
Monthly data, seasonally adjusted



See chapter 2, figure 9-1, for source.

from $97.4 billion in 1991 (in chained 2000 dollars) to $122.1 billion in 2001.

Spending on building, maintaining, operating, and administering the nation's transportation system by all levels of government totaled $176.2 billion in 2001 (in chained 2000 dollars). Among all modes of transportation, highways receive the largest share of government transportation expenditures. In 2001, government spending on highways amounted to $107.7 billion and accounted for 61 percent of total government transportation expenditures.

Gross government transportation investment,[10] including infrastructure and vehicles, is a measure of public transportation capital expansion. Gross investment has risen steadily over the last decade from $62.2 billion in 1991 to $88.8 billion in 2001 (in chained 2000 dollars). Infrastructure accounted for 93 percent of government transportation investment between 1991 and 2001; over 73 percent of infrastructure investment was allocated to highways. Net federal subsidies for passenger transportation have increased from $4,651 million in 1992 to $8,195 million in 2002 (in chained 2000 dollars).

11. Transportation-Related Variables That Influence Global Competitiveness

Transportation contributes to economic activity and to a nation's global competitiveness as a service, an industry, and an infrastructure. It affects the price competitiveness of domestic goods and services because final market prices incorporate transportation costs.

U.S. prices for transportation goods and services in 2001 were relatively lower than prices in 9 out of 24 Organization for Economic Cooperation and Development countries. However, the nation's top two overall merchandise trade partners, Canada and Mexico, had lower relative prices in 2001 than the United States.

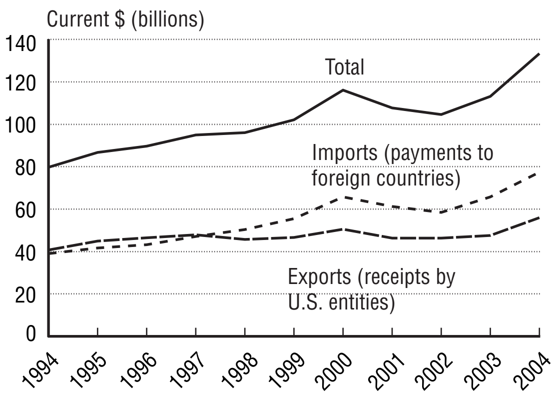
The United States traded $329.9 billion worth (in current dollars)[11] of transportation-related goods (e.g., cars, trains, boats, and airplanes and their related parts) in 2004 with its partners. As is the case with its overall international trade, the United States had a merchandise trade deficit in transportation-related goods (with an excess of imports over exports) totaling $92.4 billion in 2004. This trade deficit has grown over the years, largely reflecting far greater imports than exports in the automotive sector.

U.S. trade in transportation services in 2004 totaled $133.5 billion (in current dollars) (figure 8). The United States had a surplus in transportation services from 1994 through 1997. The trade surplus was highest in 1996, at $3.3 billion. By 2004, however, 58 percent of trade was imports (payments to foreign countries), resulting in a

[10] See section 10 in chapter 2 for detailed descriptions of transportation investments.

[11] All dollar amounts in this section on global competitiveness are in current dollars. While it is important to compare trends in economic activity using constant or chained dollars to eliminate the effects of price inflation, it is not possible to do so in this instance (see notes on chapter 2 figures and corresponding tables in appendix B).

FIGURE 8 U.S. Trade in Transportation-Related Services: 1994–2004



See chapter 2, figure 11-4, for notes and source.

trade deficit of $21.5 billion—the largest trade deficit for transportation services since 1998.

12. Frequency of Vehicle and Transportation Facility Repairs and Other Interruptions of Transportation Service

Repairs to vehicles, vessels, aircraft, and other transportation equipment as well as roads, bridges, and other infrastructure can impact the schedules of people and movement of goods. Data on repair frequencies can help planners reduce the disruptions they may cause. Unfortunately, data are not readily available to properly characterize the frequency of repairs for vehicles and infrastructure of most modes. There are a number of reasons for this lack of data.

In some cases where repair data are available, establishing a link to service interruptions can be problematic. In other cases, maintenance cost data are available (e.g., airlines and highways), but, again, the connection between costs and frequency and, thus, interruptions of service are not clear. Annual data are available on U.S. domestic vessel fleet capacity, but capacity is linked to market and other factors as well as repair downtime.

Most of the vehicle repair data for the trucks and buses operated by the nation's more than 677,000 motor carriers are not public information. A surrogate measure is data on highway truck inspections. Over 2.1 million roadside truck inspections were completed in 2004, up 9 percent since 1994. The percentage of inspected trucks taken out of service was approximately 24 percent in 1994 and 2004.

Class I railroad companies maintained 169,069 miles of track in 2003, down from 186,288 miles of track in 1993. In 2003, rail companies replaced 632,600 tons of rail (23 percent fewer than in 1993) and 13.2 million crossties (3 percent more than in 1993). Railroads also periodically replace or rebuild locomotives and freight cars. On average, new and rebuilt locomotives made up 4 percent of Class I railroad fleets between 1993 and 2003.

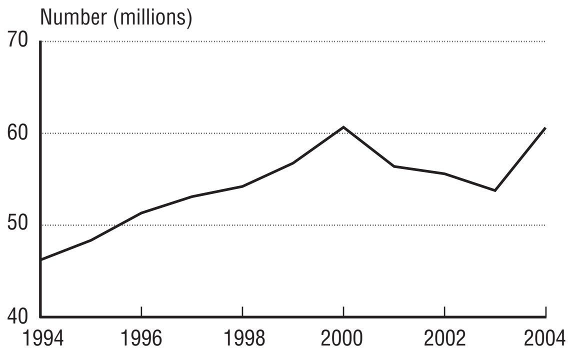
Transit service[12] interruptions for all types of transit decreased an average of 3.2 percent per year between 1995 and 2000 and 4.0 percent between 2001 and 2003.[13]

Natural disasters, accidents, labor disputes, terrorism, security breaches, and other incidents can result in major disruptions to the transportation system. The terrorist attacks of September 11, 2001, and the economic downturn at the time caused decreases in air passenger travel on both domestic and international flights. International travel to and from the United States did not fully recover until 2004 (figure 9). During September 2004, a month of unusually strong hurricane activity in Florida, airlines canceled 124 of every 1,000 flights in and out of the state, compared with only 4 flights per 1,000 in September 2003.

[12] See detailed definitions of the type of transit equipment included in section 12 in chapter 2.

[13] Data from 1995–2000 and 2001–2003 were collected using different definitions of what constitutes an interruption of service and are not comparable.

FIGURE 9 Passengers on Major U.S. Carriers to and from the United States: 1994–2004



See chapter 2, figure 12-8, for notes and sources.

13. Vehicle Weights

Vehicle traffic affects the condition and longevity of infrastructure. Traffic on a given highway segment can be measured by average weights and numbers of vehicles. A way to assess the resultant highway pavement stress is by estimating vehicle loadings[14] on the nation's highways. Aircraft landing weights can affect airport pavement, as can the weight of rail equipment on rail tracks. For maritime infrastructure, especially ports, vessel size—often expressed in deadweight tons (dwt), which is a measure of cargo capacity rather than weight—can be of concern. As larger waterborne vessels are added to the worldwide merchant marine fleet, U.S. ports may have to expand to accommodate larger ships or decide to specialize in handling cargoes that are not affected by changes in vessel size.

The number of trucks in the U.S. truck fleet grew 41 percent between 1992 and 2002. In the *heavy* category (over 26,000 pounds), the number of trucks decreased by 16 percent during the period. While the number of *medium* trucks (between 6,001 and 19,500 pounds) increased 14 percent between 1992 and 1997, their growth surged 223 percent between 1997 and 2002 (figure 10). Trucks in the medium truck category include heavier pickups and heavier SUVs that have been increasingly sold in recent years. *Light* trucks, which include SUVs, minivans, vans, and pickup trucks weighing less than 6,000 pounds, represented 74 percent of the truck fleet in 2002, having increased by 24 percent between 1992 and 2002.

Large combination trucks[15] made up only 5 percent of traffic volume on urban Interstate highways in 2003, but accounted for 76 percent of the loadings on these highways. In rural areas, they represented 14 percent of traffic and 83 percent of Interstate loadings in 2003. Between 1993 and 2003, large combination truck traffic volume declined from 18 to 14 percent on rural roads, and from 6 to 5 percent on urban Interstate highways.

The average capacity of gas carriers, such as liquid natural gas and liquid petroleum gas vessels, calling at U.S. ports increased 26 percent to 37,818 dwt per call between 1998 and 2003.[16] Meanwhile, the average capacity of all types of vessels calling at U.S. ports grew 9 percent, to 49,557 dwt per call in 2003.

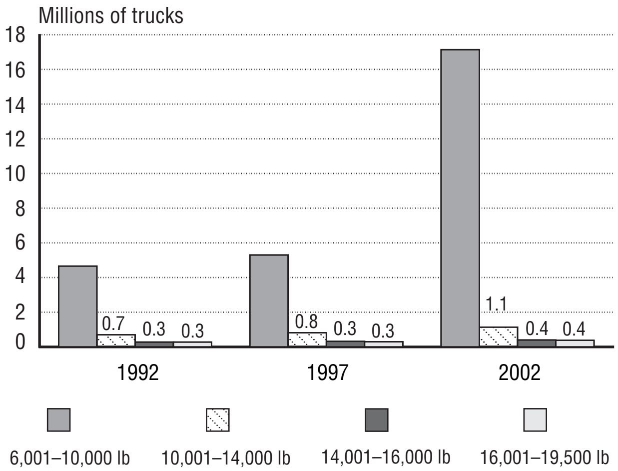
The average weight of each freight railcar remained fairly constant—ranging from 62 to 67 tons per carload—between 1993 and 2003. However, this relatively steady average weight of a loaded railcar masks countervailing trends among selected freight commodities. For instance, the average weight of a carload of coal was 111 tons in 2003, up from 101 tons in 1993. Meanwhile, miscellaneous mixed shipment carloads were 13 percent lighter in 2003 than they were in 1993.

[14] Vehicle loadings are based on equivalent single-axle loads.

[15] Large combination trucks weigh more than 12 tons and have 5 or more axles.

[16] 1998 is the first year for which data are available.

FIGURE 10 Medium Trucks by Vehicle Weight: 1992, 1997, and 2002



See chapter 2, figure 13-2, for notes and source.

14. Transportation Energy

The transportation sector used 17 percent more energy in 2004 (27.5 quadrillion British thermal units—Btu) than it did in 1994 (23.5 quadrillion Btu). Still, transportation energy use grew more slowly than GDP during the period, indicating that the U.S. economy is gradually becoming less energy intensive. Passenger travel (pmt per Btu) was 4.7 percent more energy efficient in 2002 than in 1992, while freight energy efficiency (ton-miles per Btu) declined 2.2 percent.

Decreased energy intensity also makes consumers less vulnerable to changes in energy prices. Transportation fuel prices experienced short-term fluctuations (in chained 2000 dollars) between 1994 and 2004. However, per capita vmt for all modes of transportation increased almost every year. For instance, between 1994 and 2003, per capita highway vmt rose 11 percent, while that of large air carriers grew 26 percent (figure 11).

15. Collateral Damage to the Human and Natural Environment

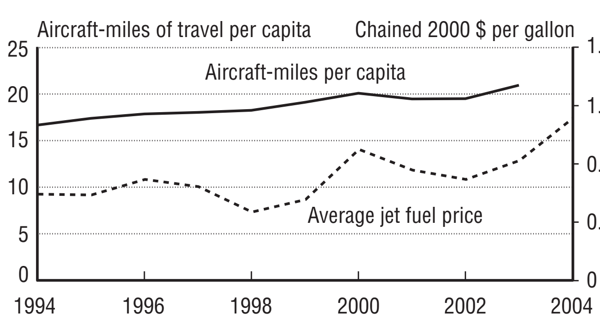
As people travel and freight is transported, damage can occur to the human and natural environment. Transportation also impacts the environment when transportation equipment and fuels are produced and infrastructure is built, during repair and maintenance of equipment and infrastructure, and when equipment and infrastructure are no longer usable and are discarded and dismantled. The extent of damage throughout these life cycles of transportation fuel, equipment, and infrastructure can vary by mode. In all cases, actual impacts on the human and natural environment are dependent on ambient levels or concentrations of pollutants and rates of exposure.

Transportation vehicles and vessels in 2002 emitted 58 percent of the nation's pollution from carbon monoxide (CO), 45 percent of nitrogen oxides (NO_X), 36 percent of volatile organic compounds (VOC), 4 percent of particulates, 8 percent of ammonia, and 5 percent of sulfur dioxide. Highway vehicles emitted almost all of transportation's share of CO emissions in 2002, 78 percent of the NO_X, and 77 percent of all VOC.

Transportation emissions of greenhouse gases (GHGs) grew 19 percent between 1993 and 2003. Nearly all (95 percent) of CO_2 emissions—the predominant GHG—are generated by the combustion of fossil fuels. Transportation CO_2 emissions grew 19 percent between 1993 and 2003.

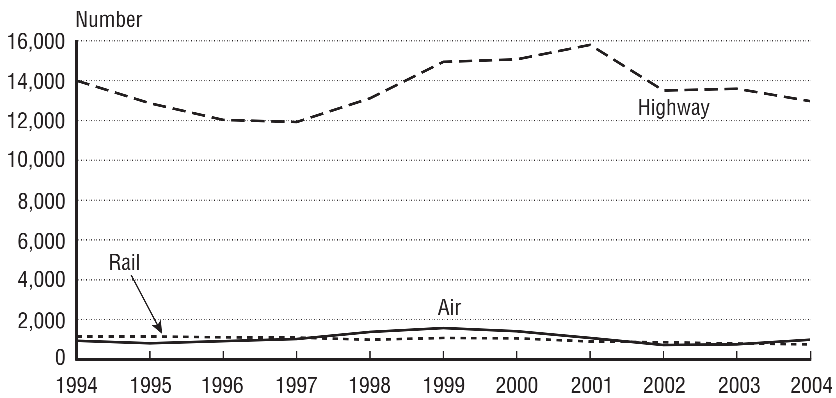
Transportation-related sources typically account for most oil spills into U.S. waters

FIGURE 11 Average Jet Fuel Price and Air Carrier Aircraft-Miles of Travel Per Capita: 1994–2004



See chapter 2, figure 14-6, for notes and sources.

FIGURE 12 Hazardous Materials Incidents by Selected Mode: 1994–2004



See chapter 2, figure 15-7, for notes and sources.

reported each year to the U.S. Coast Guard. For instance, transportation's share of the reported total volume of oil spilled between 1991 and 2001 varied from a high of 97 percent (in 1996) to a low of 77 percent (in 1992). The volume of each spill varies significantly from incident to incident. One catastrophic incident can, however, spill millions of gallons into the environment.

Transportation can also affect human health and the environment when hazardous materials accidents occur. Transportation firms reported more than 14,740 hazardous materials incidents in 2004[17] (figure 12). These incidents resulted in 13 deaths and 289 injuries, compared with annual averages of 22 deaths and 345 injuries between 1994 and 2004.

SUMMARY OF THE STATE OF TRANSPORTATION STATISTICS (CHAPTER 3)

The U.S. Congress directs RITA/BTS to collect, compile, analyze, and publish a comprehensive set of transportation statistics, including information on a list of topics specified in legislation. RITA/BTS is to include information on these topics in this annual report.

In 2005, Congress, in the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU), expanded the topic list, adding security and putting additional emphasis on goods movement, intermodalism, connectivity, infrastructure, and vehicle coverage (table 1-1). Chapter 3 discusses data needs for these topics in SAFETEA-LU under the six headings below.

Movement of People, Goods, and Vehicles on the Nation's Transportation System

Traffic flows. Data on the flow of people, goods, and vehicles on the transportation system is useful in evaluating current system capabilities, planning future infrastructure needs, and understanding other transportation topics such as energy use and safety risks.

A complete picture of freight and passenger flows is not available from any single source. National multimodal surveys, such as the CFS for goods and the NHTS for passenger travel, have provided widely used national benchmark data. These surveys are conducted infrequently (with CFS data last collected in 2002 and NHTS data in 2001/2002) and do not encompass all movements or provide detailed geography. Mode-specific data from a variety of sources can be used to fill some of the gaps, at least in the case of freight. Hence, RITA/BTS and the Federal Highway Administration (FHWA) are developing an extended dataset to provide a more complete national picture of freight flows than is currently available from the CFS survey alone [3].

[17] See section 15 in chapter 2 for a definition of a reported incident.

TABLE 1-1 Data Topics, as Amended by SAFETEA-LU

Subtitle	Topic
A	Productivity in various parts of the transportation sector
B	Traffic flows for all modes of transportation
C	Other elements of the Intermodal Transportation Database established under subsection (e)
D	Travel times and measures of congestion
E	Vehicle weights and other vehicle characteristics
F	Demographic, economic, and other variables influencing traveling behavior, including choice of transportation mode, and goods movement
G	Transportation costs for passenger travel and goods movement
H	Availability and use of mass transit (including number of passengers served by each mass transit authority) and other forms of for-hire passenger travel
I	Frequency of vehicle and transportation facility repairs and other interruptions of transportation service
J	Safety and security for travelers, vehicles, and transportation systems
K	Consequences of transportation for the human and natural environment
L	The extent, connectivity, and condition of the transportation system, building on the National Transportation Atlas Database developed under subsection (g)
M	Transportation-related variables that influence the domestic economy and global competitiveness

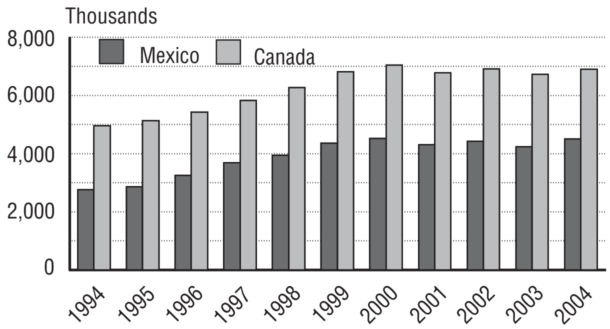
The 2001/2002 NHTS covered local and long-distance travel and all modes of transportation. The sample size was insufficient for identifying trip origins and destinations or providing detailed geography (although some states and localities paid to get more detail for their areas). Mode-specific data from operators and other sources can be useful in evaluating flow trends, but data for some types of activities such as trips by bicycle or on foot are sparse.

Data on the movement of people, vehicles, and goods across U.S. borders are important for economic, security, and flow analysis. Using data collected from Customs and Border Protection of the Department of Homeland Security, RITA/BTS compiles and disseminates data on the number of people, vehicles, trains, and containers crossing between the United States and both Canada and Mexico (figures 13 and 14).

Availability and use of for-hire passenger modes. SAFETEA-LU expanded RITA/BTS's mandate to provide information on availability and use of mass transit to all for-hire passenger modes (e.g., intercity train, intercity scheduled and charter bus, local taxis, commercial air, air taxi, and air charter). Some of these data are available from Department of Transportation modal administrations and a number of public and private sources such as Amtrak. RITA/BTS collects air passenger data.

National statistics to track trends in routes and schedules across for-hire modes are spotty. RITA/BTS evaluations of scheduled air, train, and intercity bus service for over 200 city pairs, and separate studies of the proximity of rural Americans to for-hire intercity transportation services, have contributed data for a fuller understanding. A possible next step in this analysis is the evalu-

FIGURE 13 Truck Border Crossings from Mexico and Canada: 1994–2004



See chapter 2, figure 1-18, for notes and source.

ation of intermodal connectivity of the passenger transportation network, which could help provide a more complete picture of modal access.

System Status

Data pertinent to transportation system status include, among other things, physical extent, connectivity, and condition of transportation infrastructure; physical characteristics of the vehicles and other conveyances that use the infrastructure; capital investment in the system; and infrastructure availability for use as reflected in travel times, congestion, and service interruptions.

System extent, connectivity, and condition. An enormous amount of information exists about the extent and location of transportation facilities, the number and nature of connections within and between modes, and the physical condition of system components. Such data can be aggregated into summary tabulations, such as the RITA/BTS publication *National Transportation Statistics*, and a companion volume of state-level data [2]. It is often very useful to portray the geographic context of transportation data, such as through the RITA/BTS *National Transportation Atlas Database*, which displays transportation data, including facilities and networks, at a national, regional, state, and local level.

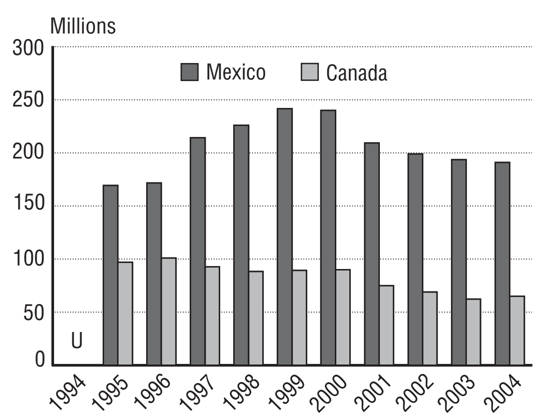
Travel times and congestion. RITA/BTS publishes monthly summaries of on-time performance for large U.S. air carriers and data on causes of delays. Additionally, an Air Travel Time Index measures the change in the difference between scheduled travel times and actual travel times for nonstop flights in the United States (figure 15).

Not all travel time data is made public by private carriers, making trend analysis difficult. If data can be aggregated from a suitable number of firms while maintaining privacy rights, measures of travel time across an industry can be conducted. RITA/BTS has developed such a measure for overall line-haul speeds for the rail freight industry, allowing for historical comparisons.

The best way to measure congestion remains a subject of debate. Research conducted by FHWA summarized the data challenges [1]. In essence, additional work must be done to collect sufficient data by a standardized approach so that congestion can be compared in a particular region or across various regions.

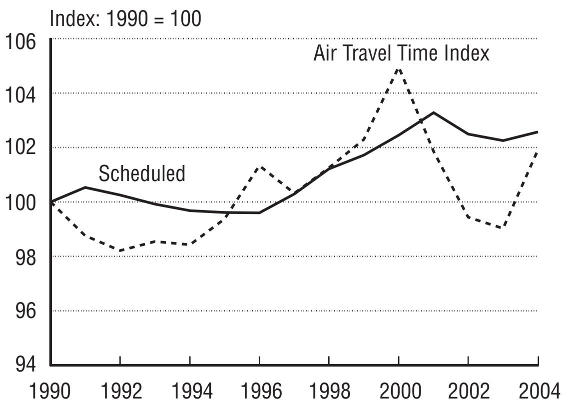
Transportation capital stock and financing. Capital stock takes into consideration the quan-

FIGURE 14 Passenger Crossings by Personal Vehicles from Mexico and Canada: 1994–2004



See chapter 2, figure 1-4, for note and source.

FIGURE 15 Air Travel Time Index and Scheduled Air Travel Time: 1990–2004
Yearly averages



See chapter 2, figure 5-8, for note and source.

tity and condition of infrastructure and vehicles. The Bureau of Economic Analysis in the U.S. Department of Commerce compiles data on private sector transportation capital stock and public sector highways and streets (figure 16). RITA/BTS has been developing measures for other publicly owned transportation capital stock, including airports, waterways, and transit systems.

Economic and Other Variables Affecting Travel and Goods Movement

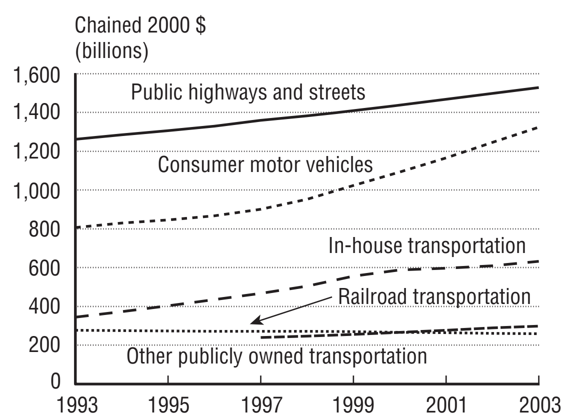
Variables influencing travel behavior. Access to transportation, travel costs, employment status and location, income, location of housing and services, family status, age, and disabilities are a few of the demographic, economic, and other variables influencing travel behavior. Information on passenger characteristics is available from the NHTS. Goods movement is influenced by the economy and population and its geographic distribution, including the location of goods producers, suppliers and customers in relation to each other, and proximity of transportation facilities and services.

Performance of the domestic economy and U.S. competitiveness. There is extensive data available that relate to the performance of the domestic economy and U.S. global competitiveness. Among the variables that may be considered are relative prices of goods and services, relative productivity, transportation infrastructure, international trade, and employment. Many sources of these data, including government and private transportation investment, capital stock, and productivity, are discussed under other SAFETEA-LU topics.

Transportation sector productivity. Productivity data is primarily the work of the Bureau of Labor Statistics. In general, productivity measures describe the relationship between the quantity of output produced and the inputs (labor and capital) used. BLS currently provides labor productivity data for air transportation, line-haul railroads, and general freight trucking (long-distance) and multifactor productivity data for air transportation. RITA/BTS has been working on multifactor productivity data for other modes.

Cost of passenger travel and goods movement. The RITA/BTS Air Travel Price Index measures the change over time in the actual prices paid by air travelers. The index can be used to compare airfares in the most recent quarter available

FIGURE 16 Transportation Capital Stock for Selected Modes: 1993–2003



See chapter 2, figure 2 -1, for notes and source.

with any quarter since the 1995 base year. The index reflects fares paid by travelers, not published fares, using survey data from a 10 percent sample of all U.S. carrier airline tickets, excluding charter air travel. Similar indexes are not available for other modes.

Safety and Security

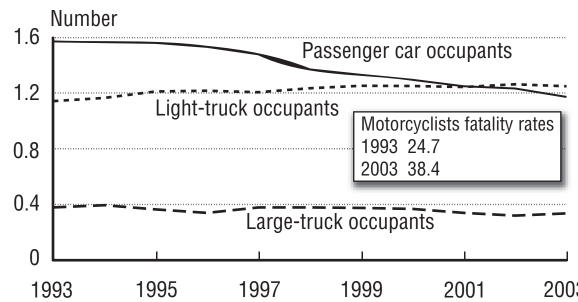
SAFETEA-LU expanded the topic of accidents in prior legislation to the broader topic of the safety and security of passengers, vehicles, and transportation systems. This poses some data availability problems as much of the security data that are collected are no longer publicly available or available in a more limited form.

Differences among vehicles have implications for safety data. Changes in consumer preferences for vehicles, such as the rapid increase in sales of sport utility vehicles and other light trucks over the last 15 years, has made crashes more common between these larger vehicles and smaller passenger cars, and also has raised issues about the vehicles themselves (figure 17). Data on crashes involving more than one mode of transportation, such as passenger cars or bicycles with trains at grade crossings, remains an important topic. Safety incidents involving freight and passenger modes, which often share the same facility or road, present data challenges.

Unintended Consequences

The U.S. Environmental Protection Agency (EPA) and the Department of Energy's Energy Information Agency (EIA) are the primary agencies collecting data used to evaluate transportation's effect on the natural environment. EPA collects data to measure national air pollutant emissions from transportation vehicles, disposed amounts of some types of transportation equipment, and air quality across the nation. EIA is responsible for collecting data on fossil fuel use, an important

FIGURE 17 Highway Fatalities per 100 Million Vehicle-Miles for Selected Vehicle Types: 1993–2003



See chapter 2, figure 3-3, for notes and source.

component of transportation energy use. The Coast Guard previously reported oil spill data from all sources. However, its current emphasis on security has changed data-collection priorities such that current oil spill data focuses on marine vessels and structures, with little data on other transportation sources.

A Concluding Note

RITA/BTS has been reporting on important transportation data needs in this report annually, as well as in other reports over the years. In addition to expanding the scope of data issues in 2005, the U.S. Congress has mandated that the Secretary of the U.S. Department of Transportation (DOT) enter into an agreement with the National Research Council to assess national transportation information needs. The study, due for completion in the fall 2007, is to be followed by a DOT report to Congress on ways to fill data gaps. It is evident that the need remains for relevant, timely, high-quality transportation information for decisionmaking.

REFERENCES

1. U.S. Department of Transportation, Federal Highway Administration. 2004. *Traffic Congestion and Reliability: Linking Solutions to Prob-*

lems. Available at http://www.ops.fhwa.dot.gov/congestion_report/, as of September 2005.

2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics. 2004. *State Transportation Statistics*. Washington, DC. Also available at http://www.bts.gov/.

3. ______. 2005. *Freight in America*. Washington, DC.

Chapter 2

Transportation Indicators

Introduction

The Intermodal Surface Transportation Efficiency Act of 1991[1] and subsequent authorizing legislation charged the Bureau of Transportation Statistics (BTS)—now a part of the Research and Innovative Technology Administration—with compiling, analyzing, and publishing a comprehensive set of transportation statistics, including information on a specified list of topics.

In this chapter, each of these topics is represented by a series of key indicators. Data tables supporting all the indicators are in appendix B at the end of the report. Appendix table numbers correspond to the figure numbers in the chapter. The chapter is organized thematically rather than in the order the topics are presented in the legislation (table 1). As in the two previous annual reports, BTS includes three topics that are not on the congressional list.

TABLE 1 Topics in this Report

Legislative item		Chapter section
A	Productivity in the transportation sector	8
B	Traffic flows	1
C	Travel times	5
D	Vehicle weights	13
E	Variables influencing traveling behavior, including choice of transportation mode	4
F	Travel costs of intracity commuting and intercity trips	7
G	Availability of mass transit and the number of passengers served by each mass transit authority	6
H	Frequency of vehicle and transportation facility repairs and other interruptions of transportation service	12
I	Accidents	3
J	Collateral damage to the human and natural environment	15
K	The condition of the transportation system	2
L	Transportation-related variables that influence global competitiveness[1]	11
–	Transportation and economic growth[2]	9
–	Government transportation finance[2]	10
–	Transportation energy[2]	14

[1] This topic was added to 111(c)(1) by the Transportation Equity Act for the 21st Century in 1998.

[2] These topics were added by the Bureau of Transportation Statistics.

About the Data in the Report

For consistency, most trend indicator data are shown over at least a 10-year period. Because of the differing availability of data among all the indicators included, it has not been possible to use the same 10-year span for each indicator without sacrificing timeliness. Instead, the data span a decade up to the year of most recent data available when this report was prepared. There are some instances where less than 10 years of data are presented—either because the data are not comparable over the period or are not available.

With a few exceptions, trend data involving costs were converted to 2000 chained ("real") dollars to eliminate the effect of inflation over time. Appendix B provides both 2000 chained dollar and current dollar value tables. Throughout the text in the report, results of most percent

[1] See 49 U.S. Code 111(c)(1). As this report was nearing completion in 2005, the U.S. Congress enacted the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU, Public Law 109-59). This legislation amended section 111(c)(1). These amendments are discussed in this report's chapter 3, The State of Transportation Statistics.

calculations have been rounded up or down, as appropriate, to a whole number. If the percent value is less than 5, data are presented with one decimal point because rounding these data can mask differences when making comparisons. Annual growth rate calculations are made using a logarithmic formula to account for compounding over time.[2] A reader may not obtain the same percentage or other calculation presented in this report using the tabulated data in appendix B because of the rounding of data on the tables.

Data in this report come from a variety of sources, principally from BTS and operating administrations of the U.S. Department of Transportation. However, other sources are federal government agencies, such as the U.S. Census Bureau, the Bureau of Economic Analysis, the U.S. Environmental Protection Agency, the U.S. Coast Guard, and the Energy Information Administration. To supplement government sources, the report occasionally uses data and information from trade associations, such as the Association of American Railroads and the American Public Transportation Association. Data from any of these sources may be subject to omissions and errors in reporting, recording, and processing. Sampling data are subject to sampling variability. Documents cited as sources in this report often provide detailed information about definitions, methodologies, and statistical reliability.

Source information in the report details where BTS obtained data used (e.g., from a printed document, website, or by direct communication with an individual). The same data BTS obtained from websites and used in this report may not be available to readers because of frequent changes in such postings. However, the day and month of the BTS download is included in the source information, along with the website address (url) at that time.

[2] The formula is: average annual rate = Exp $[(\ln Y - \ln X)/(n-m)] - 1$, where Y is the end year value, X is the initial year value, n is the end year, and m is the initial year.

Passenger-Miles of Travel

Estimated U.S. passenger-miles of travel (pmt) increased 27 percent between 1992 and 2002 to total 5.0 trillion in 2002, an average of about 17,000 miles for every man, woman, and child (box 1-A) [2].

Almost 87 percent of pmt in 2002 was in personal vehicles (passenger cars and light trucks, including sport utility vehicles, pickups, and minivans) (figure 1-1). Most of the balance (10 percent) occurred by air. Passenger travel in light trucks accounted for one-third of all pmt. Bus was nearly 3 percent of pmt in 2002, while transit—excluding bus—made up less than 1 percent.

The growth in pmt between 1992 and 2002 varied by mode and vehicle type. While pmt by light trucks grew 39 percent, passenger car pmt rose 19 percent (figure 1-2). Air carrier pmt grew at 36 percent despite a decline in passenger traffic between 2000 and 2002, which most likely occurred because of the economic downturn at the time and the terrorist attacks in 2001. Pmt by intercity train (Amtrak) declined, although there has been modest growth since 1996. Transit pmt has grown since the mid-1990s.

The increase in pmt between 1992 and 2002 occurred for a variety of reasons. While the U.S. resident population grew less (12 percent) than pmt over this period, the economy grew appreciably. Gross Domestic Product (GDP) increased 37 percent[1] and GDP per capita grew 22 percent between 1992 and 2002 (figure 1-3) [1, 2].

BOX 1-A Data on Passenger-Miles of Travel

Total passenger-miles of travel (pmt) excludes travel in heavy trucks, by bicycle, by walking, and by boat (including recreational boat). Pmt in heavy trucks is excluded because such travel is assumed to be incidental to the hauling of freight, the main purpose of this travel. Bicycle, pedestrian, and boat travel are excluded because national estimates are not available on an annual basis. The pmt data in this section of the report are from the Bureau of Transportation Statistics (BTS) publication, *National Transportation Statistics* (NTS). BTS compiles these data for NTS, primarily using mode-by-mode data derived in various ways by BTS and others. For instance, pmt for large air carriers and intercity trains are estimated from ticket sales and trip lengths; for transit, data are reported by transit authorities. Each method used to estimate these data has differing strengths and weaknesses, as discussed in the Data Source and Accuracy Statements in appendix C, available at http://www.bts.gov/. BTS updates NTS on a quarterly basis; the data in this section are the data available when the report was prepared and may not be consistent with data available later in NTS or other sources, as noted in the chapter introduction.

BTS has another set of national pmt, the *National Household Travel Survey* (NHTS), last conducted jointly by BTS and the Federal Highway Administration in 2001 and 2002. As survey data, they are collected using a single methodology. This provides a coherence and comparability not available with data compiled for NTS. However, the survey data are not collected annually, making them unsuitable for year-to-year trend analyses. Another difference between NTS and NHTS data is the extent of their coverage among modes. It can be expected, then, that because of methodological and coverage issues NTS and NHTS data will differ. In section 4 of this chapter, Variables Influencing Traveling Behavior, the report uses data from the 2001 NHTS.

Sources

1. U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts, summary GDP table, available at http://www.bea.doc/, as of January 2005.
2. U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States,* section 1, table 2, available at http://www.census.gov/, as of May 2005.

[1] Calculation is based on chained 2000 dollars.

FIGURE 1-1 Passenger-Miles of Travel by Mode: 2002

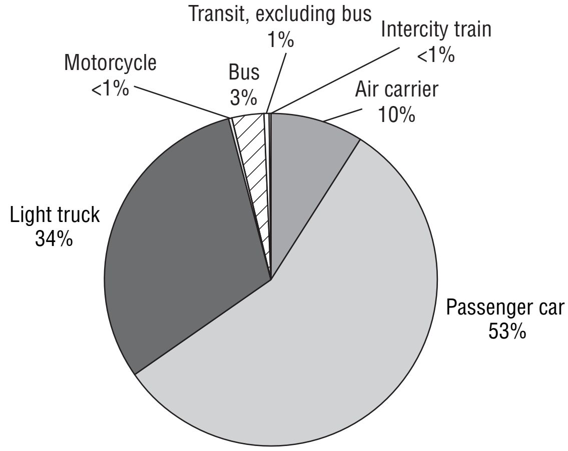


FIGURE 1-2 Change in Passenger-Miles of Travel by Selected Mode: 1992–2002

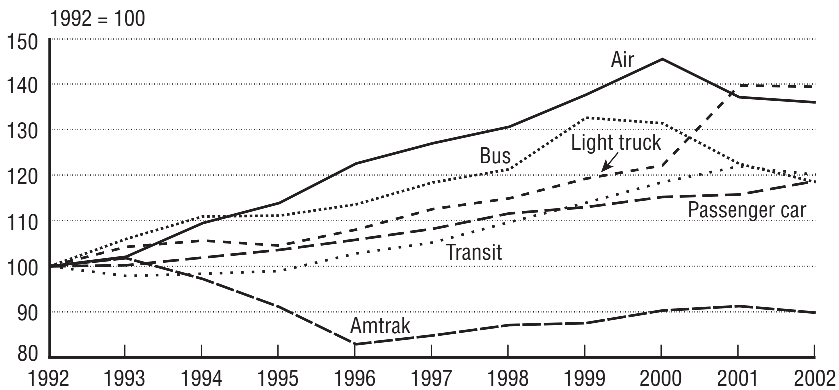
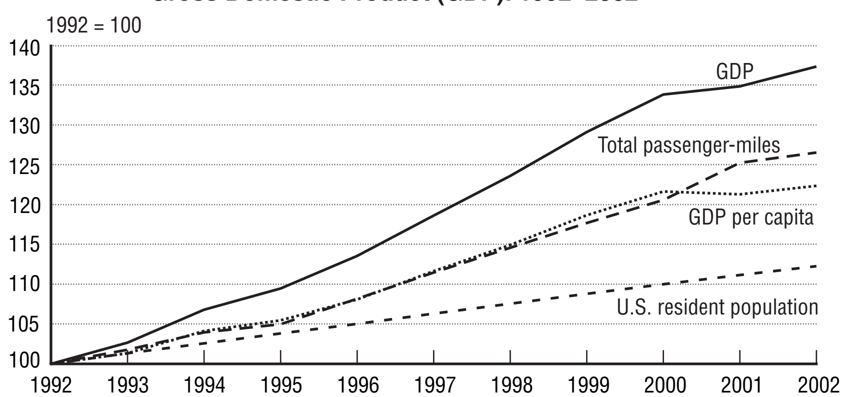


FIGURE 1-3 Change in Passenger-Miles of Travel, U.S. Population, and Gross Domestic Product (GDP): 1992–2002



NOTES: For consistency, aviation passenger-miles of travel (pmt) includes air carrier aviation only, as general aviation pmt 2002 data were not available when this report was prepared. **Figures 1-1 and 1-2**—see tables 1-1 and 1-2 in appendix B for definitions. **Figure 1-3**—*Total pmt* excludes motorcycle pmt and results in some double counting of bus pmt.

Figure 1-1—Percentages may not add to 100 because of independent rounding. **Figures 1-2 and 1-3**—To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see corresponding tables in appendix B) by the initial year value and multiplied the result by 100.

SOURCES: Passenger-miles—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-37, available at http://www.bts.gov/, as of January 2005. **GDP**—Based on chained 2000 dollar data from U.S. Department of Commerce (USDOC), Bureau of Economic Analysis, National Income and Product Accounts, summary GDP table, available at http://www.bea.doc.gov/, as of December 2004. **Population**—USDOC, U.S. Census Bureau, *Statistical Abstract of the United States,* Section 1: Population, table No. 2. Population: 1960 to 2003, available at http://www.census.gov/, as of May 2005.

Passenger Border Crossings

There were approximately 312 million passenger crossings into the United States by land from Canada and Mexico in 2004, an increase of 2.5 percent from the 304 million crossings in 1995[1] [1]. These crossings were made in personal vehicles, buses, and trains, and by pedestrians at U.S. border gateways.[2] The majority of crossings (82 percent), however, were in personal vehicles.

Crossings from Mexico accounted for more than three-quarters of the total (242 million) in 2004, or an average of 660,000 per day, up from an average of 558,000 per day in 1995. From Canada there were almost 70 million passenger crossings in 2004, about 191,000 a day, a decrease of 31 percent since 1995.

In general, the number of crossings by personal vehicle from Canada have been declining since 1996 (figure 1-4). From Mexico, however, passenger crossings by personal vehicle rose 43 percent between 1995 and 1999 and then fell 21 percent (to 191 million) by 2004. Over the 1995 to 2004 period, the largest one-year decline (13 percent) occurred between 2000 and 2001, the year of the terrorist attacks in the United States.

The differences between crossings from Canada and Mexico are most evident for pedestrians (figure 1-5). Almost 20 percent of passenger crossings into the United States from Mexico in 2004 were made on foot, while from Canada only 1.2 percent were. While the number of pedestrian crossings from Mexico fluctuated between 1994 and 2004, they declined 7 percent between 2001 and 2004. Conversely, pedestrian crossings from Canada grew 10 percent between 2001 and 2004 and were the highest (1.1 million) in 2002 for the entire 1994 to 2004 period.

Mexico and Canada had similar numbers of passenger crossings by bus in 2004 (3.4 million and 3.9 million, respectively). Bus crossings constituted 1.4 percent of crossings from Mexico and 6 percent of those from Canada in 2004. In recent years, between 2002 and 2004, bus crossings from Canada declined. Bus crossings from Mexico rose to their highest level in 2002 (3.9 million) and then also declined (figure 1-6).

Considerably more people arrive by train from Canada than Mexico (figure 1-7). In 2004, for instance, over 220,000 people arrived from Canada by train, while only about 13,000 did from Mexico. However, arrivals by train constituted less than 1 percent of all crossings from both Canada and Mexico in 2004.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

[1] 1994 data for passenger crossings by personal vehicle are not available for both Mexico and Canada.

[2] See, "Surface Border Wait Times" in section 5 for specific information on U.S.-Canada and U.S.-Mexico gateways.

FIGURE 1-4 Passenger Crossings by Personal Vehicles from Mexico and Canada: 1994–2004

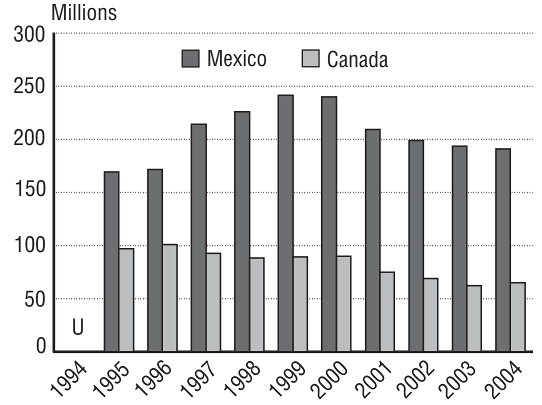


FIGURE 1-5 Pedestrian Crossings from Mexico and Canada: 1994–2004

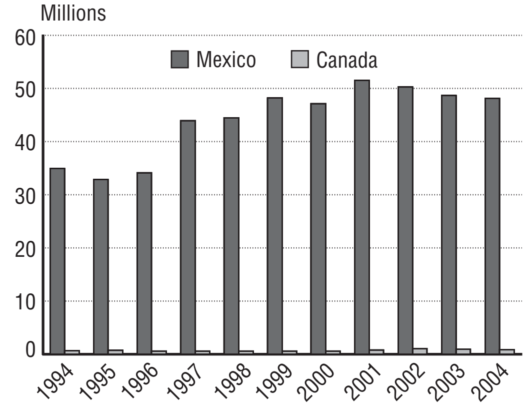


FIGURE 1-6 Passenger Crossings by Bus from Mexico and Canada: 1994–2004

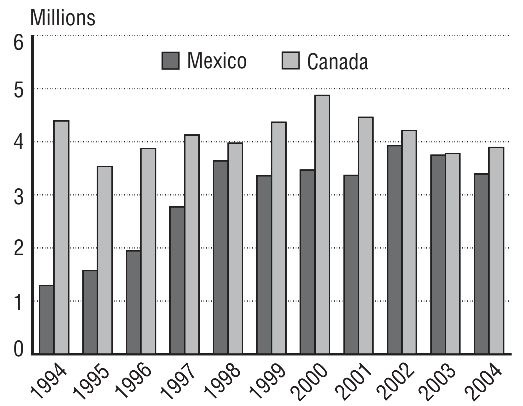
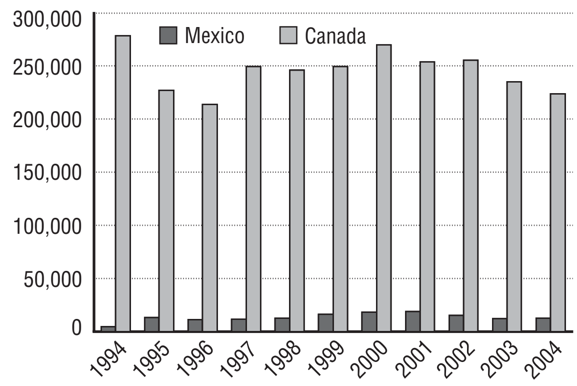


FIGURE 1-7 Passenger Crossings by Train from Mexico and Canada: 1994–2004



KEY: U = data are unavailable (for crossings by personal vehicle from both Mexico and Canada in 1994).

NOTE: For definitions see tables 1-4, 1-5, 1-6, and 1-7 in appendix B.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

Amtrak Station Boardings

Amtrak ridership increased 18 percent, between fiscal years 1994 and 2004, from 21.2 million riders to 25.1 million riders [1, 4]. The number of riders in fiscal year 2004, about 68,800 per day on average, was the largest ever on the Amtrak system [2].

In numbers of passengers boarded, the top five Amtrak stations in fiscal year 2004 were New York; Washington, DC; Philadelphia; Chicago; and Newark. Almost 40 percent of all passengers boarded at these stations. Over 79 percent of ridership volume is accounted for by Amtrak's top 50 stations [5] (figure 1-8).

Amtrak ridership is heavily concentrated in the Northeast Corridor from Washington, DC, to Boston and to a lesser extent, along the Pacific coast. Among Amtrak's top 50 stations, 19 are located in areas served by Amtrak's Northeast Corridor service.[1] Almost 13.0 million passengers boarded trains at these stations, accounting for almost 52 percent of the entire system's passenger volume in fiscal year 2004. Twenty-one of Amtrak's top 50 stations are located along the Pacific coast. These 21 stations accounted for nearly 18 percent of Amtrak's ridership in fiscal year 2004. The remaining 10 top 50 stations are in Florida, Illinois, Louisiana, Massachusetts, New York, Virginia, and Wisconsin.

Nationally, Amtrak operates 523 rail stations serving 46 states [2, 3]. Of these, 74 are owned by Amtrak, 204 are privately owned, and 245 are owned by a public entity [3]. According to an analysis by the Bureau of Transportation Statistics, Amtrak is accessible to about 35 million rural residents (42 percent of all rural residents). For approximately 300,000 rural residents, Amtrak is the only public intercity transportation available [5].[2]

Sources

1. Amtrak, *Amtrak Annual Report, Statistical Appendix* (Washington, DC: 2002).
2. ______. *Amtrak Facts*, available at http://www.amtrak.com/, as of May 2005.
3. ______. *Amtrak Strategic Plan: FY 2005–2009* (Washington, DC: June 29, 2004).
4. ______. *Annual Report to Congress*, Feb. 17, 2005, available at http://www.amtrak.com/, as of May 2005.
5. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Scheduled Intercity Transportation: Rural Service Areas in the United States*, available at http://www.bts.gov/, as of March 2005.

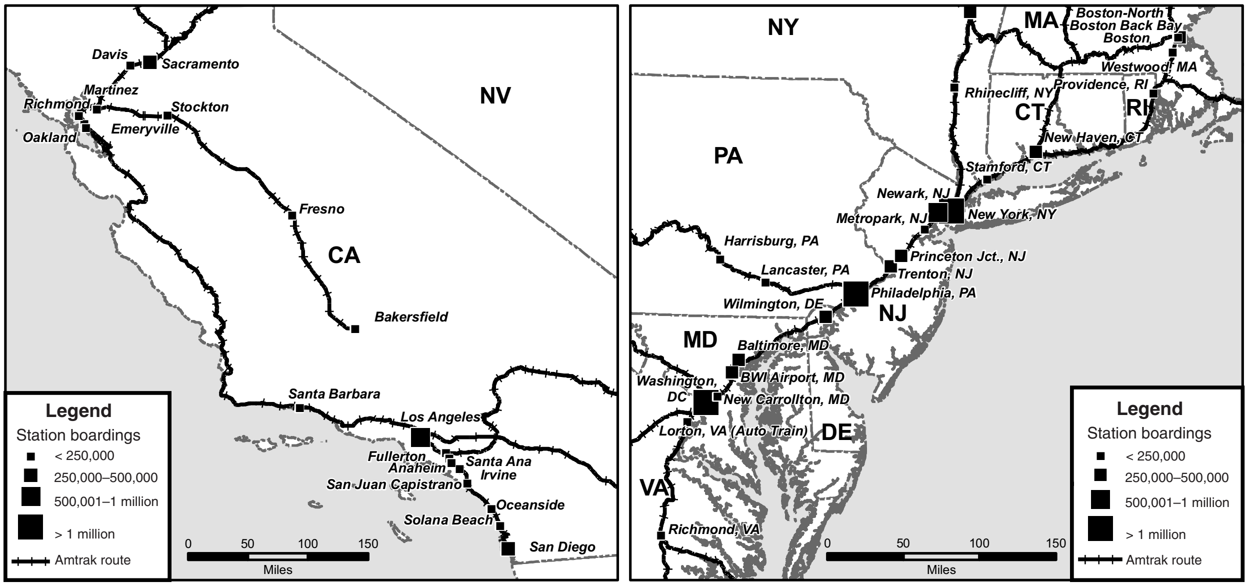
[1] For purposes of this report, Amtrak's Northeast Corridor (NEC) service includes the Boston-Washington mainline plus the Springfield, MA-New Haven, CT and Harrisburg, PA-Philadelphia, PA branch lines. In recent years, Amtrak's former Northeast Corridor Strategic Business Unit also considered the Boston, MA-Portland, ME; New York, NY-Niagara Falls, NY; and Washington, DC-Newport News, VA routes to be part of the NEC.

[2] See, "Scheduled Intercity Transportation in Rural America" in section 4 (Variables Influencing Traveling Behavior).

FIGURE 1-8 Amtrak Stations: Fiscal Year 2004

OVERVIEW

ROUTE DETAILS



SOURCE: Amtrak, personal communication, November 2004.

Domestic Freight Ton-Miles

All modes of freight transportation, combined, generated 4.4 trillion domestic ton-miles in 2002, 18 percent more than in 1992 (box 1-B). This represents a growth rate of 1.7 percent per year during the period.

Domestic ton-miles for all modes, except water, grew during most of the 1992 to 2002 period (figure 1-9). Rail grew the fastest (46 percent), closely followed by truck (40 percent) and air (23 percent). Rail and truck accounted for the majority of domestic ton-miles at 37 and 29 percent, respectively, in 2002 (figure 1-10). Truck data, however, do not include retail and government shipments and some imports and, therefore, understate total truck traffic.

Water transportation and oil and natural gas pipelines accounted for 14 and 20 percent of domestic ton-miles, respectively, in 2002. Although domestic waterborne ton-miles decreased 29 percent between 1992 and 2002, waterborne vessels continued to play a prominent role in international trade [2]. U.S. waterborne imports and exports, valued at $728 million, totaled 1.1 billion metric tons in 2002 [1]. Oil and natural gas pipeline combined ton-miles, which grew 7 percent between 1992 and 1996, were stagnant or declining through the rest of the period.

Air freight declined between 2000 and 2001, from 15.8 billion ton-miles to 13.3 billion ton-miles, reflecting the economic downturn at the time, the impact of the terrorist attacks of September 11, 2001, and perhaps restrictions placed on the air transport of U.S. mail packages as a security precaution in late 2001. However, air freight rose again, reaching 13.6 billion ton-miles in 2002.

BOX 1-B Domestic Freight Ton-Miles Data

Most recently, the Bureau of Transportation Statistics (BTS) has gathered three datasets on freight ton-miles. Here, BTS compiled the data from a variety of modal and other sources to produce annual trend data (see table 1-9b in appendix B for source details). The coverage of the modal data is often incomplete, and the BTS process of developing these data attempts to provide a more comprehensive estimate of all domestic freight ton-miles. For instance, while ton-miles data are readily available for the large Class I railroads, BTS estimates ton-miles for smaller railroads to arrive at total freight rail ton-miles.

A second set of annual BTS ton-miles data has been produced for many years and published in *National Transportation Statistics* (NTS). These data provide estimates of freight ton-miles back to 1960 but are not as comprehensive as the estimates presented here. BTS is in the process of updating these NTS data using the methodology described above.

The third set of freight ton-miles data—discussed in the next pages—come from the Commodity Flow Survey (CFS) conducted every five years by BTS and the U.S. Census Bureau of the Department of Commerce. As a survey, the methodology and coverage of this dataset differ from the above and the data are not comparable. For instance, according to the CFS, total 2002 ton-miles are 3.1 trillion and with supplemental estimates added rise to 4.5 trillion ton-miles.

Sources

1. U.S. Department of Transportation, Maritime Administration, Office of Statistical and Economic Analysis, *U.S. Foreign Waterborne Transportation Statistics*, available at http://www.marad.dot.gov/, as of February 2005.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *U.S. International Trade and Freight Transportation Trends* (Washington, DC: 2003).

FIGURE 1-9 Change in Domestic Freight Ton-Miles by Mode: 1992–2002

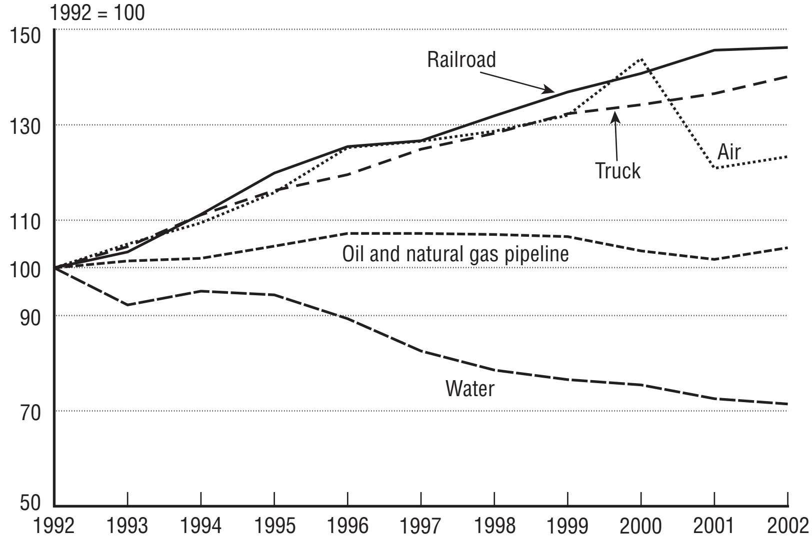
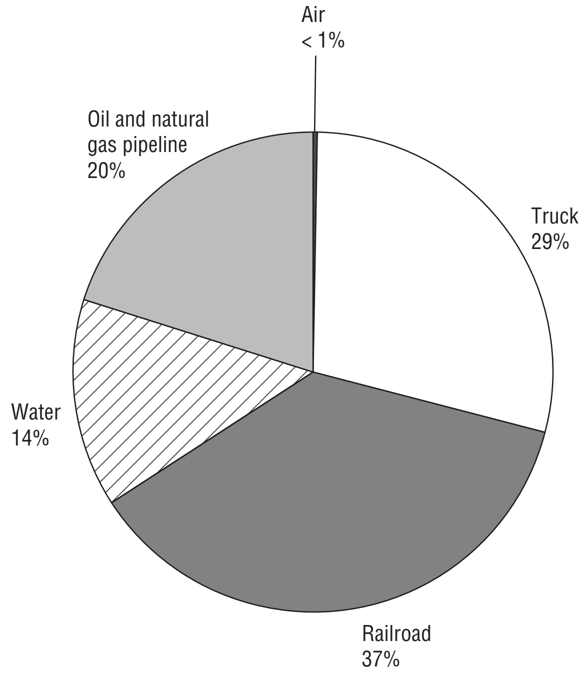


FIGURE 1-10 Domestic Freight Ton-Miles by Mode: 2002



NOTES: Figure 1-9—To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 1-9b in appendix B) by the initial year value and multiplied the result by 100. **Figure 1-10**—Percentage may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from various sources. See tables 1-9b and 1-10 (in appendix B) for details.

Commercial Freight Activity

The nation's freight transportation system, all modes combined, carried 15.8 billion tons of raw materials and finished goods in 2002, up 18 percent from 13.4 billion tons in 1993 (figure 1-11).[1] The 2002 freight activity also represented 4,506 billion ton-miles at a value of $10,460 billion (in chained 2000 dollars[2]). Ton-miles have grown 24 percent since 1993, while value rose 45 percent (figure 1-12 and figure 1-13).

Trucking moved the majority of freight by tonnage and by shipment value in 2002: 9.2 billon tons (58 percent of the total tonnage) and $6,660 billion (64 percent of the total value). Multimodal shipments—a combination of more than one mode—were second by value at 11 percent ($1,111 billion), while waterborne carried 15 percent by weight (2.3 billion tons). Trucking and rail were responsible for 32 and 28 percent, respectively, of the total ton-miles.

These total commercial freight data were calculated by the Bureau of Transportation Statistics, using data from the Commodity Flow Survey (CFS) conducted in 1993, 1997, and 2002 and estimates of activity not covered by CFS (box 1-C). While these total estimates provide the most complete commercial freight picture for all modes of transportation, they exclude most shipments by the retail sector and governments (e.g., goods for defense operations and the collection of municipal solid waste). The estimate also excludes shipments by nongoods-producing sectors (e.g., services, construction, household goods movers, and transportation service providers).

[1] All 2002 total commercial freight data here and in the accompanying figures and tables are preliminary. Although final 2002 Commodity Flow Survey data were available at the time this report was prepared, final 2002 supplemental estimates were still forthcoming.

[2] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. Current dollar amounts were adjusted to eliminate the effects of inflation over time.

BOX 1-C Measuring the Nation's Freight Movements

Accurately measuring the magnitude of freight movement is a challenge. No single data source provides complete and timely information on all freight transportation modes for all goods and sectors of the economy. The most comprehensive national picture of freight movement comes from the Commodity Flow Survey (CFS) produced most recently in 1993, 1997, and 2002 by the Bureau of Transportation Statistics (BTS) and the U.S. Census Bureau. As a shipper-based survey, the CFS collects information on how U.S. establishments transport raw materials and finished goods; the types of commodities shipped by mode of transportation; the value, weight, origin, and destination of shipments; and the distance shipped. (By contrast, a carrier-based survey would provide information on shipment route, cost, and time of travel.)

Despite the comprehensive nature of the CFS, important data gaps exist in its coverage of certain industries and commodities and in the domestic movement of imports. BTS estimated that the 2002 CFS covered about 81 percent of the shipment value, 73 percent of the tonnage, and 71 percent of the ton-miles of total U.S. freight movements. To improve the data, BTS made supplemental estimates for farm shipments to processing plants, crude petroleum pipeline shipments, waterborne imports and exports, and imports by surface and air. These supplemental estimates were made for the 1993, 1997, and 2002 CFS. For the 2002 CFS, BTS also filled gaps in shipments of logs and lumber.

Some major differences arise when CFS totals are compared with the supplemental data, especially in relative modal combinations, average shipment distance, and commodity mix. For example, CFS shipments were valued at $733 per ton compared with $470 per ton of shipments in the supplemental data, which has a lower value because it provides better coverage of crude oil and petroleum products. A ton of CFS shipments, on average, traveled about 270 miles, slightly less than the approximate 300 miles for the shipments in the supplemental data, in part because CFS includes large bulk shipments (e.g., sand and gravel), which are mostly local shipments.

FIGURE 1-11 Commercial Freight Activity for All Modes by Weight: 1993, 1997, and 2002

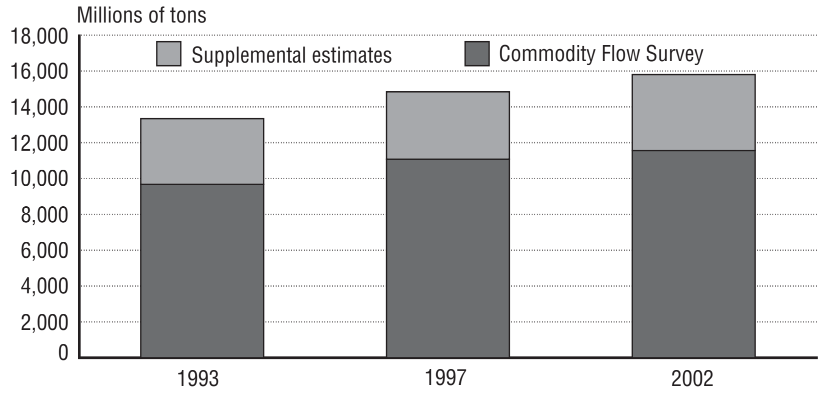


FIGURE 1-12 Commercial Freight Activity for All Modes by Ton-Miles: 1993, 1997, and 2002

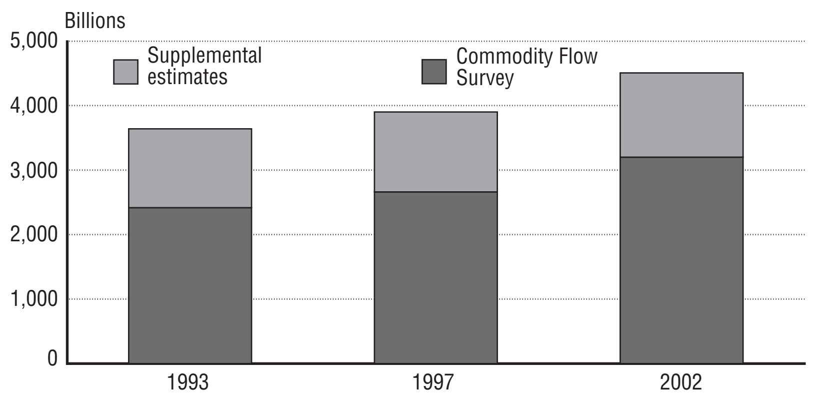
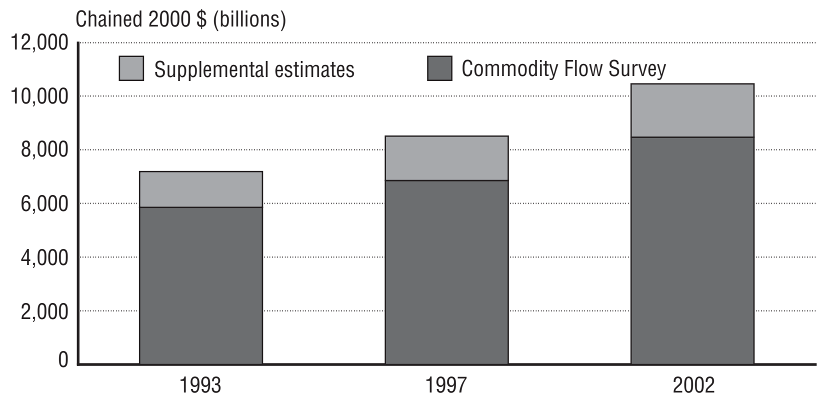


FIGURE 1-13 Commercial Freight Activity for All Modes by Shipment Value: 1993, 1997, and 2002



NOTES: 2002 data are preliminary. Although final 2002 Commodity Flow Survey data were available when this report was prepared, final 2002 supplemental data were still forthcoming. For information on coverage of preliminary supplemental estimates, see tables 1-11, 1-12, and 1-13 in appendix B.

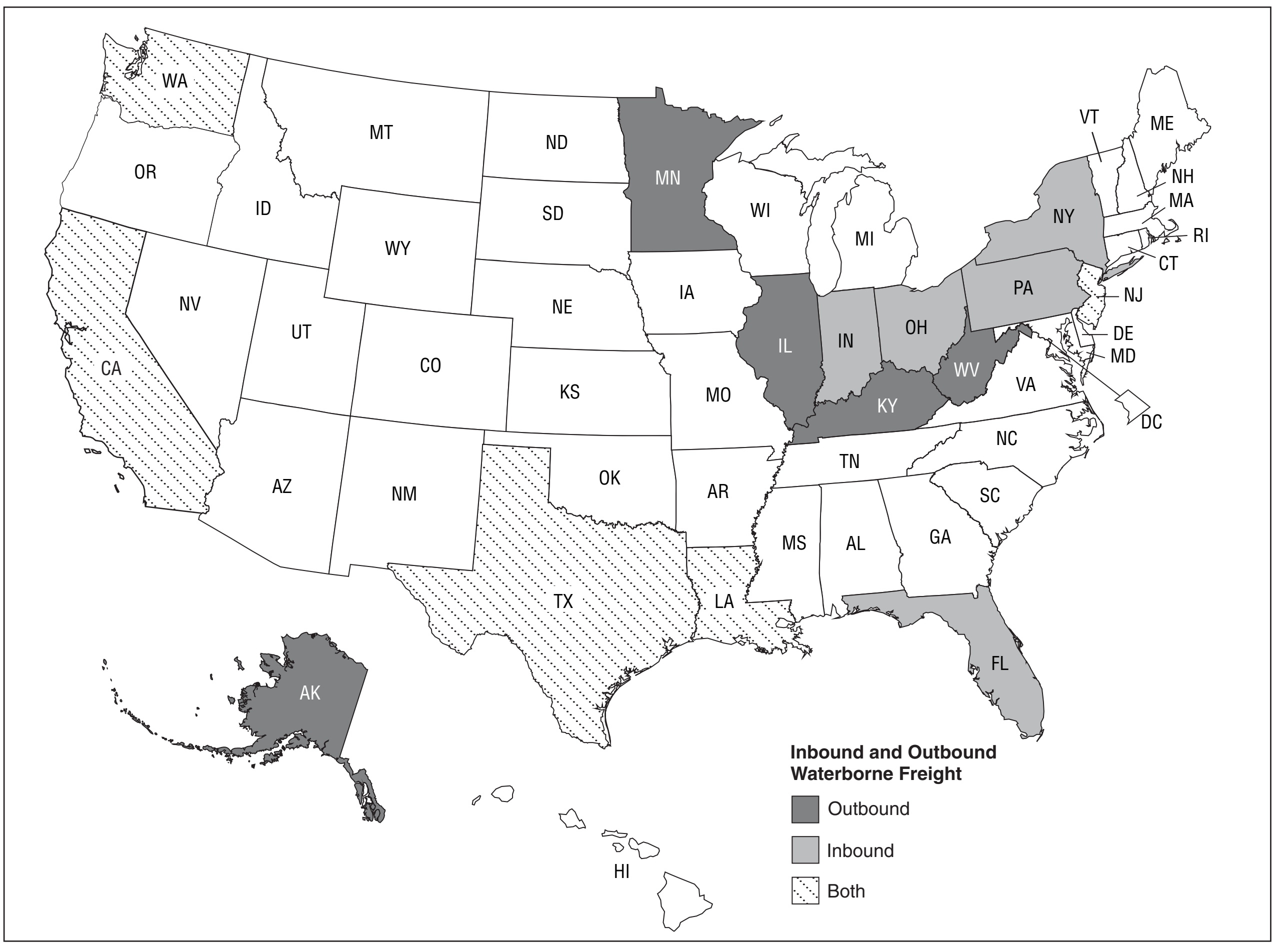
To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars to chained 2000 dollars.

SOURCES: Commodity Flow Survey data—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce, U.S. Census Bureau, *Commodity Flow Survey* (Washington, DC: 2003). **Supplemental estimates**—USDOT, BTS, *Freight Shipments in America* (April 2004), available at http://www.bts.gov/, as of May 2005.

Geography of Freight Flows by Mode

The geography of freight flows by mode is determined, for the most part, by the distribution of population and industry and availability of transportation infrastructure. The effect of transportation infrastructure is especially pronounced with waterborne shipments, which rely on inland waterways, including the Great Lakes and the Mississippi River system, and coastal ports (figure 1-14). Some of the leaders in waterborne shipments, for instance California and Washington, are states with large coastal ports. Others, such as West Virginia and Indiana, ship

FIGURE 1-14 Leading States for Inbound and Outbound Waterborne Freight Shipments: 2002[1]



[1] Map data are shipments by weight in tons. Waterborne shipments include foreign imports and exports but exclude intrastate shipments.

NOTE: This map is based on information from *Waterborne Commerce of the United States* data.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Army Corp of Engineers, Waterborne Commerce Statistics Center, *CY 2002 Waterborne Tonnage by State*, available at http://www.iwr.usace.army.mil/, as of April 2005.

FIGURE 1-15 Leading States for Inbound and Outbound Truck Freight Shipments: 2002

NOTE: This map is based on information from the Commodity Flow Survey (CFS). Because the CFS data used in this map are drawn from a survey, they are subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states. See appendix table 1-18 for a list showing the rest of the states. Information on measures of sampling variability for the data used in the map is available at http://www.bts.gov/.

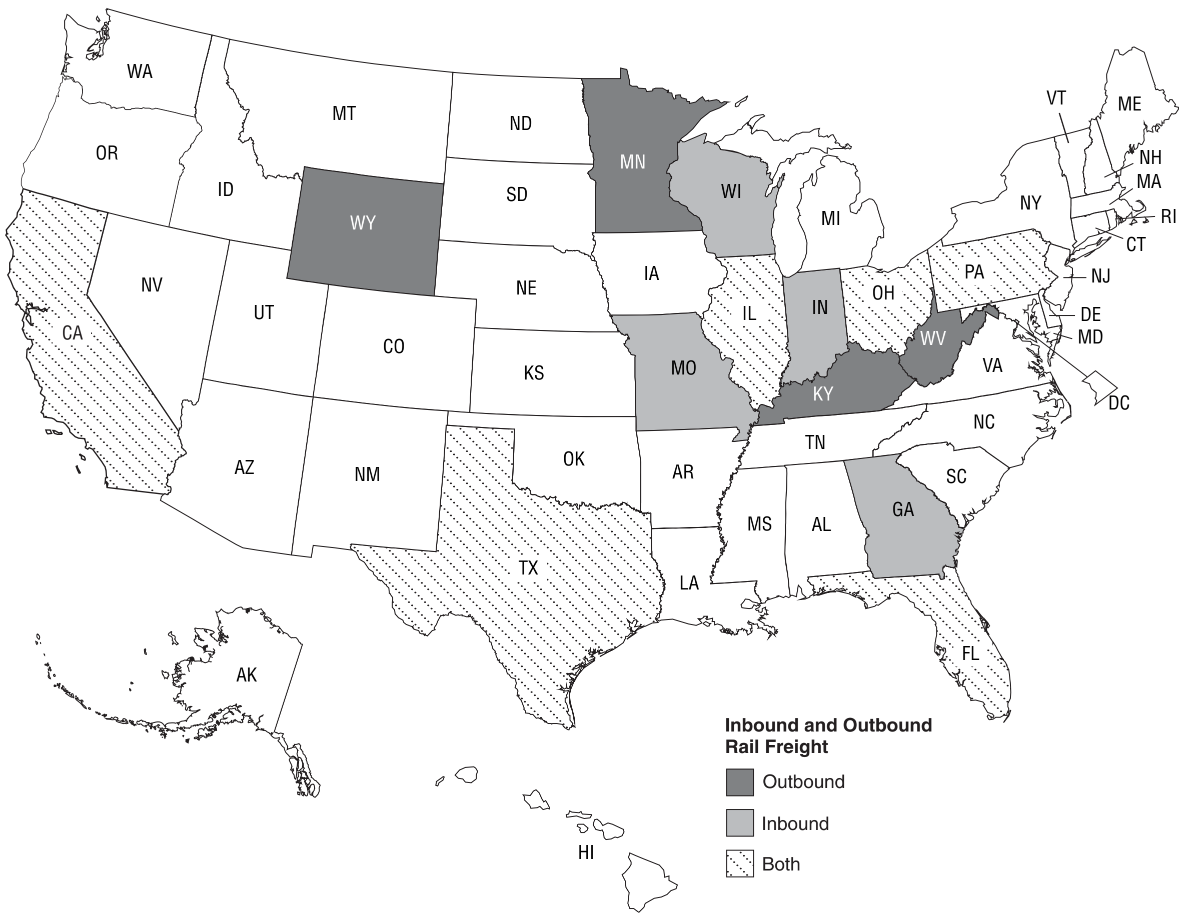
SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, 2002 Commodity Flow Survey data, April 2005.

or receive large amounts of freight via the inland waterway system. Some, like Louisiana, ship and receive freight through coastal ports and the inland waterway system.

With the ubiquity of the highway network, the amount of freight moving to and from each state by truck is closely related to population size (figure 1-15). Thus, 8 of the 10 most populated states (California, Florida, Georgia, Illinois, Michigan, Ohio, Pennsylvania, and Texas) are leaders in both inbound and outbound truck shipments.

States producing or consuming large amounts of coal are often the leaders in shipments of goods originating or terminating by rail (figure 1-16). For instance, Wyoming, West Virginia,

FIGURE 1-16 Leading States for Inbound and Outbound Rail Freight Shipments: 2002



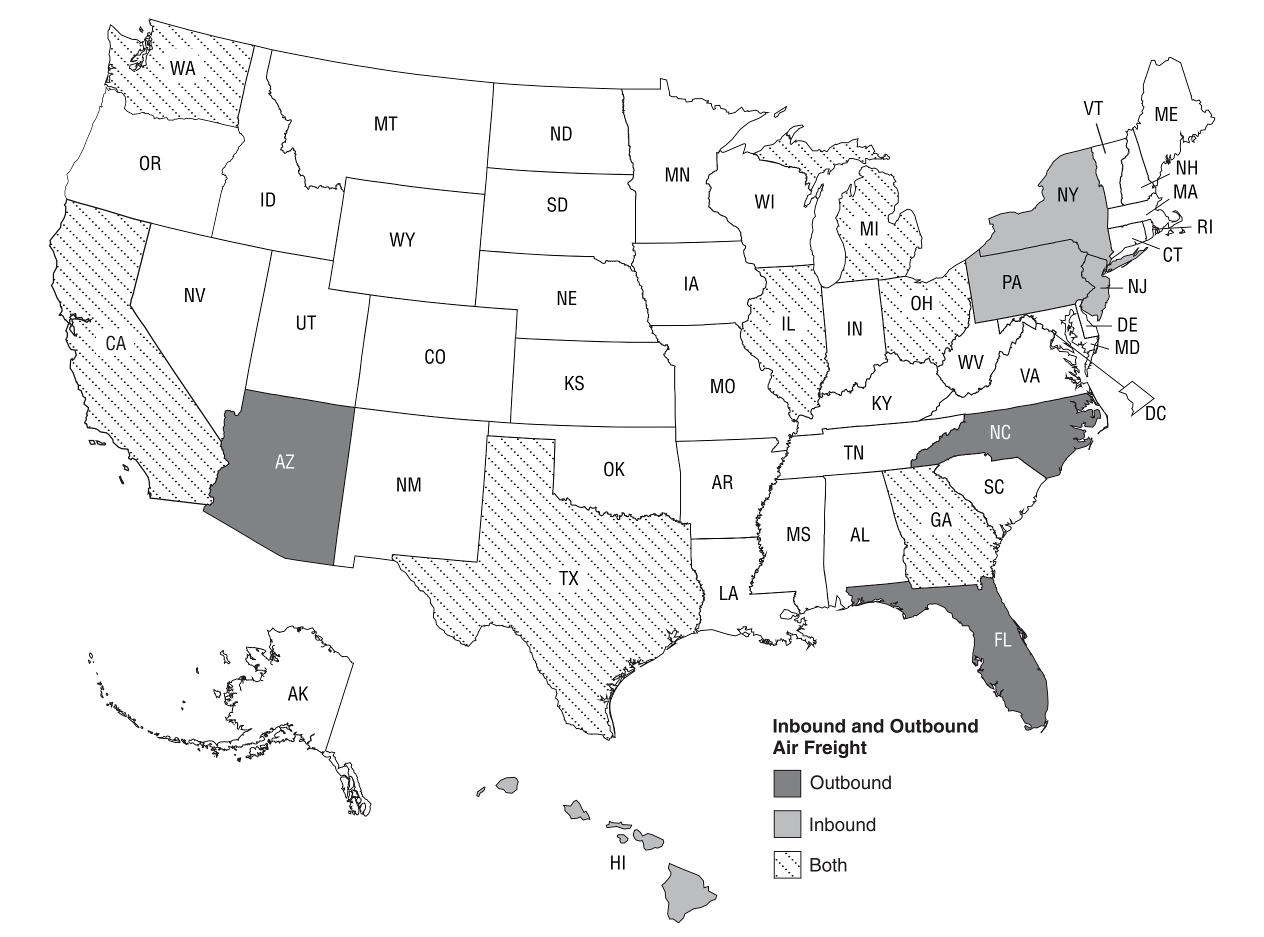
NOTE: This map is based on information from the *Rail Waybill Sample*. Because these data are drawn from a survey, theyare subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Association of American Railroads, *Railroads and States—2002* (Washington, DC: 2004), available at http://www.aar.org/, as of April 2005.

Kentucky, and Pennsylvania are the four largest producers of coal in the United States. Coal shipments to Georgia, Missouri, Indiana, Wisconsin, and Ohio place these states among the leaders of inbound rail shipments. However, the top commodity originating and terminating in California by rail is mixed freight and the top commodity originating in Minnesota is metallic ores. Texas leads in both inbound and outbound chemical shipments [1].

The amount of inbound and outbound shipments by air, like trucking, is closely related to state population (figure 1-17). A major exception is Hawaii, which, as an island state, is a leader in inbound air freight shipments despite

FIGURE 1-17 Leading States for Inbound and Outbound Air Freight Shipments: 2002



NOTE: This map is based on information from the Commodity Flow Survey (CFS). Because the CFS data are drawn from a survey, the data used in this map are subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states. See appendix table 1-20 for a list showing the rest of the states. Information on measures of sampling variability for the data used in the map is available at http://www.bts.gov/.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, 2002 Commodity Flow Survey data, April 2005.

its relatively low population. The Commodity Flow Survey,[1] the source of the data for trucking and air shipments, captures the state origin and destination of shipments but not in-transit shipments. Hence, states with airports that are major air freight sorting and distribution facilities, such as the FedEx facility in Memphis, Tennessee, may not register as leaders.

Source

1. Association of American Railroads, *Railroads and States 2002* (Washington, DC: 2004).

[1] See Commercial Freight Activity, especially box 1-C.

Freight Border Crossings

The number of trucks entering the United States from Canada and Mexico rose from 7.7 million in 1994 to 11.4 million in 2004 (figure 1-18). While this resulted in annual growth of almost 4 percent per year, the number of trucks crossing into the United States declined in 2001 and 2003, compared with the previous year. For instance, the number of trucks entering from Canada fell by 3.8 percent and from Mexico by 4.9 percent in 2001. Truck entries in 2003 declined at 52 of the 72 U.S.-Canada ports of entry and 14 of the 22 U.S.-Mexico ports [1].

Between 1996 and 2004, the number of full rail containers entering from Canada increased 350 percent, without declining in 2001 (figure 1-19). From Mexico, the number of these rail containers rose 115 percent during the same period; however, most of the increase occurred between 1996 and 2000. Since 2000, growth has been slight. Rail crossings are also measured in number of trains (figure 1-20). These data show a different pattern, with uneven growth for both Canada and Mexico between 1994 and 2004. Total train crossings hit a low of 38,949 in 1999 and a high of 41,911 in 2003.

Trucks accounted for 64 percent ($453 billion) of total trade in 2004 between the United States and its two largest trading partners, Canada and Mexico. When rail is included, surface transportation carried 89 percent of this trade. The other 11 percent of cross border trade was transported by maritime vessels ($46 billion) and aircraft ($32 billion). Over $32 billion of the vessel trade was with Mexico and $23 billion of the air transported trade was with Canada [2]. Data are not available on the numbers of vessels and aircraft entering the United States from Canada and Mexico, however, as they are for surface transportation.

Sources

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *U.S.-North American Trade and Freight Transportation Highlights Transborder Freight Data* (Washington, DC: 2005).

FIGURE 1-18 Truck Border Crossings from Mexico and Canada: 1994–2004

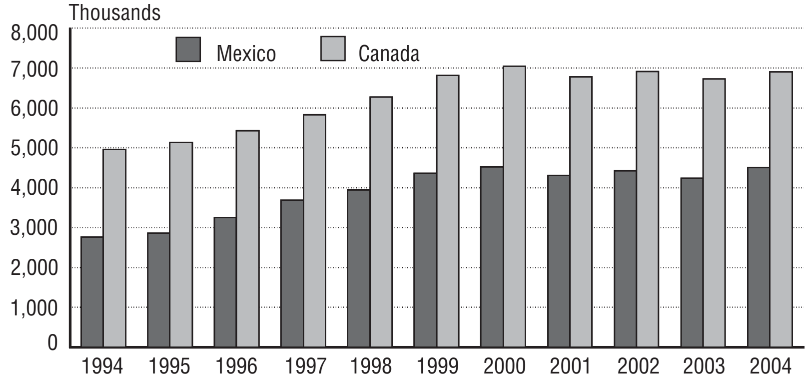


FIGURE 1-19 Full Rail Containers from Mexico and Canada: 1994–2004

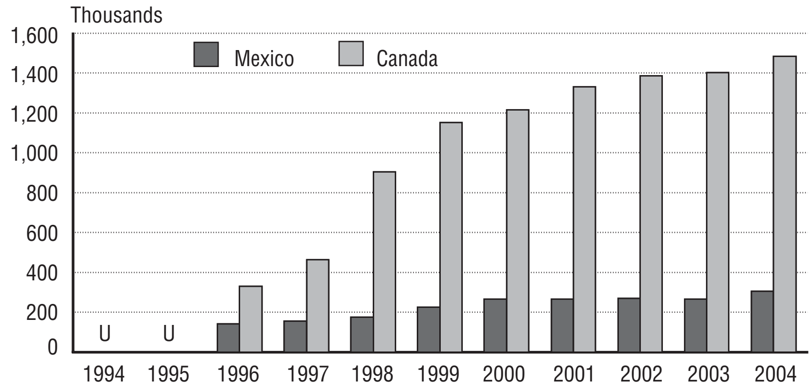
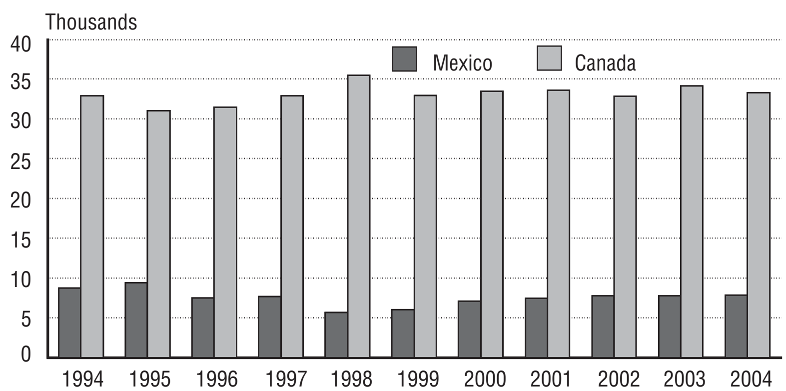


FIGURE 1-20 Train Border Crossings from Mexico and Canada: 1994–2004



KEY: U = data are unavailable.

NOTES: Rail container crossings (full and empty)—A container is any conveyance entering the United States used for commercial purposes, full or empty. Data here apply only to the number of full rail containers arriving at a surface port and include containers moving as in-bond shipments.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM,* May 2005.

Passenger and Freight Vehicle-Miles of Travel

Annual highway vehicle-miles of travel (vmt) amounted to 2.9 trillion in 2003, rising by 26 percent since 1993 [1], an annual 2.3 percent rate of change. Vmt per capita rose by 13 percent during the same period.

In recent years, the makeup and use of the highway vehicle fleet in the United States has changed, altering the share of vmt by vehicle type (figure 1-21). With the increasing popularity of sport utility vehicles and other light trucks, this class of vehicles registered the fastest passenger vmt growth (34 percent) between 1993 and 2003. During the same period, freight vehicle vmt for single-unit and combination trucks grew 35 percent, outpacing total passenger vehicle vmt growth (25 percent). Nevertheless, in 2003, passenger vehicles accounted for more than 90 percent of highway vmt.[1]

Vehicle travel has also generally increased in other modes of transportation including freight and passenger rail, air, and transit rail.[2] Vehicle-miles by rail (measured in train-miles and excluding transit rail) grew 26 percent between 1993 and 2003. Freight train-miles made up over 90 percent of all rail vehicle travel in 2003. This share increased slightly between 1993 and 2003 as freight rail vehicle movements outpaced those of passenger rail over the period (figure 1-22).

Domestic service air carrier aircraft vmt increased by 46 percent between 1993 and 2003. Air carrier aircraft vmt reached 5.7 million in 2000, falling back to 5.5 million in 2001, mainly because of the terrorist attacks that year. Aircraft vmt has grown since then, reaching 6.1 million in 2003 [2].

The biggest change in transit rail between 1993 and 2003 was a doubling of light rail vmt as existing systems were expanded and new systems were built (e.g., in Baltimore, Dallas, Denver, St. Louis, and Salt Lake City). Commuter rail vehicle-miles were up 28 percent over this period and heavy rail vehicle-miles, 21 percent (figure 1-23).

[1] Here, *passenger vehicles* includes passenger car, light truck, bus, and motorcycle vmt. Passenger cars alone accounted for 57 percent of highway vmt. See table 1-21b for detailed data.

[2] A vehicle-mile of travel (1 vehicle traveling 1 mile) is a concept that is more easily applied to highway vehicles than to other modes of transportation. For instance, rail can be measured in car-miles (1 car, 1 mile) or in train-miles, which include any number of cars but may be more comparable to highway vmt. For air transportation, vmt is synonymous with an aircraft-mile of travel (1 aircraft, 1 mile).

Source

1. U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004), table VM-1.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues).

FIGURE 1-21 Change in Highway Vehicle-Miles of Travel by Vehicle Type: 1993–2003

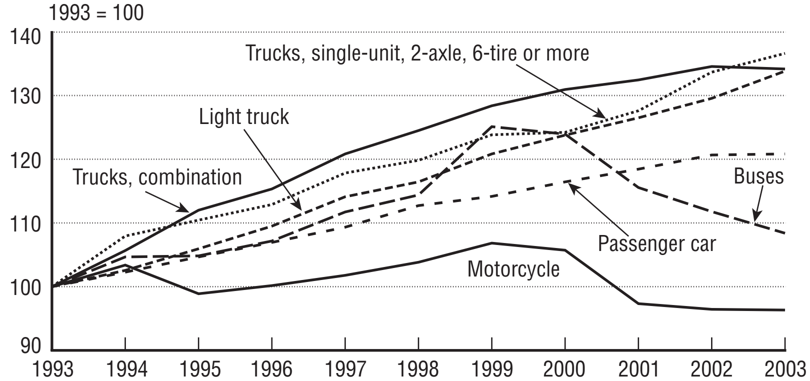


FIGURE 1-22 Change in Freight and Passenger Train-Miles: 1993–2003

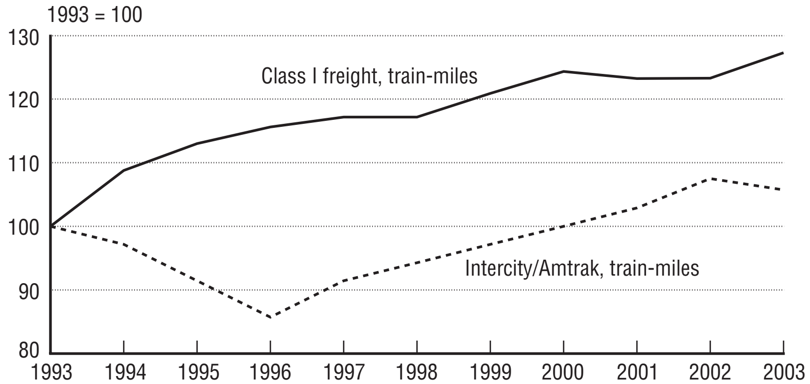
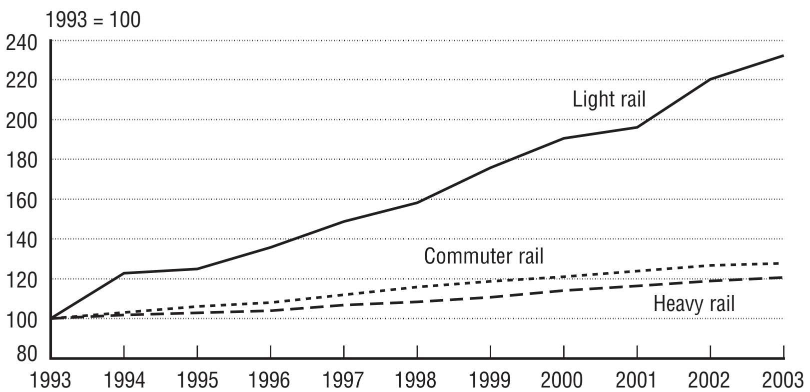


FIGURE 1-23 Change in Transit Rail Vehicle-Miles: 1993–2003



NOTES: *Light trucks* include sport utility vehicles, minivans, and pickup trucks. See Glossary for definitions of transit rail service types.
To make it easier to compare data of differing magnitudes over time on the figures, the Bureau of Transportation Statistics divided the data for all years in each category (see tables 1-21b and 1-22b/1-23b in appendix B) by the initial year value.

SOURCES: Figure 1-21—1993–1994: U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), *Highway Statistics Summary to 1995* (Washington, DC: 1997), table VM-201A. **1995–2003:** USDOT, FHWA, *Highway Statistics* (Washington, DC: Annual issues), table VM-1. **Figure 1-22**—Class I rail freight train-miles: Association of American Railroads (AAR), *Railroad Facts 2003* (Washington, DC: 2003), p. 33. **Intercity/Amtrak train-miles: 1993–2001:** Amtrak, *Amtrak Annual Report* (Washington, DC: Annual issues), statistical appendix. **2002–2003**—AAR, *Railroad Facts 2003* (Washington, DC: 2003), p. 77. **Figure 1-23**—American Public Transportation Association, *Public Transportation Fact Book, 2005* (Washington, DC: 2005), table 19.

Transportation Capital Stock

Highway-related capital stock (public highways and streets, consumer motor vehicles, and commercial truck transportation) represented the majority of the nation's transportation capital stock, $2,917 billion in 2003 (in chained 2000 dollars[1]). Public highways and streets constituted the majority (52 percent) of highway-related capital stock in 2003, as well as the largest portion (33 percent) of all transportation capital stock (figure 2-1). The combined value of capital stocks for other nonhighway-related modes of the transportation system, including rail, water, air, pipeline, and other publicly or privately owned transportation, is less than the value of consumer motor vehicles alone (figure 2-2).[2]

All transportation capital stocks, except for railroads, increased between 1993 and 2003. Highway-related capital stocks were not the fastest growing, however. The most rapid growth occurred in air transportation, which doubled over the period. In-house transportation, which can involve several modes, increased 84 percent. Consumer motor vehicles grew 64 percent; truck transportation, 52 percent; private ground passenger transportation, 38 percent; pipeline transportation, 32 percent; and water transportation, 22 percent [1].

Public highways and streets grew 21 percent, and other publicly owned transportation, which includes publicly owned airway, waterway, and transit structures, grew 25 percent over the period for which data were available. Other privately owned transportation, which includes sightseeing, couriers and messengers, and transportation support activities, grew by 4 percent from 1993 to 2003, while railroad transportation declined by 6 percent over the period.

Capital stock is a commonly used economic measure of the capacity of the transportation system. It combines the capabilities of modes, components, and owners into a single measure of capacity in dollar value. This measure takes into account both the quantity of each component (through initial investment) and its condition (through depreciation and retirements). The Bureau of Transportation Statistics has been developing data on airports, waterways, and transit systems that will enhance the available data on publicly owned capital stock.

[1] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. Current dollar amounts (available in appendix B of this report) were adjusted to eliminate the effects of inflation over time.

[2] Because the Bureau of Economic Analysis has recategorized capital stock data, the time-series data in this report differ from the capital stock data in previous editions of the *Transportation Statistics Annual Report*.

Sources

1. U.S. Department of Commerce, Bureau of Economic Analysis, *Fixed Assets and Consumer Durable Goods in the United States*, tables 3.1ES, 3.2ES, 7.1, 7.2, 8.1, and 8.2, available at http://www.bea.gov/, as of May 2005.

FIGURE 2-1 Transportation Capital Stock for Selected Modes: 1993–2003

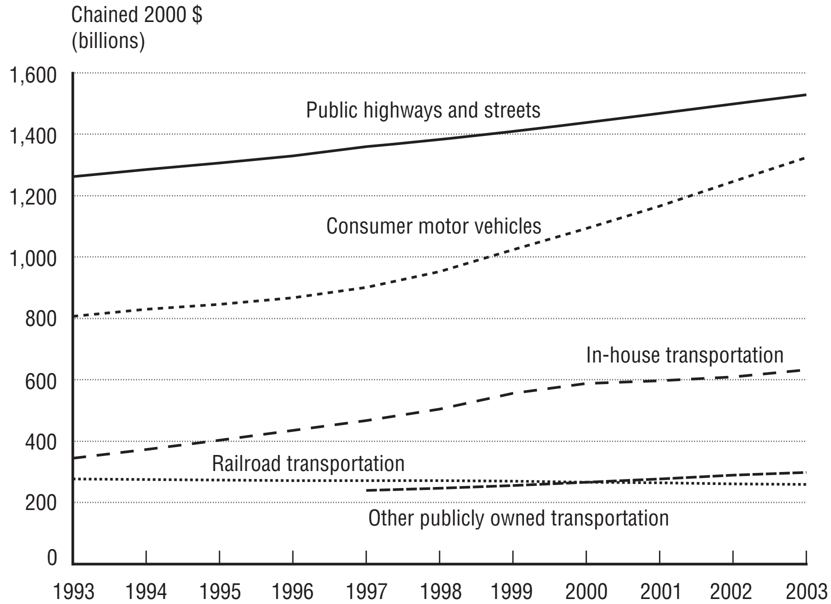
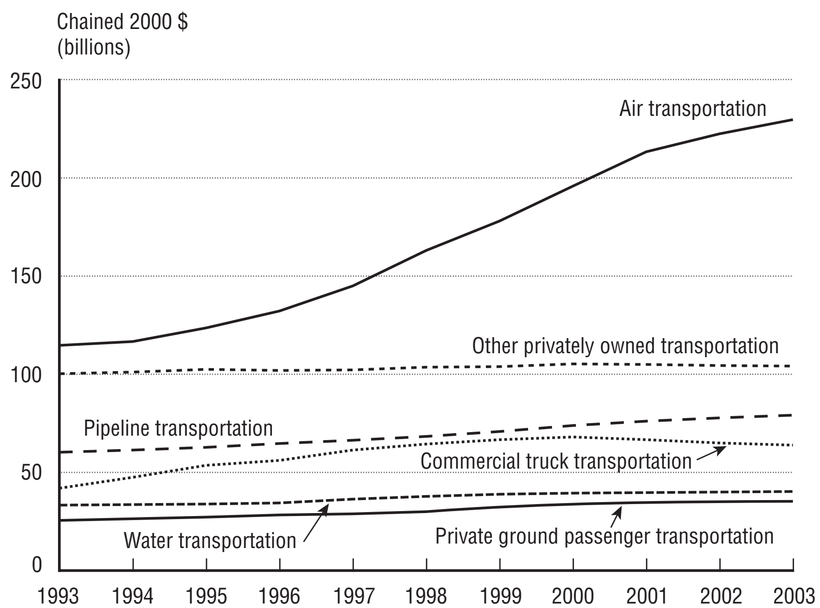


FIGURE 2-2 Transportation Capital Stock for Selected Modes: 1993–2003



NOTES: Unless otherwise noted, data include only privately owned capital stock. *Consumer motor vehicles* are considered consumer durable goods. *In-house transportation* includes transportation services provided within a firm whose main business is not transportation. For example, grocery companies often use their own truck fleets to move goods from their warehouses to their retail outlets. *Other publicly owned transportation* includes publicly owned airway, waterway, and transit structures but does not include associated equipment. *Other privately owned transportation* includes sightseeing, couriers and messengers, and transportation support activities such as freight transportation brokers. **Figure 2-1:** *Other publicly owned transportation* data prior to 1997 were not available when this report was prepared.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollar values (see tables 2-1b/2-2b in appendix B) to chained 2000 dollars.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Fixed Assets and Consumer Durable Goods in the United States,* tables 3.1ES, 3.2ES, 7.1, 7.2, 8.1, and 8.2, available at http://www.bea.gov/bea/, as of May 2005.

Highway Condition

The condition of roads in the United States improved between 1993 and 2003. For instance, the percentage of rural Interstate mileage in poor or mediocre condition declined from 35 percent in 1993 to 11 percent in 2003 (figure 2-3). Poor or mediocre urban Interstate mileage decreased from 42 to 27 percent over this period (figure 2-4).

However, while all classes of rural roads (box 2-A) have improved in recent years, the condition of urban collectors and minor arterials has declined. For instance, 28 percent of urban minor arterial mileage and 34 percent of collector mileage were rated poor or mediocre in 2003, rising from 18 percent and 21 percent, respectively, in 1998.

Just under 41 percent of all U.S. urban and rural roads were in good or very good condition in 2003, while approximately 18 percent were in poor or mediocre condition. The rest were in fair condition.[1] In general, rural roads are in better condition than urban roads. In 2003, for instance, 30 percent of urban road-miles were classified as poor or mediocre compared with only 14 percent of rural-miles [1].

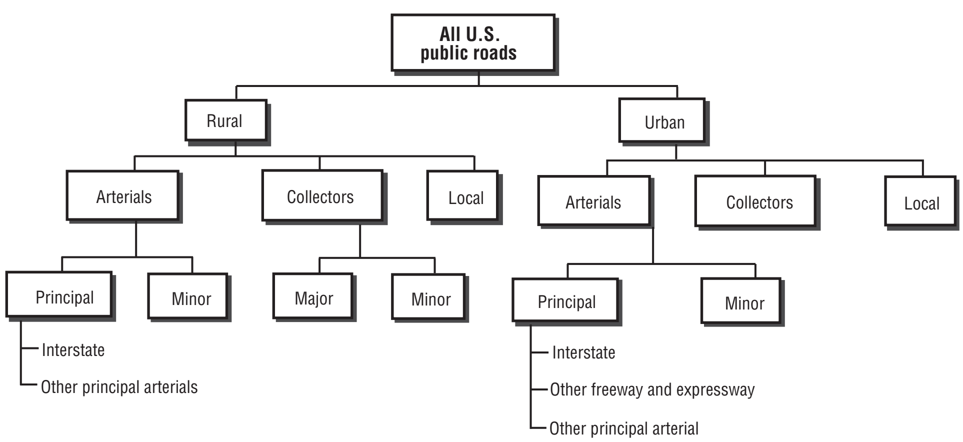
Source

1. U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004), table HM-64.

[1] These percentages include all classes of roads except local roads or minor collector roads.

BOX 2-A Highway Functional Classification System

The Federal Highway Administration classifies roads according to the type of service provided and the type of area (urban or rural). There are three main types of roads: 1) arterials that provide the highest level of mobility for longer, uninterrupted trips; 2) collectors that collect and distribute traffic from the arterial network and connect with local roads; and 3) local roads that provide direct access to residences and businesses.



SOURCES: U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA) and Federal Transit Administration, *1999 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance* (Washington, DC: 2000). USDOT, FHWA, *Our Nation's Highways: Selected Facts and Figures 1998* (Washington, DC: 1998).

FIGURE 2-3 Rural Roads in Poor or Mediocre Condition by Functional Class: 1993–2003

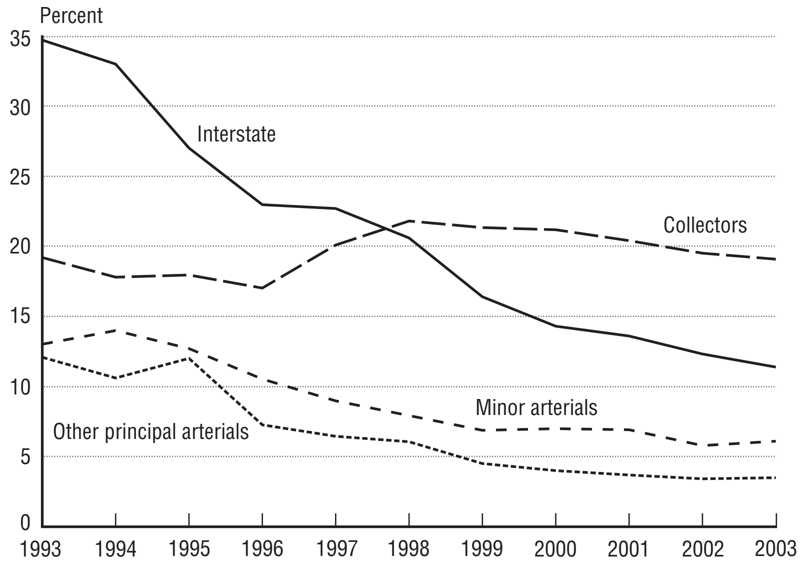
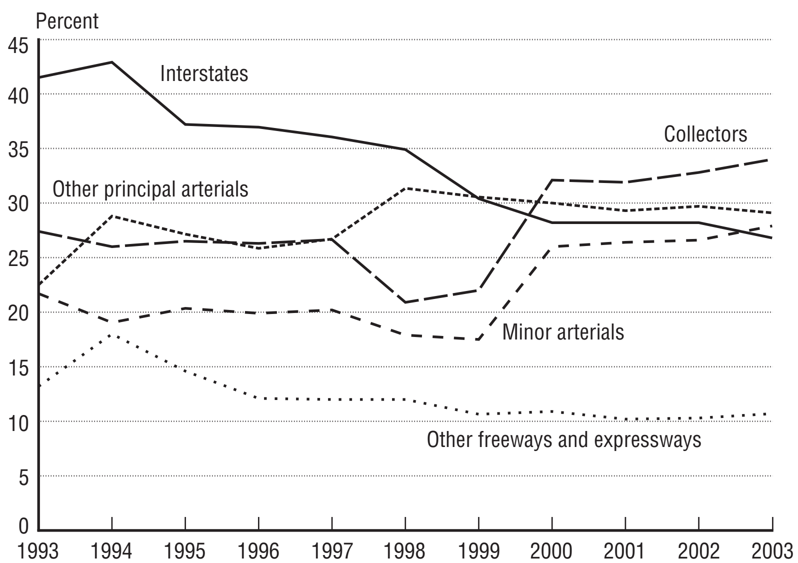


FIGURE 2-4 Urban Roads in Poor or Mediocre Condition by Functional Class: 1993–2003



NOTES: Data are for the 50 states and the District of Columbia. The terms *poor* and *mediocre* as used here are Federal Highway Administration pavement condition criteria term categories for quantitative International Roughness Index and Present Serviceability Ratings (see tables 2-3 and 2-4 in appendix B)

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004,* table 1-26, available at http://www.bts.gov/, as of January 2005.

Bridge Condition

The condition of bridges nationwide has improved markedly since the early 1990s. Of the 590,853 roadway bridges in 2003, the Federal Highway Administration found that 14 percent were structurally deficient and 14 percent were functionally obsolete. About 33 percent of all bridges in 1993 were either structurally deficient or functionally obsolete [1].

Structurally deficient bridges are those that are restricted to light vehicles, require immediate rehabilitation to remain open, or are closed. Functionally obsolete bridges are those with deck geometry (e.g., lane width), load carrying capacity, clearance, or approach roadway alignment that no longer meet the criteria for the system of which the bridge is a part.[1] While the number of structurally deficient bridges steadily declined between 1993 and 2003, the number of functionally obsolete bridges remained constant (figure 2-5).

[1] Structurally deficient bridges are counted separately from functionally obsolete bridges even though most structurally deficient bridges are, by definition, functionally obsolete.

In general, bridges in rural areas suffer more from structural deficiencies than functional obsolescence (particularly on local roads), whereas the reverse is true for bridges on roads in urban areas (figure 2-6 and figure 2-7). A large number of problem bridges nationwide are those supporting local rural roads: 118,381 of the 160,659 deficient and obsolete bridges in 2003 (74 percent) were rural local bridges. Problems are much less prevalent on other parts of the highway network. Nevertheless, in 2003, 26 percent of rural Interstate bridges and 16 percent of urban Interstate bridges were deficient or obsolete.

Source

1. U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, Bridge Division, National Bridge Inventory database, available at http://www.fhwa.dot.gov/bridge/, as of January 2005.

FIGURE 2-5 Structurally Deficient and Functionally Obsolete Bridges: All Roadways, 1993–2003

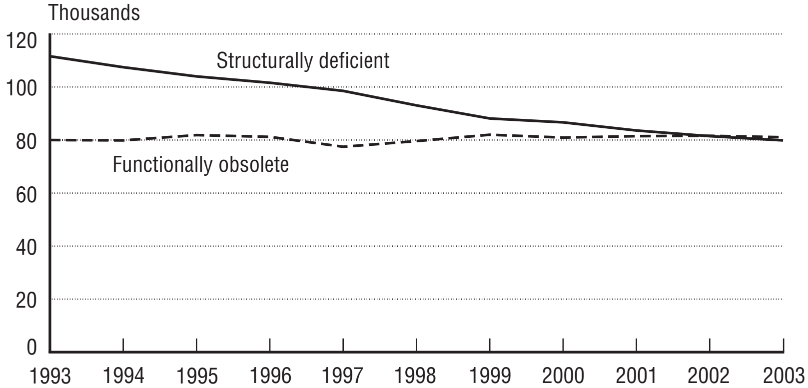


FIGURE 2-6 Rural Bridge Condition by Functional Class: 2003

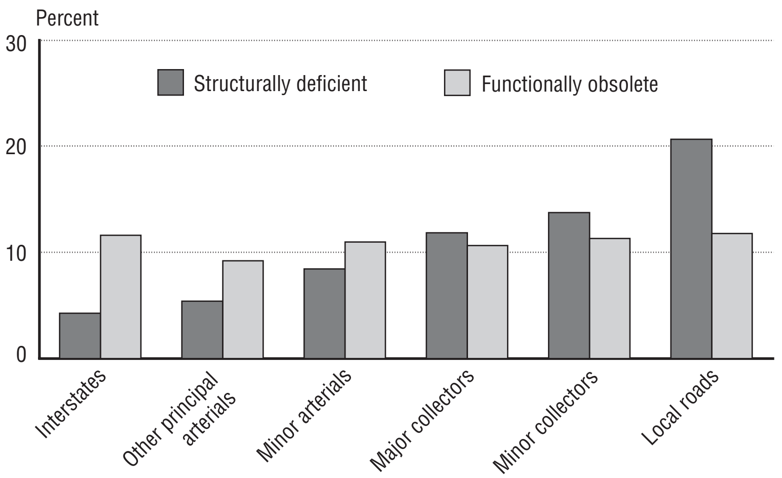
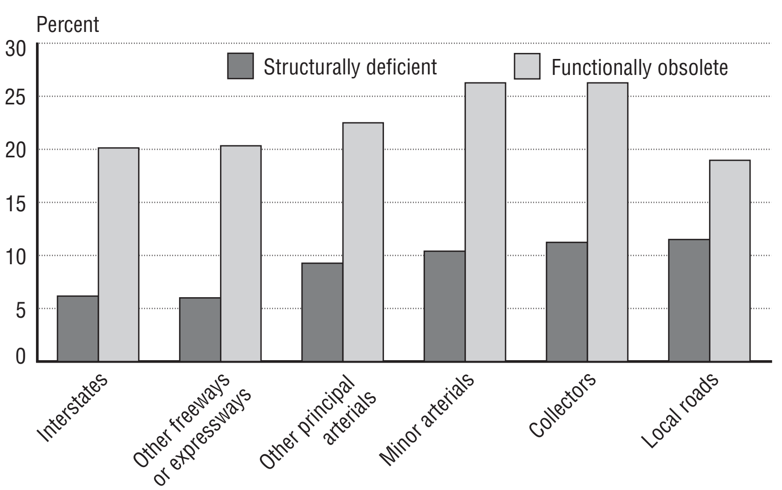


FIGURE 2-7 Urban Bridge Condition by Functional Class: 2003



NOTES: *Functionally obsolete* refers to bridges that do not have the lane widths, shoulder widths, or vertical clearances adequate to serve traffic demand or bridges that may not be able to handle occasional roadway flooding. *Structurally deficient* refers to bridges needing significant maintenance attention, rehabilitation, or replacement.

SOURCES: Figure 2-5—U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), Office of Engineering, Bridge Division, National Bridge Inventory Database, available at http://www.fhwa.dot.gov/bridge/, as of January 2005. **Figures 2-6 and 2-7**—USDOT, FHWA, Office of Engineering, Bridge Division, *National Bridge Inventory Database*, CD-ROM, January 2005.

Airport Runway Conditions

Airport runway conditions stayed about the same at the nation's major public-use airports (box 2-B) between 1997 and 2004[1] [1, 2]. At the nation's commercial service airports, pavement in poor condition remained at 2 percent from 1997 through 2004 (figure 2-8). At the larger group of National Plan of Integrated Airport Systems (NPIAS) airports, the Federal Aviation Administration (FAA) found poor conditions on 4 percent of runways in 2004, down from 5 percent in 1997 (figure 2-9).

FAA inspects runways at public-use airports and classifies runway condition as good, fair, or poor. A runway is classified as good if all cracks and joints are sealed. Fair condition means there is mild surface cracking, unsealed joints, and slab edge spalling.[2] Runways are in poor condition if there are large open cracks, surface and edge spalling, and/or vegetation growing through cracks and joints [2].

BOX 2-B Classification of Airports in the United States

There were nearly 20,000 airports[1] in the United States, with about 5,300 of these open to the public and known as public-use airports, as of January 2004. The Federal Aviation Administration includes about 3,400 existing public-use airports in its National Plan of Integrated Airport Systems (NPIAS). The NPIAS includes both commercial and general aviation airports that are eligible to receive grants under the Airport Improvement Program. Commercial service airports are defined as public airports receiving scheduled passenger service with at least 2,500 enplaned passengers per year. These airports handle the vast majority of enplanements in the United States. In 2004, there were 513 commercial service airports.

Source

U.S. Department of Transportation, Federal Aviation Administration, National Planning Division, personal communication, Feb. 22, 2005.

[1] Includes civil and joint-use civil-military airports, heliports, STOL (short take off and landing) ports, and seaplane bases in the United States and its territories.

Sources

1. U.S. Department of Transportation, Federal Aviation Administration, National Planning Division, personal communication, February 2005.

2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-24, available at http://www.bts.gov/, as of January 2005.

[1] Data on airport runway conditions do not exist for 1994 to 1996 or for 1998.

[2] Spalling refers to chips, scales, or slabs breaking off of surface pavement.

FIGURE 2-8 Runway Pavement Condition of Commercial Service Airports: 1997–2004

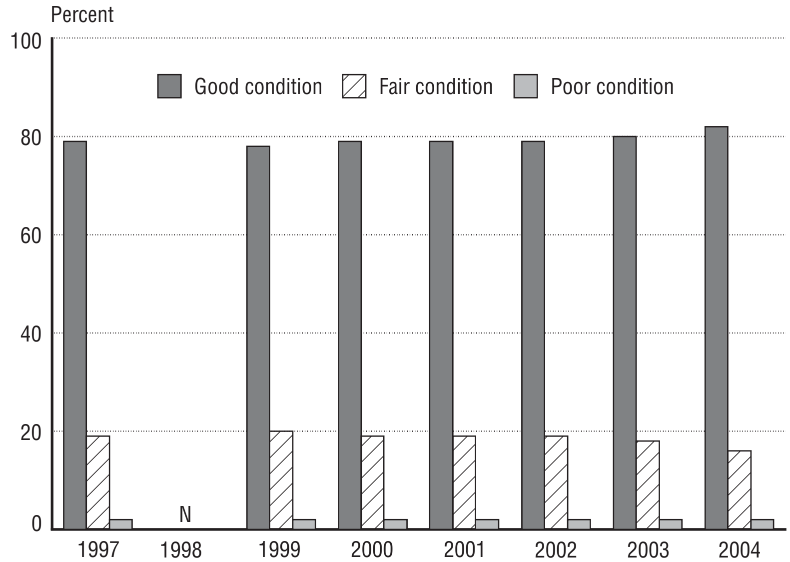
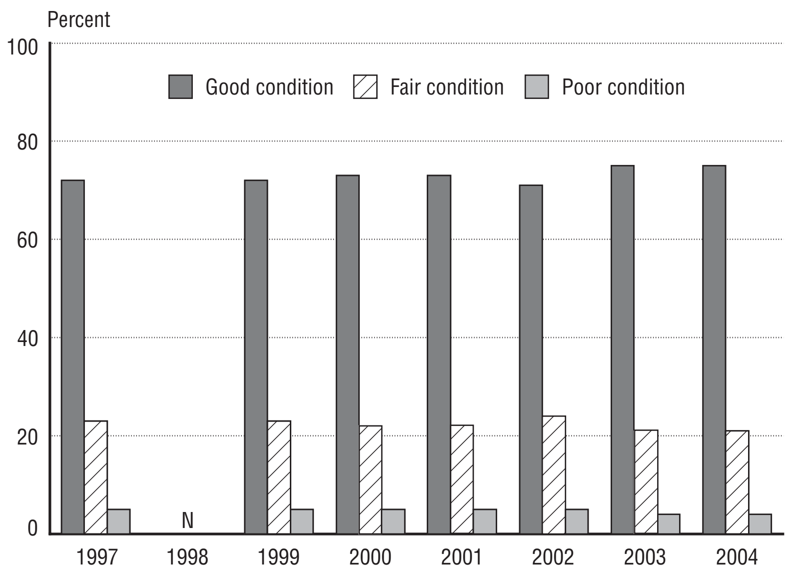


FIGURE 2-9 Runway Pavement Conditions of NPIAS Airports: 1997–2004



KEY: N = data are nonexistent; NPIAS = National Plan of Integrated Airport Systems.

NOTES: See box 2-B on the facing page for definitions of NPIAS and commercial service airports. NPIAS airports data include commercial service airports.

SOURCES: 1997–2003—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004,* table 1-24, available at http://www.bts.gov/, as of January 2005. **2004**—USDOT, Federal Aviation Administration, National Planning Division, personal communication, February 2005.

Age of Highway and Transit Fleet Vehicles

The median age of the automobile fleet in the United States increased, by 19 percent, from 7.5 years in 1994 to 8.9 years in 2004. The median age of the truck fleet,[1] by contrast, began to increase in the early 1990s but has declined since 1997 as the purchase of light trucks increased (figure 2-10). As a result, the truck median age of 6.6 years in 2004 is less than its 7.5 years in 1994 [1].

The age of transit vehicle fleets varies by transit and vehicle type and tends to fluctuate (figure 2-11). The average age of heavy-rail passenger cars and ferryboats increased 7 percent and 10 percent, respectively, between 1993 and 2003. By contrast, the average age of full-size transit buses decreased 14 percent [1].

[1] This includes all truck categories: light, heavy, and heavy-heavy.

The age of fleets as a measure of condition is not very precise. Because of the different characteristics of vehicle fleets across the modes—some serving freight and others passengers, some owned predominantly by businesses, and others by individuals—the measure varies widely.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, tables 1-25 and 1-28, available at http://www.bts.gov/, as of June 2005.

FIGURE 2-10 Median Age of Cars and Trucks: 1994–2004

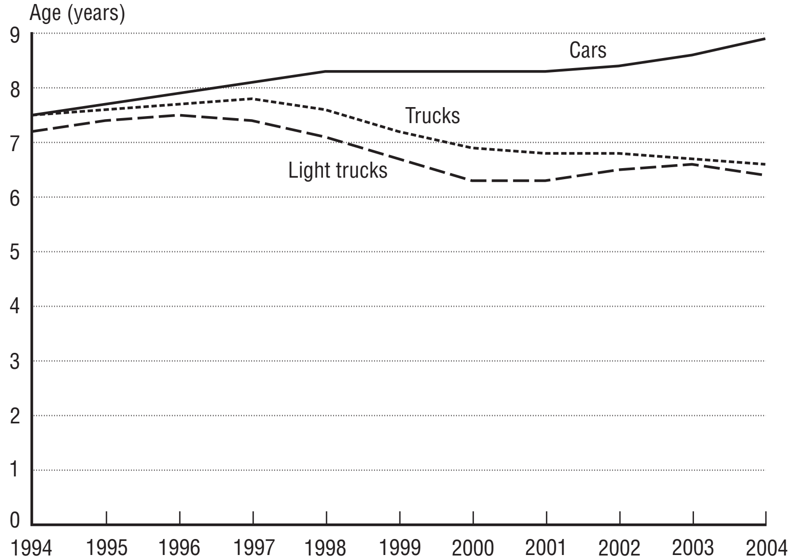
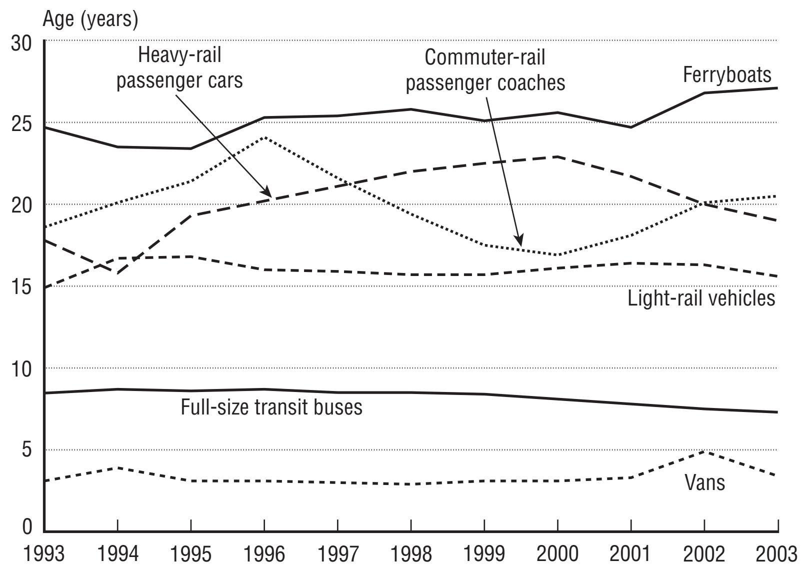


FIGURE 2-11 Average Age of Selected Transit Vehicles: 1993–2003



NOTES: Figure 2-10—*Trucks* represents all types of trucks, including light trucks (sport utility vehicles, vans, and pickup trucks), heavy trucks, and heavy-heavy trucks. **Figure 2-11**—*Full-size transit buses* have more than 35 seats.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005,* tables 1-25 and 1-28, available at http://www.bts.gov/, as of June 2005.

Age of Rail, Aircraft, and Maritime Vessel Fleets

The average age of Amtrak locomotives and passenger train cars fluctuated in a narrow range for most of the 1990s (figure 2-12). The average age of locomotives was 14 years in fiscal year 2001, up 8 percent from 13 years in fiscal year 1991. Meanwhile, the age of Amtrak railcars dropped from 21 to 19 years over this period. Of the 20,744 Class I freight locomotives in service in 2003, 33 percent were built before 1980, 17 percent between 1980 and 1989, and 50 percent from 1990 onwards [1].

Over 32 percent of the U.S.-flag vessel fleet (almost 13,000 vessels) was 25 years old or more in 2003, up from 19 percent (over 7,500 vessels) in 1993 [2]. However, during the same period, the percentage of the fleet less than 6 years old grew from 11 percent (more than 4,300 vessels) to 16 percent (nearly 6,400 vessels). Of the various components of the fleet, the offshore support fleet was one of the youngest in 2003 with 20 percent of its vessels under 6 years old and 24 percent over 25 years old. The towboat fleet had the highest proportion of older ships (60 percent) in 2003 (figure 2-13).

The average age of U.S. commercial aircraft was 12 years in 2002, up from 11 years in 1992 (figure 2-14). Commercial airlines are air carriers providing scheduled or nonscheduled passenger or freight service, including commuter and air taxi on-demand services. Major airlines—those with $1 billion or more in annual revenues—accounted for 78 percent of commercial aircraft in 2002 [3]. These aircraft were approximately one year younger on average than all commercial aircraft during the 1990s, but the gap narrowed in 2001, and by 2002 the average age of both categories was the same (12 years).

Sources

1. Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), pp. 49–50.
2. U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), *National Transportation Statistics 2005*, table 1-31, available at http://www.bts.gov/, as of June 2005.
3. ______. calculations using data from USDOT, BTS, Form 41, Schedule B-43, 1992–2002.

FIGURE 2-12 Average Age of Amtrak Locomotive and Car Fleets: Fiscal Years 1991–2001

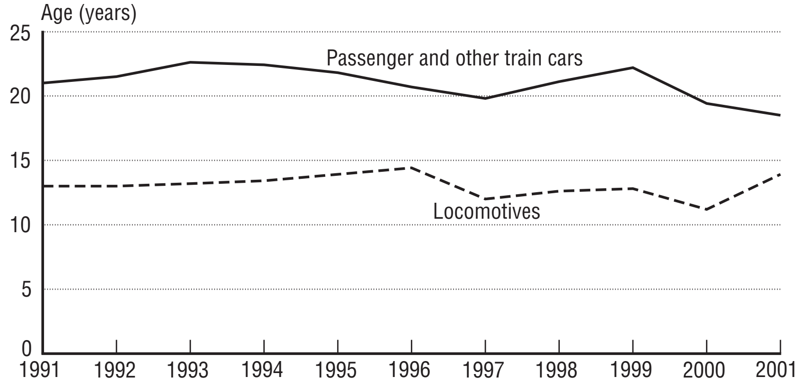


FIGURE 2-13 Age of U.S Flag Vessels by Type: 2003

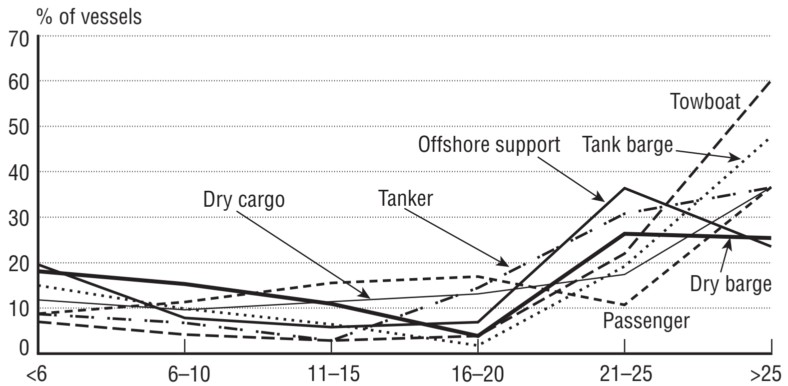
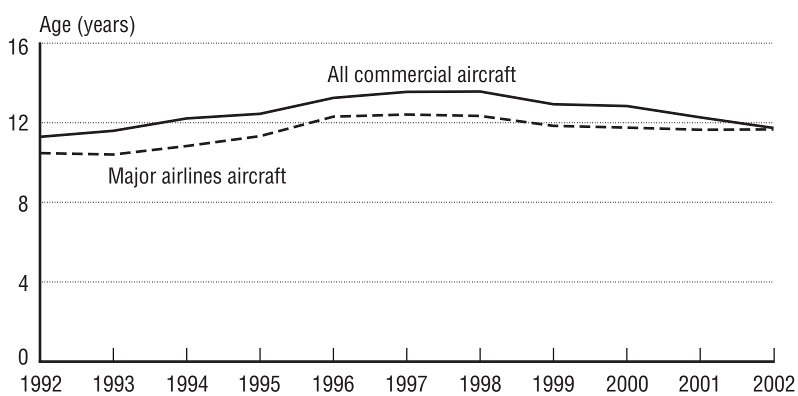


FIGURE 2-14 Average Age of U.S. Commercial Aircraft: 1992–2002



NOTES: Figure 2-13—*Offshore support* includes crewboats. **Figure 2-14**–*Commercial aircraft* are aircraft of air carriers providing scheduled or nonscheduled passenger or freight service, including commuter and air taxi on-demand services. *Major airlines* includes only commercial airlines with operating revenues greater than $1 billion annually. See table 2-14 notes in appendix B for additional information.

SOURCES: Figure 2-12—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), *National Transportation Statistics 2003*, table 1-30, available at http://www.bts.gov/, as of March 2004. **2001 data**—USDOT, BTS, calculations using data provided by Amtrak, personal communication, March 2004. **Figure 2-13**—USDOT, BTS, *National Transportation Statistics 2005*, table 1-31, available at http://www.bts.gov/, as of June 2005. **Figure 2-14**—USDOT, BTS, calculations using data from USDOT, BTS, Form 41, Schedule B-43, 1992–2002.

Transportation Fatality Rates

There were about 44,900 fatalities related to transportation in 2003—15.4 fatalities per 100,000 U.S. residents.[1] This is the same rate as in 1993, when there were about 42,800 deaths [1, 3]. Approximately 95 percent of all transportation fatalities in 2003 were highway-related. Most of these people who died were occupants of passenger cars or light trucks (including pickup trucks, sport utility vehicles, and minivans). Air, rail, transit, water, and pipeline transportation result in comparatively few deaths per capita (box 3-A). For instance, railroad incidents resulted in 0.3 deaths per 100,000 residents in 2003[2] (figure 3-1).

Overall, highway safety remained about the same between 1993 and 2003 when compared with the size of the population. There were 14.7 fatalities per 100,000 residents each year over the entire period. Fatality rates declined 19 percent for occupants of passenger cars but increased 31 percent for occupants of light trucks between 1993 and 2003 (figure 3-2). (This is a period during which the number of registered light trucks increased from 60 million to 87 million [2].) Motorcyclist fatalities per 100,000 residents have been rising since 1998. Pedestrian and pedalcyclist fatality rates (at 1.6 and 0.2, respectively in 2003) have declined the most (down 25 percent and 32 percent, respectively) since 1993.

BOX 3-A Fatality Data

Each transportation mode tends to define *fatality* differently (e.g., death within 30 days of injury) and may generate its fatality data using different methods. Therefore, comparisons across modes should be viewed very carefully. For further information on modal fatality definitions, see the glossary section of this report.

Similar trends in highway fatality rates are apparent when the rate is based on vehicle-miles of travel (vmt). Passenger car occupant fatalities per 100 million vmt declined 25 percent between 1993 and 2003, while light-truck occupant fatalities per 100 million vmt rose 9 percent (figure 3-3). The motorcyclist fatality rate grew 55 percent during the period. After falling from 25 fatalities per 100 million vmt in 1993 to 21 fatalities per 100 million vmt in 1997, motorcyclist fatalities grew to 38 per 100 million vmt in 2003.[3]

Sources

1. U.S. Department of Commerce, U.S. Census Bureau, *Monthly Population Estimates for the United States*, available at http://www.census.gov/, as of December 2004.
2. U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995* and *Highway Statistics 2003* (Washington DC: 1997 and 2004), tables VM-201A and VM-1.
3. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, table 2-1, available at http://www.bts.gov, as of August 2005.

[1] This total fatality rate has not been adjusted for double counting across modes because detailed data needed to do so were not available at the time this report was prepared. See table 3-1 in appendix B for further information on double-counting impacts.

[2] This calculation includes fatalities occurring at highway-rail grade crossings.

[3] Because of their magnitude, these motorcycle data are not shown in figure 3-3 (see table 3-3 in appendix B).

FIGURE 3-1 Transportation Fatality Rates by Selected Mode: 2003

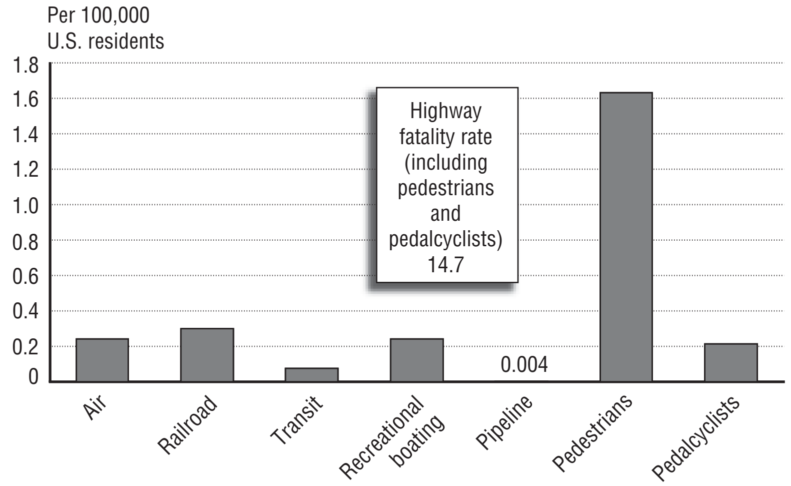


FIGURE 3-2 Highway Fatalities per 100,000 Residents for Selected Vehicle Types: 1993–2003

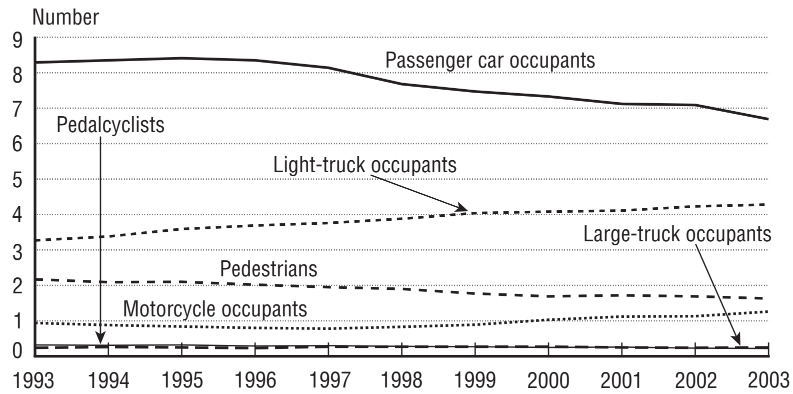
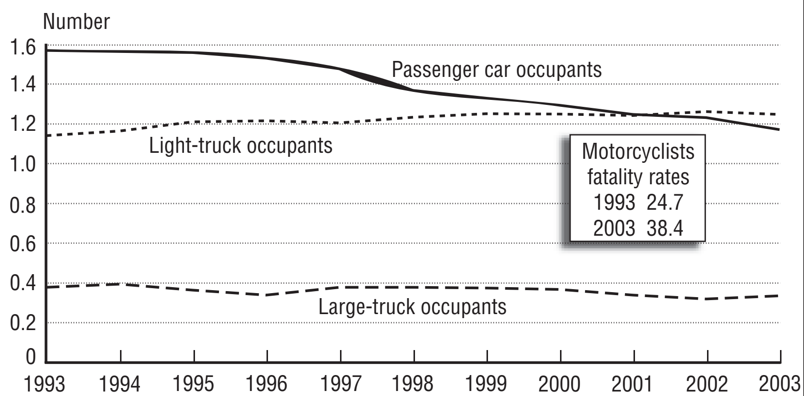


FIGURE 3-3 Highway Fatalities per 100 Million Vehicle-Miles for Selected Vehicle Types: 1993–2003



NOTES: Figure 3-1—See note on table 3-1 in appendix B regarding double counting. **Figures 3-2 and 3-3**—Large trucks are defined as trucks over 10,000 pounds gross vehicle weight rating (GVWR), including single-unit trucks and truck tractors. Light trucks are defined as trucks of 10,000 pounds GVWR or less, including pickup trucks, vans, truck-based station wagons, and sport utility vehicles.

SOURCES: Fatalities—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005,* table 2-1, available at http://www.bts.gov/, as of August 2005. **Population**—U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States,* section 1, table 2, available at http://www.census.gov/, as of May 2005.

Transportation Injury Rates

Each year a far larger number of people are injured than killed in transportation-related accidents. Over 2.9 million people suffered some kind of injury involving passenger and freight transportation in 2003 (box 3-B). Most of these injuries, 99 percent, resulted from highway crashes[1] [1, 2].

Highway injury rates vary by the type of vehicle used (figure 3-4). In 2003, 67 passenger car occupants were injured per 100 million passenger-miles of travel (pmt) compared with 51 injured light-truck occupants. Occupants of large trucks and buses are less likely to sustain an injury per mile of travel. Motorcycle riders are, by far, the most likely to get hurt.

Injury rates for some highway modes declined between 1993 and 2003.[2] However, rates for light-truck occupants rose 7 percent, from 48 per 100 million pmt in 1993 to 51 per 100 million pmt in 2003 (figure 3-5). Motorcycling became safer in terms of injuries per mile ridden until 1999; but since then, the injury rate increased from 429 per 100 million pmt to 554 per 100 million pmt by 2003. Bus injuries have fluctuated between 10 per 100 million pmt and 15 per 100 million pmt.

BOX 3-B Injury Data

Each transportation mode tends to define *injury* differently. In addition, each mode may generate its injury data using different methods. Therefore, comparisons across modes should be viewed very carefully. For further information on modal injury definitions, see the glossary section of this report.

In the following pages, another source of highway injury data—the National Electronic Injury Surveillance System operated by the U.S. Consumer Product Safety Commission—results in yet another set of highway injury data that differs from modal data presented here.

Sources

1. U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2003* (Washington DC: 2004), table VM-1.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, table 2-2, available at http://www.bts.gov/, as of August 2005.

[1] There is the potential for some double counting involving highway-rail grade-crossing and transit bus data.

[2] Bicycling, walking, and boating (including recreational boating) are excluded, because there are no national annual trend data estimates of pmt for these forms of transportation.

FIGURE 3-4 Injury Rates for Occupants of Highway Vehicles and Motorcycles: 2003

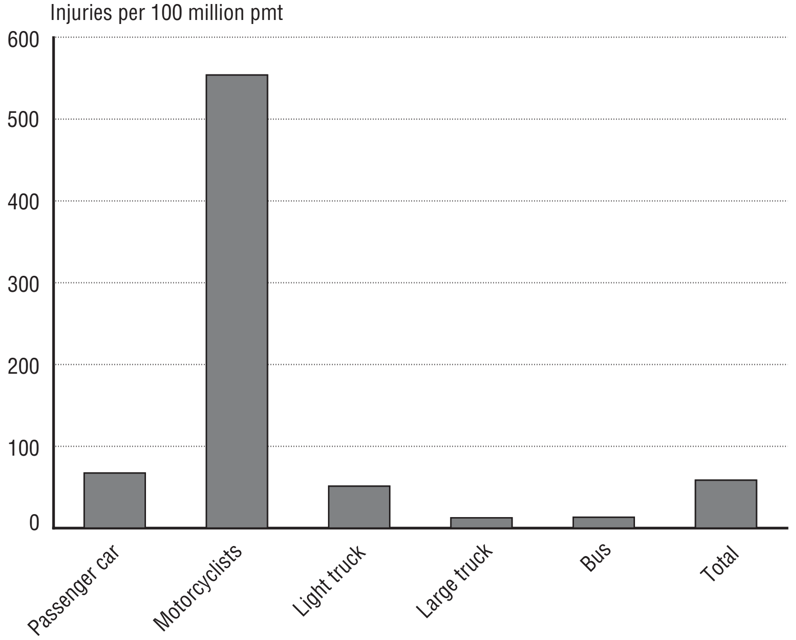
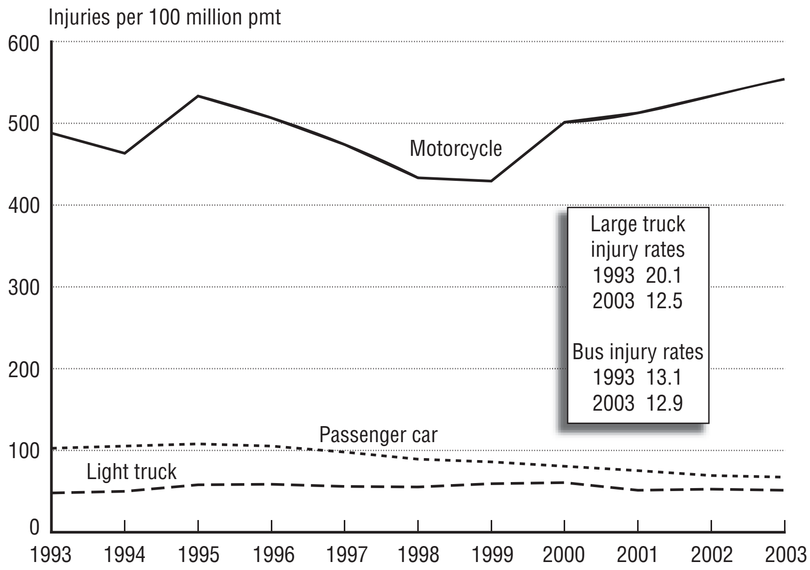


FIGURE 3-5 Injury Rates for Occupants of Selected Highway Vehicles and Motorcycles: 1993–2003



KEY: pmt = passenger-miles of travel.

NOTES: Bus and large-truck occupant injury rates for 1993–2003 are included in table 3-5 in appendix B. Pedestrian and pedalcyclist data are not included because pmt data are not available.

SOURCES: Injuries—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005,* table 2-2, available at http://www.bts.gov/, as of August 2005. **Pmt**—USDOT, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004).

Motor Vehicle-Related Injuries

There were an estimated 3.6 million motor vehicle-related injuries in the United States in 2003, according to data reported to the U.S. Consumer Product Safety Commission (CPSC)[1] (box 3-C) [1]. An estimated 3.3 million of these injuries involved motor vehicle occupants. The rest involved about 133,000 motorcyclists, 127,000 pedestrians, and 59,000 pedalcyclists.

More females than males were treated for minor injuries in 2003 across most age groups (figure 3-6). The 20 to 24 age group sustained almost 494,000 minor motor vehicle-related injuries, 53 percent of them by females. For serious injuries, more males than females were treated across all age groups up to about 75 years (figure 3-7). Again, serious injuries spiked at ages 20 to 24, but male injuries spiked substantially higher. This age group incurred over 41,000 serious injuries in 2003, 62 percent of which happened to males.

In summary, there were sharp peaks in injuries associated with youth: for motor vehicle occupants and motorcyclists, the peak spanned ages 15 to 24; for pedalcyclists and pedestrians, the peak spanned ages 10 to 14. Young males exhibited a substantially greater peak in serious injuries than young females. In addition, the percentage of injuries classified as serious was greater for motorcyclists (20 percent of all motorcyclist injuries were serious), pedestrians (18 percent), and pedalcyclists (13 percent) than it was for motor vehicle occupants (7 percent) (figure 3-8).

[1] Because of methodological and other differences, motor vehicle-related injury data from CPSC differ from those estimated by the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation. For 2003, NHTSA reported an estimated 2.9 million highway injuries [2].

BOX 3-C National Electronic Injury Surveillance System (NEISS) Data

Use of NEISS data from the U.S. Consumer Product Safety Commission (CPSC) enables analyses of injuries by factors such as age and gender, type of vehicle, and severity of injuries sustained. NEISS data are a probability sample of reports from hospital emergency rooms in the United States and territories open 24 hours a day with at least 6 beds. Each hospital has a computer linked to CPSC headquarters. Staff consistently computer code information in emergency room medical reports, which allows injuries to be analyzed and compared within and across transportation modes and over time. Physicians diagnose injuries, specify injured body part(s), determine disposition, and give other detailed medical information. NEISS data cannot estimate injuries treated at sites other than hospital emergency rooms (e.g., HMOs, physician's offices, and onsite medical facilities) and do not include investigative information aside from emergency room medical reports.

This analysis is the second update of a Bureau of Transportation Statistics comprehensive study originally conducted using 2001 data from the CPSC's National Electronic Injury Surveillance System.[2]

Sources

1. U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance System (NEISS), available at http://www.cpsc.gov/about/clrnghse.html, as of February 2005.
2. U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 2003*, available at http://www.nhtsa.dot.gov/, as of March 2005.

[2] For details on 2001 and 2002 motor vehicle-related injuries, see October 2003 and September 2004 editions of *Transportation Statistics Annual Report*, available at http://www.bts.gov/, as of March 2005.

FIGURE 3-6 Minor Motor Vehicle-Related Injuries by Age and Gender: 2003

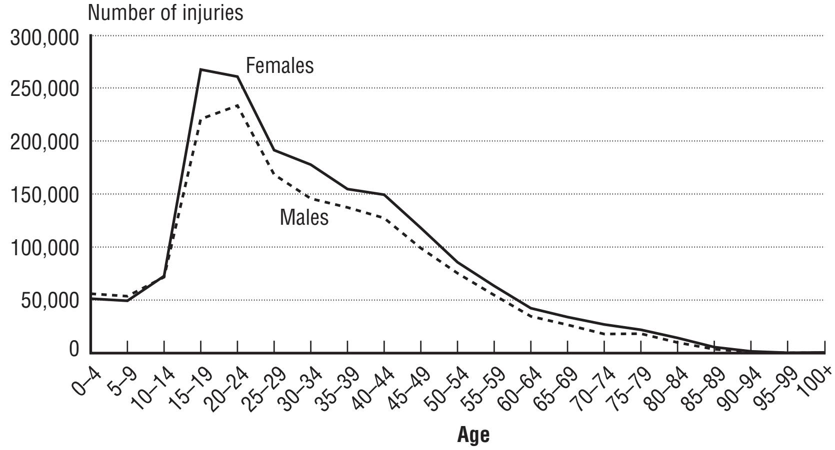


FIGURE 3-7 Serious Motor Vehicle-Related Injuries by Age and Gender: 2003

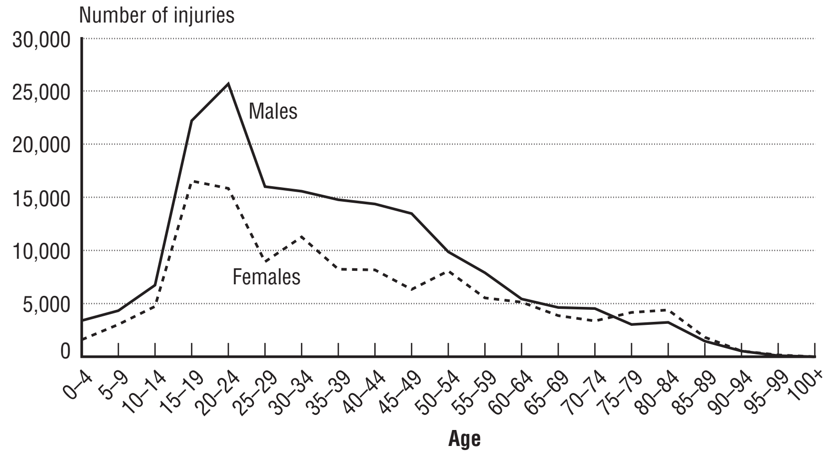
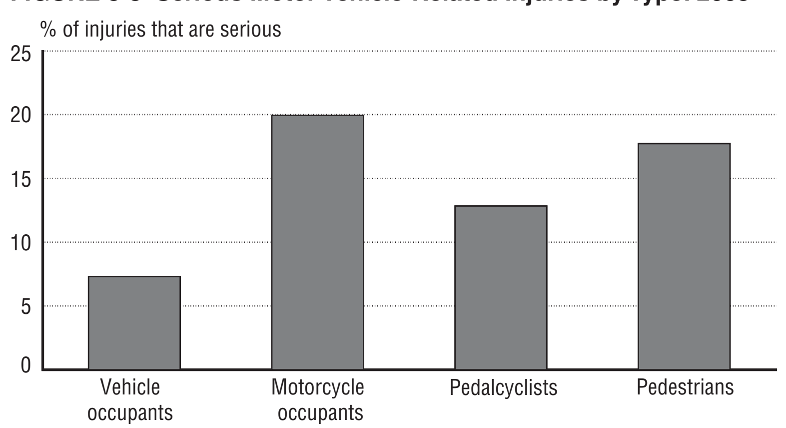


FIGURE 3-8 Serious Motor Vehicle-Related Injuries by Type: 2003



NOTES: *A minor injury* is one in which the victim was treated and released. A *serious injury* is one in which the victim was either hospitalized or treated and transferred to another facility, was dead on arrival, or died in the emergency room. A *pedalcyclist* is a person on a vehicle that is powered solely by pedals. **Figures 3-6 and 3-7**—Injuries for which age and sex were unknown or unrecorded in the original data are not included. See tables 3-6 and 3-7 in appendix B for further details. **Figure 3-8**—Data are the share of injuries that were serious for one person type (e.g., the share of seriously injured pedestrians of all injured pedestrians).

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance (NEISS) System, March 2005.

Highway-Railroad Grade-Crossing Accidents

There were 3,045 collisions between trains and highway users in 2004, of which 319 involved at least one fatality (figure 3-9). These 319 fatal accidents resulted in 368 fatalities, 41 percent of the 896 rail-related fatalities in 2004[1] [2, 3]. The geographic distribution of fatal accidents, such as the cluster around Chicago, is associated with a high number of highway-railroad grade crossings.

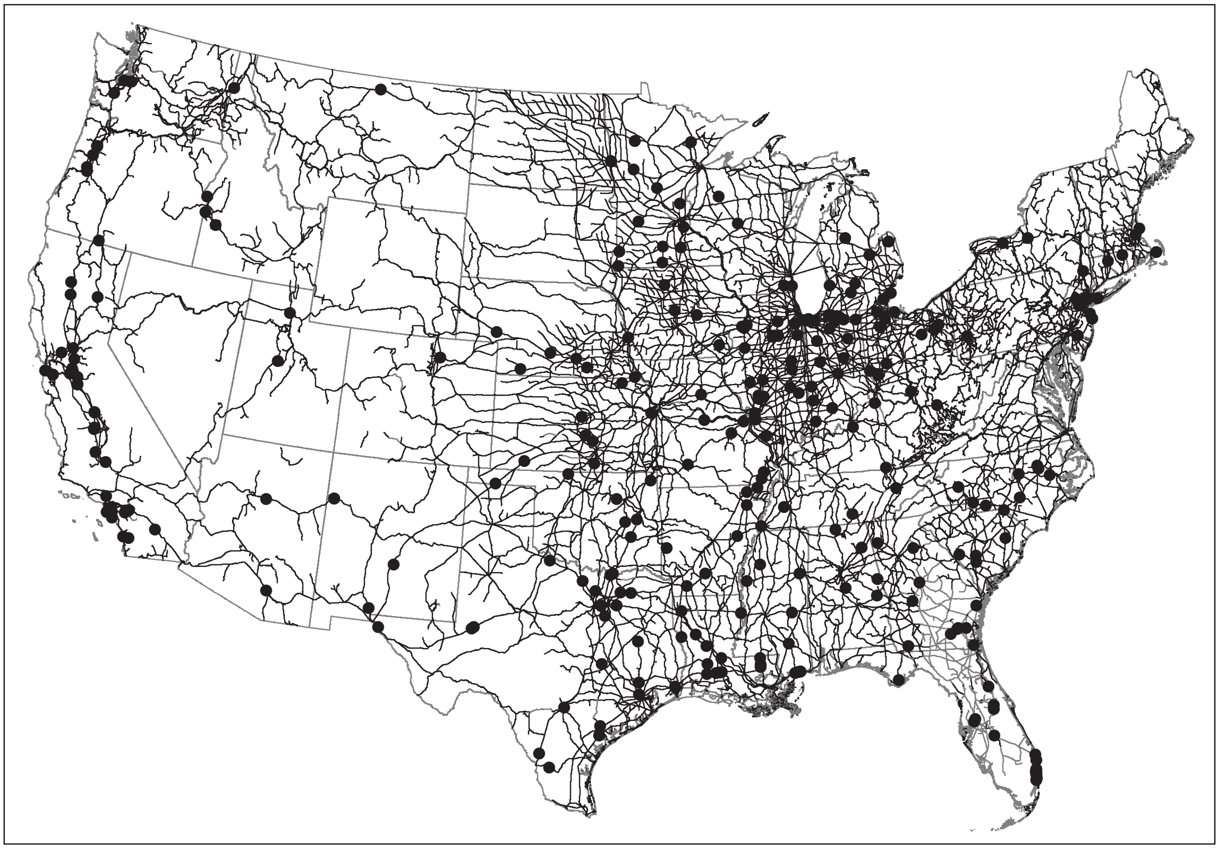
Despite an increase in both motor vehicle traffic and rail traffic, safety at highway-railroad grade-crossings has improved markedly since the mid-1970s. Enhanced safety reflects grade-crossing improvements, such as gates and warning signals. The reduction in the number of accidents is also related to public education campaigns, better warning lights on trains, and fewer crossing opportunities. The number of highway-rail crossings declined by more than 30 percent between 1975 and 2004 as a result of grade separation projects, crossing consolidation, and railroad track abandonment [1].

[1] At the time this report was prepared, these 2004 data were preliminary.

Sources

1. Shannon Mok and Ian Savage, "Why has Safety Improved at Rail-Highway Grade Crossings?" *Risk Analysis* (forthcoming).
2. U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis, Highway-Rail Crossings, available at http://safetydata.fra.dot.gov/officeofsafety/, as of June 2005.
3. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, table 2-1, available at http://www.bts.gov/, as of August 2005.

FIGURE 3-9 Highway-Rail Grade-Crossing Fatal Accident Locations: 2004



NOTE: Of the 319 grade-crossing fatal accidents, 23 could not be displayed on this map due to incomplete information.

SOURCE: U.S. Department of Transportation, Federal Railroad Administration, Highway-Rail Crossing Database Files and Accident Data on Demand, available at https://safetydata.fra.dot/gov/, as of May 2005.

General Aviation Safety

There were 556 U.S. fatalities in 2004 caused by general aviation, amounting to 88 percent of all aviation fatalities in the United States [1]. However, general aviation has become safer between 1994 and 2004. Despite a 16 percent increase in general aviation flight hours during the period, fatalities declined by 24 percent (figure 3-10). In 1994, there were 3.3 general aviation fatalities for every 100,000 flight hours (figure 3-11). By 2004, that rate had fallen to 2.2 per 100,000 flight hours. The total number of general aviation accidents and fatal accidents declined from 1994 to 2004 by 20 and 23 percent, respectively (figure 3-12).

The National Transportation Safety Board (NTSB) often establishes more than one cause or factor to an aviation accident using three broad categories: personnel, environment, and aircraft. There were 1,758 general aviation accidents in 2000[1] for which NTSB has established causes. Personnel was cited as a cause or factor in 89 percent of those accidents, environment was cited in 45 percent, and the aircraft in 29 percent. Within the broad categories: the pilot was responsible in 95 percent of accidents where personnel was the cause or factor, weather was attributed to 47 percent of accidents where the environment was a factor,[2] and in accidents where the aircraft was a factor, 47 percent of the time it could be attributed to the powerplant/propulsion system [2].

Runway incursions are another safety concern in general aviation. Of the 1,804 runway incursions between 1999 and 2003, just fewer than 75 percent of them involved general aviation aircraft. The rate of runway incursions involving general aviation aircraft per million operations increased from 6.0 in 1999, reaching a 5-year high in 2001 at 8.3 runway incursions per million operations. The rate fell back to 6.2 runway incursions per million operations in 2003 [4].

[1] At the time this report was prepared, 2000 was the most recent year for which these data were available.

[2] NTSB specifically studied weather as a factor in general aviation accidents from 1991 to 2001. The board found that 21 percent of these accidents were weather related [3].

Sources

1. National Transportation Safety Board, *Aviation Accident Statistics*, tables 5, 8, 9, and 10, available at http://www.ntsb.gov/aviation/, as of July 2005.
2. ______. *Aviation Statistical Reports, Annual Review of Aircraft Accident Data* (Washington, DC: 2004), also available at http://www.ntsb.gov/, as of March 2005.
3. U.S. Department of Transportation, Federal Aviation Administration, *NASDAC Review of NTSB Weather-Related Incidents*, available at https://www.nasdac.faa.gov/, as of March 2005.
4. ______. *Runway Safety Report* (Washington, DC: Annual issues), also available at http://www.faa.gov/, as of March 2005.

FIGURE 3-10 General Aviation Fatalities: 1994–2004

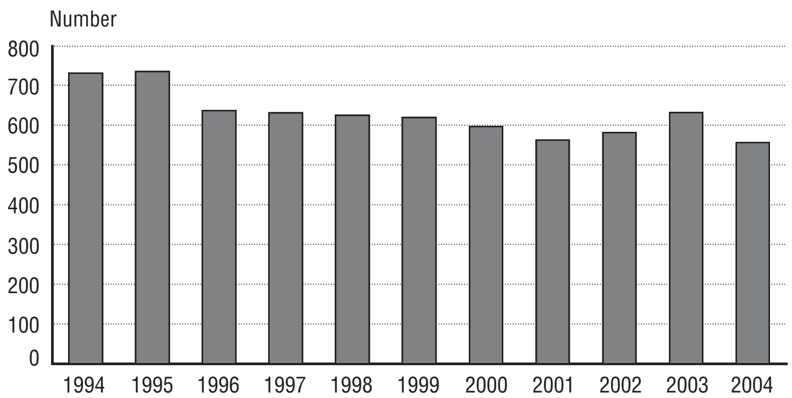


FIGURE 3-11 General and Commercial Aviation Fatalities per 100,000 Hours Flown: 1994–2004

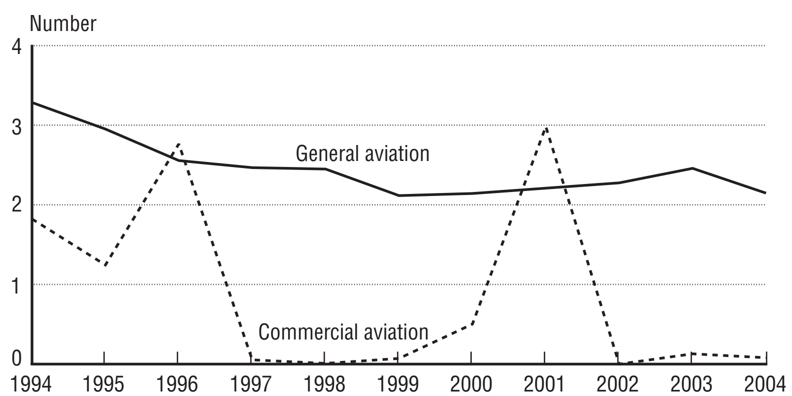
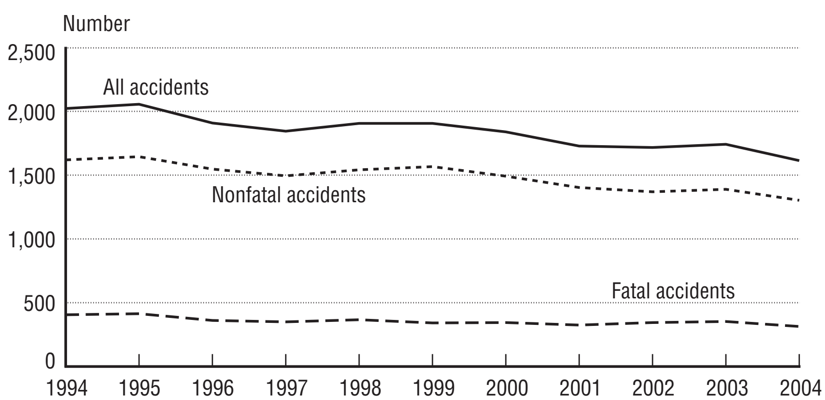


FIGURE 3-12 General Aviation Accidents: 1994–2004



NOTES: 2004 data are preliminary. *General aviation* includes any civil aircraft operation that is not covered under 14 *Code of Federal Regulations* (CFR) Parts 121, 129, or 135, commonly referred to as commercial air carrier operations. **Figure 3-11**—The 2001 spike in commercial aviation fatalities is the result of the terrorist acts of September 11; these data only include fatalities of persons aboard the 4 aircraft. *Commerical aviation* includes air carriers operating under 14 CFR Part 121 only, both scheduled and nonscheduled service.

SOURCE: National Transportation Safety Board, *Aviation Accident Statistics,* tables 5 and 10, available at http://www.ntsb.gov/aviation, as of July 2005.

Daily and Long-Distance Passenger Travel

According to the 2001 National Household Travel Survey, U.S. residents make, on average, about 4 one-way trips per person per day averaging 10 miles each and 9 roundtrip long-distance trips per person per year averaging about 520 miles each (box 4-A). This translates to annual travel per person of 14,500 miles on daily trips and 4,900 miles on long-distance trips[1] [1].

Shares by mode differ between long-distance and daily travel trips and miles traveled. In miles traveled, 89 percent of miles are made by personal vehicle on daily trips (figure 4-1), but only 56 percent by personal vehicle on long-distance trips (figure 4-2). Air transportation makes up 41 percent of long-distance travel miles. On a trip basis, nearly 90 percent of both daily and long-distance trips are accomplished by personal vehicle.[2] Walking makes up most of the rest of daily trips, and air transportation makes up most of the rest of long-distance trips [1].

Source

1. U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey Data*, CD-ROM, February 2004.

[1] These cannot be added together to get a total number because of double counting of daily trips of 50 miles or more from home and differing trip definitions.

[2] Personal vehicles are cars, vans, sport utility vehicles, pickup trucks, other trucks, recreational vehicles (not including watercraft), and motorcycles.

BOX 4-A 2001 National Household Travel Survey (NHTS)

The 2001 NHTS was sponsored by the Bureau of Transportation Statistics and the Federal Highway Administration of the U.S. Department of Transportation. Households were asked about all the trips[1] they took on a specific day (daily travel), known as the "travel day," and about trips from home to a distance of at least 50 miles in the 27 days preceding and including the travel day, known as the "travel period." Detailed characteristics were collected for each trip including, among other things, the mode of transportation, the purpose of the trip, and the distance traveled. Additionally, households were asked to provide information about their social and demographic characteristics, including income and vehicle ownership, as well as the age, sex, education level, and so forth of household members. The 2001 NHTS collected information from 26,000 households nationally between March 2001 and May 2002. NHTS passenger data differ from data presented in section 1, "Passenger-Miles of Travel." See box 1-A for a discussion of these differences.

While many aspects of the survey are consistent across its daily and long-distance trip components, differences exist. In addition to the period over which the data were collected, the definition of a trip is also different. Daily travel (as defined in footnote 1) also counted walking and bicycling trips for recreation, including walking the dog, where a person starts and ends at the same address. Thus, daily travel covers trips that do not necessarily originate from home, such as trips from work to the doctor. Long-distance trips, by contrast, are defined as trips originating *from home* and include the return component from the farthest destination, as well as any overnight stops and stops to change transportation mode.

Other minor differences exist between the daily and long-distance components of the NHTS. For instance, data collected on long-distance trips do not include travel time and the time of day the trip took place, but do include the location of overnight stops and access/egress to an airport, train station, bus station, or boat pier.

[1] A trip is defined as traveling from one address to another, whether it is down the street, across town, or cross country.

FIGURE 4-1 Daily Trip-Miles by Mode: 2001

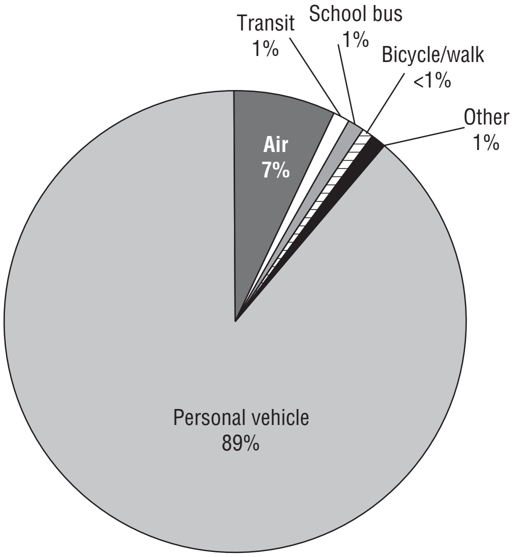
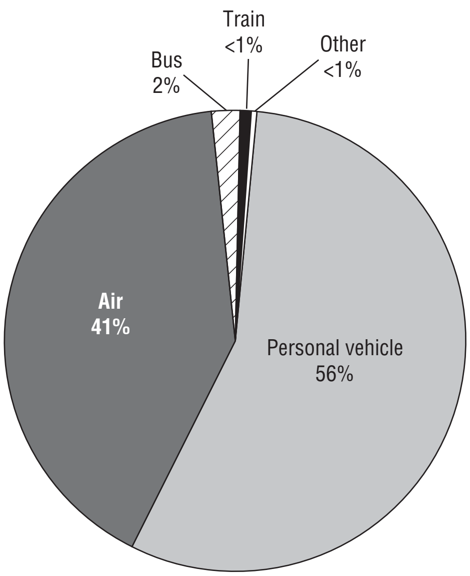


FIGURE 4-2 Long-Distance Trip-Miles by Mode: 2001



NOTES: Figure 4-1: Excludes trips where mode was not reported. *Other* includes charter/tour/intercity bus; taxi, limousine, hotel/airport shuttle bus; intercity train; and other not elsewhere classified. **Figure 4-2:** Excludes trips where mode was not reported. *Other* includes watercraft (e.g., ship, ferry, and motorboat); taxi, limousine, and hotel/airport shuttle; bicycle and walking; and other not elsewhere classified.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey Data,* CD-ROM, February 2004.

Vehicle Availability by Household

There were 9.3 million U.S. households without a car, truck, or van in 2003 (9 percent of all households), down from 9.8 million in 1993 (10 percent of households). The 4.6 percent decline in households without vehicles occurred while the number of households increased by 12 percent. The improvement in vehicle availability may be related to a variety of factors, such as better vehicle reliability and longevity, rising incomes, and suburbanization.

Black, Hispanic, poor, and elderly households are more likely to be without a car, van, or truck than the population as a whole (figure 4-3). Poor households are the least likely to have a vehicle. Nevertheless, the percentage of poor households without a vehicle dropped from 33 to 27 percent between 1993 and 2003 [1].

The geographic location of a household also affects vehicle ownership. Central city households are less likely than those in other areas to have at least one car, truck, or van (figure 4-4). This may be due, in part, to higher poverty rates found in central city areas. When data are aggregated on a regional basis, the heavily urban Northeast has the highest share of households without a vehicle (figure 4-5).

Source

1. U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

FIGURE 4-3 Households Without a Vehicle

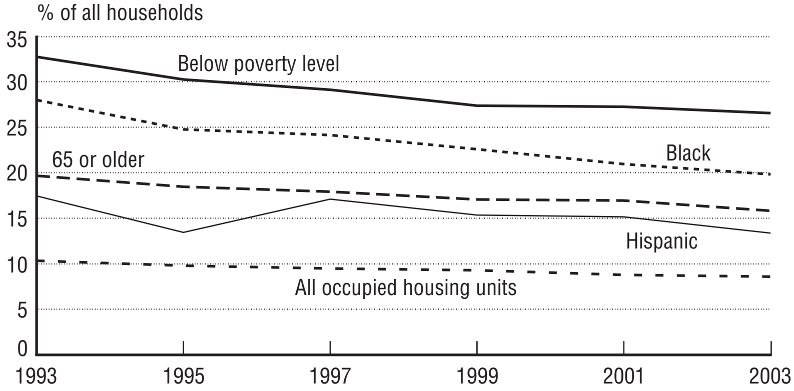


FIGURE 4-4 Households Without a Vehicle in Urban, Suburban, and Rural Areas: 1993 and 2003

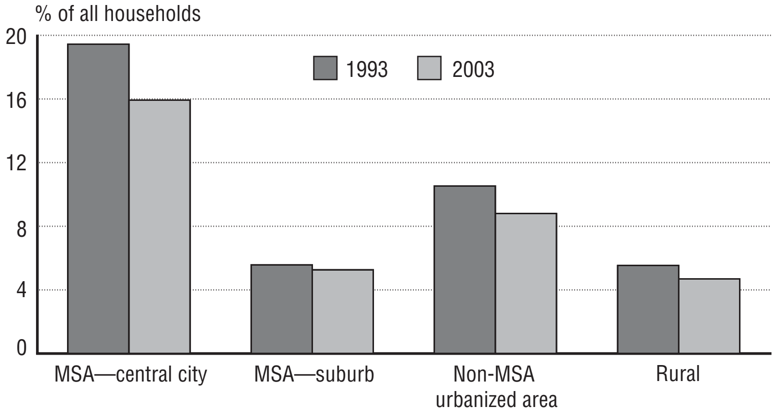
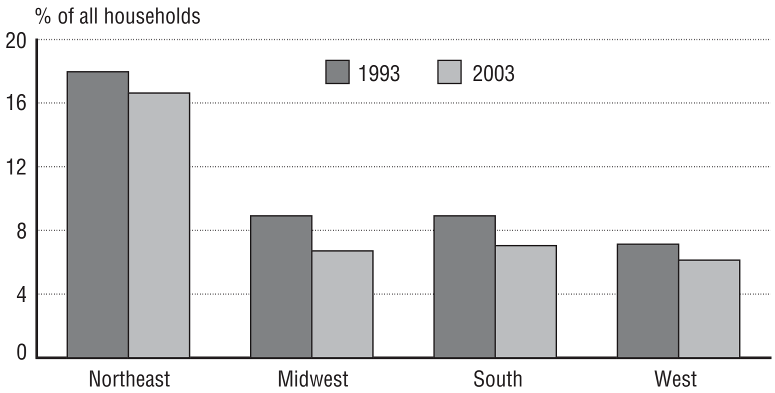


FIGURE 4-5 Households Without a Vehicle by Region: 1993 and 2003



KEY: MSA = metropolitan statistical area.

NOTES: See table 4-5 in appendix B for regional definitions. A housing unit is classified as *occupied* if there is at least one person who lives in the unit as a usual resident at the time of the survey or if the occupants are only temporarily absent (e.g., on vacation).

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States,* H150 (Washington, DC: Biennial issues).

Daily Passenger Travel by Departure Time

On an annual basis, people in the United States make about the same number of trips on weekdays (56.3 billion) as they do on weekend days (62.7 billion)[1] [1]. However, trips made during the week are heavily concentrated in the morning and evening rush hour peaks (figure 4-6). Weekend trips, by contrast, are shifted more toward the middle of the day and peak later in the evening. One of the busiest hours of any day for trip starts is 6 p.m. to 7 p.m. on weekend days. The most common purposes for these trips are people going home from an activity and people going out (say, to eat) or to buy goods and services (e.g., groceries or video rental).

The large number of weekday trips beginning between 7 a.m. and 9 a.m. are predominantly people traveling to work and school (figure 4-7). A large number of trips during the afternoon peak are people returning home from work and school, but this is mixed in with people running errands (e.g., shopping) and making trips for social and recreational purposes. These patterns are linked with the modal pattern that shows that weekday transit trips are more concentrated than trips by personal vehicle, particularly in the morning rush period when work and school trips overlap and travelers are less likely to be making other types of trips [1].

[1] Standard error data are available in tables 4-6 through 4-8 in appendix B.

Social and demographic characteristics are another influence on the distribution of trips throughout the day. For instance, weekday time of departure by age reflects the different opportunities and constraints of travelers. Those 20 and under have the most concentrated profile of trip times reflecting the beginning and ending of school and their heavy reliance on others for transportation. Those aged 66 and over are typically less constrained by work hours and thus make a large number of trips between the morning and evening rush periods (figure 4-8).

The concentration of trip-making at certain times of the day can often place a strain on transportation infrastructure. The morning and evening "rush hour" is the most obvious example. But when a trip is made varies with a range of factors including, among others, day of the week (weekend vs. weekday), transportation mode, purpose, and social and demographic characteristics.

Source

1. U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey*, CD-ROM, February 2005.

FIGURE 4-6 Trips each Weekday and Weekend Day by Departure Time: 2001

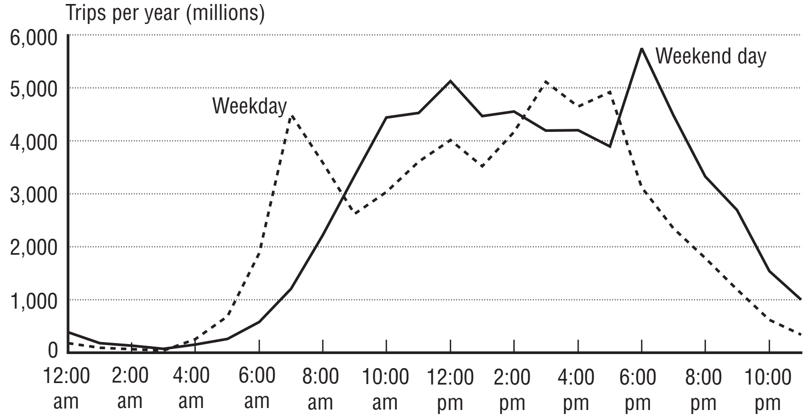


FIGURE 4-7 Trips each Weekday by Departure Time and Selected Trip Purpose: 2001

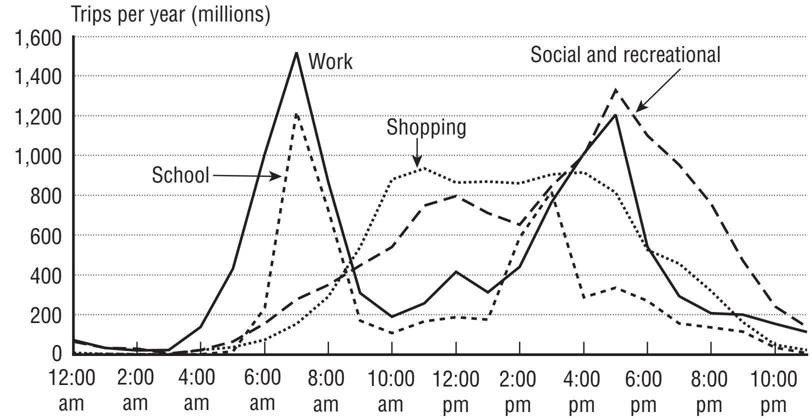
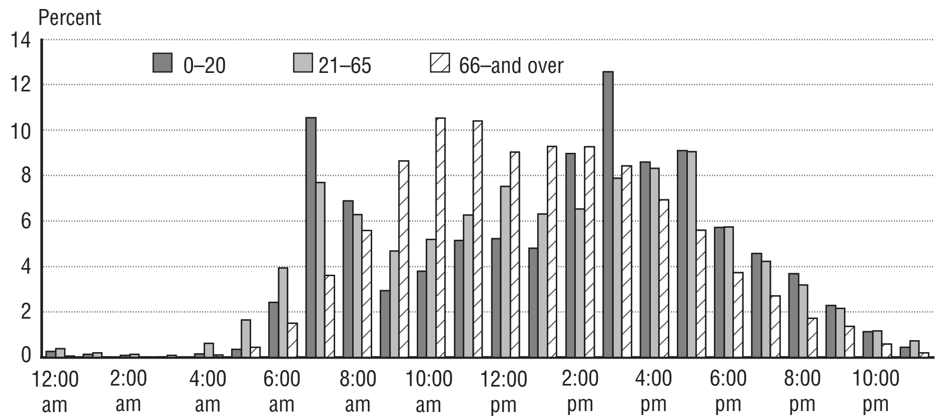


FIGURE 4-8 Trips each Weekday by Departure Time and Age: 2001
(By hour within each age group)



NOTE: Data are *daily trips*, which are generally defined as traveling from one address to another and not necessarily from home. Most daily trips are local.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Research Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey*, CD-ROM, February 2005.

Commuting to Work

Nearly 9 out of 10 workers in 2003 traveled to work by car, truck, or van; and most of those who drove to work did so alone (figure 4-9). Between 1993 and 2003, the share of workers driving to work alone rose from 77 to 79 percent, while carpooling declined from 11 to 9 percent. Over this same period, transit's share of commuters hovered around 4 to 5 percent, and those working at home remained at about 3 percent. [1]

Poor workers are less likely to drive alone than workers as a whole. Their propensity to drive alone to work was the same in 2003 as it was in 1993, 64 percent (figure 4-10). Black workers, Hispanic workers, and workers over 65 are less likely than the average of all workers to drive alone to work, but the percentages for all three categories rose between 1993 and 2003.

In 2003, the median travel time from home to work was 21 minutes and the median distance was 11 miles. Overall, both median time and median distance are about the same as they were in 1993 [1]. More than a quarter of workers leave for work between 7 a.m. and 8 a.m., with nearly 20 percent leaving between 6 a.m. and 7 a.m., and another 20 percent leaving between 8 a.m. and 9 a.m. (figure 4-11).

Source

1. U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

FIGURE 4-9 How People Get to Work: 2003

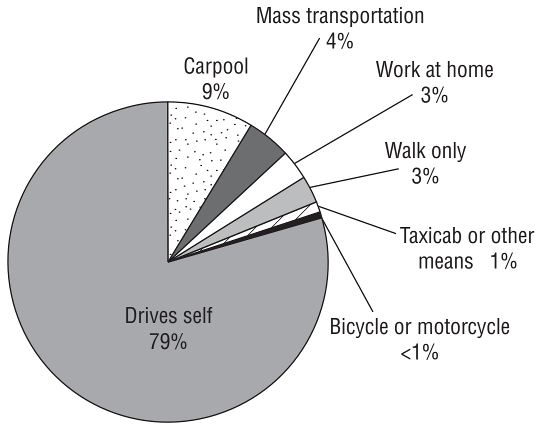


FIGURE 4-10 Workers Driving Alone to Work by Selected Characteristics: 1993 and 2003

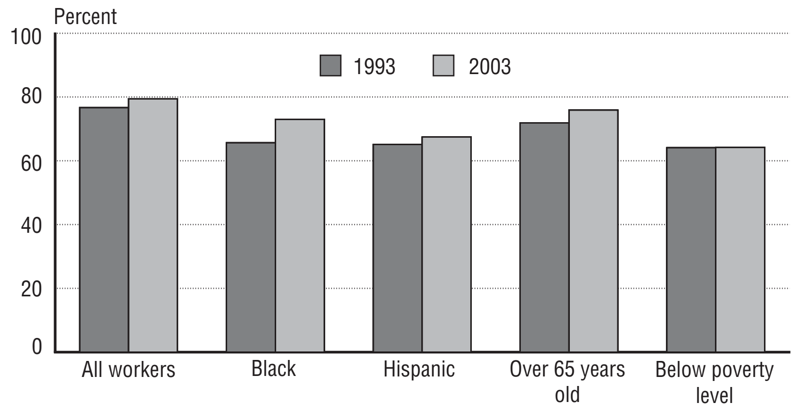
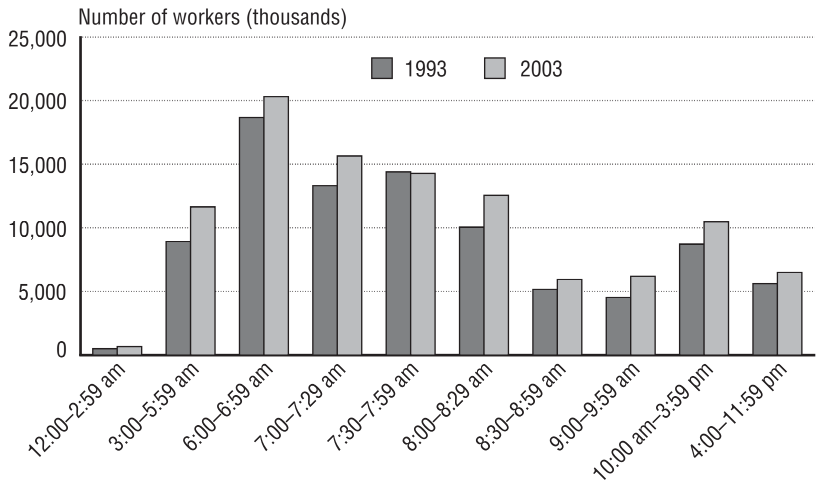


FIGURE 4-11 When People Depart for Work: 1993 and 2003



NOTE: Figure 4-11—Departure time increments are consistent with the source document.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States,* H150 (Washington, DC: Biennial issues).

Long-Distance Travel by Young Adults

Overall, the percentage of long-distance trips[1] made by young adults aged 18 to 29 (15.6 percent) was about the same as this age group's share of the U.S. population (16.4 percent). However, when the age group is broken down into two subgroups—ages 18 to 23 and ages 24 to 29—differences appear in travel patterns that may reflect the position of this age group between dependence on one side (going to school and living at home) and independence on the other (with a job and an independent income and place to live) (box 4-B).

For instance, those 18 to 23 years old make a smaller share of all long-distance trips than their share of the population, similar to those 5 to 17 years old[2] (figure 4-12). But trip-making increases for the 24 to 29 age group such that it begins to resemble the long-distance travel of the older 30 to 44 age group [1]. As young adults move from school to work, the reasons for long-distance travel change. For people aged 18 to 23 years, 11 percent of their long-distance trips are for commuting and 8 percent for business. For people aged 24 to 29 years, commuting and business shares of long-distance trip-making are 16 percent and 21 percent, respectively, about the same as those aged 30 to 44 years (figure 4-13).

The means of transportation for long-distance travel also varies by age, reflecting to some extent the changing reasons for traveling, widening choices (e.g., vehicle availability), and increasing income. All age groups make about 90 percent of their long-distance trips by personal vehicle, with larger variations occurring for air travel and other means (bus, train, and other) (figure 4-14). Those between 18 and 23 years of age make 92 percent of their long-distance trips by vehicle, 5 percent by air, and 3 percent by other means. The older young adults (ages 24 to 29) make 8 percent of their trips by air, reducing their vehicle usage to 89 percent.

BOX 4-B Labor Force Participation Rates

In 2001, the labor force participation rate (LFPR) for males aged 16 to 19 was 50 percent, rising to 82 percent for those 20 to 24, and 93 percent for those 25 to 34. For females, the corresponding LFPRs in 2001 were 49 percent, 73 percent, and 75 percent. In 2001, 93 percent of people aged 16 and 17 years were enrolled in school compared with 61 percent of 18 and 19 year olds, 46 percent of 20 and 21 year olds, and 25 percent of 22 to 24 year olds.

From the mid-teens to the mid-20s, labor force participation rises rapidly with a concomitant drop in school enrollment. Of course, many young adults work and go to school. In 2001, of the 20 million people between ages 16 to 24 with a job, about 8 million were also enrolled in school.

Sources: U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States: 2003* (Washington, DC: 2003), tables 221, 588; and *Statistical Abstract of the United States: 2002* (Washington, DC: 2002), table 567.

Source

1. U.S. Department of Commerce, U.S. Census Bureau, *National Estimates by Demographic Characteristics: Single Year of Age, Sex, Race, and Hispanic Origin*, available at http://www.census.gov/, as of March 2005.

[1] Long-distance trips are defined as trips, originating from home, of 50 miles or more to the farthest destination and include the return component as well as any overnight stops and stops to change transportation mode.

[2] The standard errors of the data on this page are in tables 4-12 through 4-14 in appendix B.

FIGURE 4-12 Long-Distance Trips and Population by Age: 2001

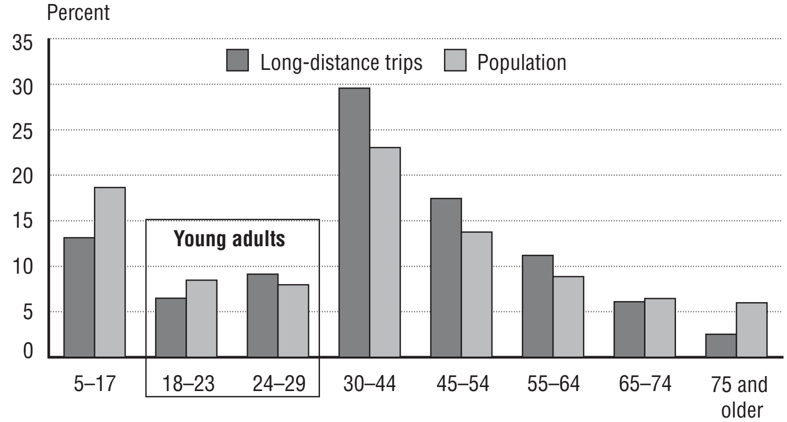


FIGURE 4-13 Long-Distance Trips by Purpose and Age: 2001

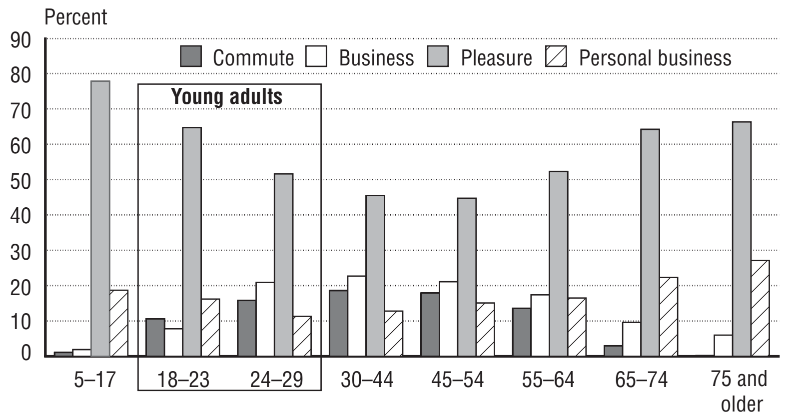
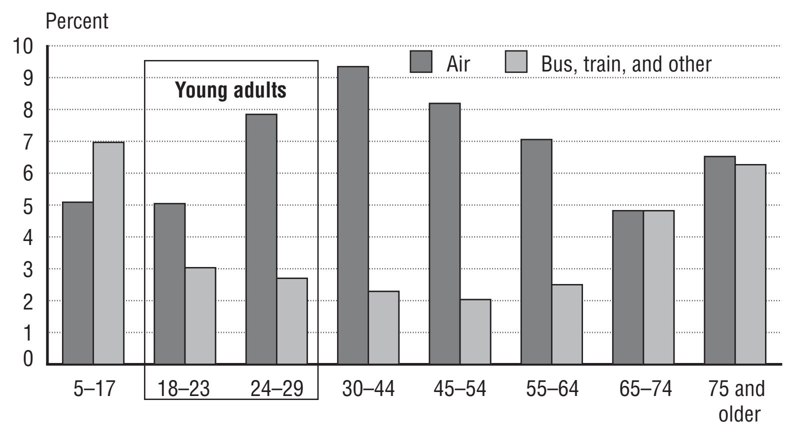


FIGURE 4-14 Long-Distance Trips by Selected Mode and Age: 2001



SOURCES: Long-distance trips—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005. **Population**—U.S. Department of Commerce, U.S. Census Bureau, *National Estimates by Demographic Characteristics: Single Year of Age, Sex, Race, and Hispanic Origin,* available at http://www.census.gov/, as of March 2005.

Long-Distance Travel by Women

People in the United States took 2.6 billion long-distance trips[1] covering 1.4 trillion miles in 2001. Females made 43 percent of these trips (1.1 billion) while males made 57 percent of them (1.5 billion). Adult females (18 and over) take about two-thirds of the long-distance trips that adult males take (8 trips, on average per year, compared with 13 trips). However, the median distance per trip for women tends to be slightly longer than for men (216 and 201 miles, respectively) [1].

The largest differences in the number of long-distance trips taken by females and males occur in the working age group—typically defined as ages 25 to 64 (figure 4-15). Among those aged 35 to 44, for instance, men take 61 percent of all long-distance trips compared with 39 percent for women. This gap persists until people are 75 years and older; then women and men take approximately the same number of trips.

Trip purpose also varies between females and males (figure 4-16). Both make a similar number of trips for pleasure and personal business, but almost 8 out of 10 long-distance business and more than 8 out of 10 long-distance commuting trips are made by males [1]. While business travel accounts for 16 percent of all long-distance trips, it constitutes 21 percent of males' long-distance trips compared with 9 percent for females. Similarly, commuting accounts for 13 percent of all long-distance trips but 18 percent of males' and only 5 percent of females' long-distance trips.

Modal choice between males and females does not differ much—both use personal vehicles as their primary mode of transport, accounting for 90 percent of all long-distance trips. However, females make a slightly higher proportion of their long-distance trips by bus (2.7 percent) as compared to males (1.7 percent) (figure 4-17).

[1] Long-distance trips are defined as trips, originating from home, of 50 miles or more to the farthest destination and include the return component as well as any overnight stops and stops to change transportation mode.

Source

1. Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, "A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey," paper presented at the National Household Travel Survey Conference: Understanding Our Nation's Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

FIGURE 4-15 Long-Distance Trips by Gender and Age: 2001

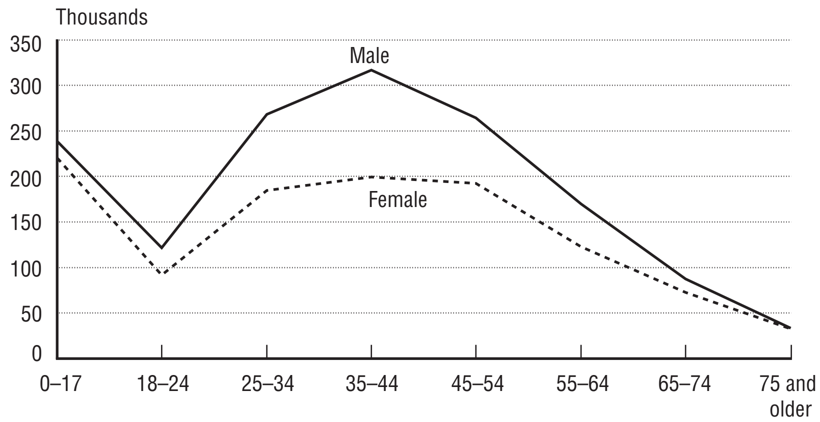


FIGURE 4-16 Long-Distance Trips by Gender and Purpose: 2001

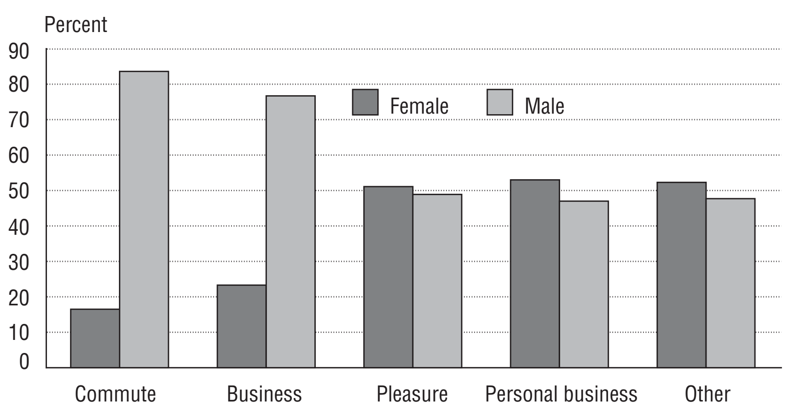
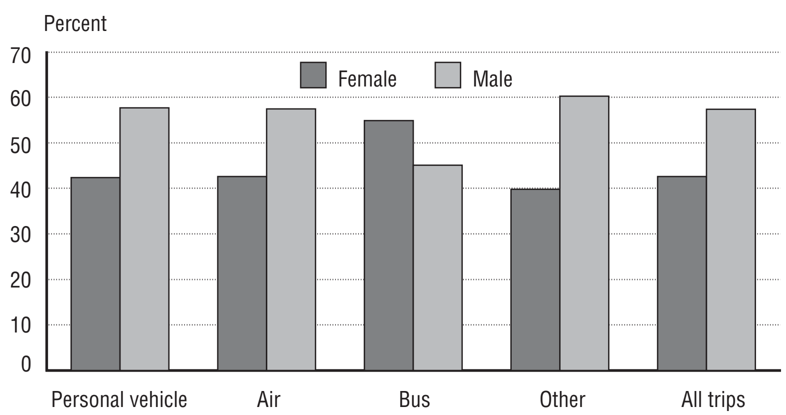


FIGURE 4-17 Long-Distance Trips by Gender and Mode: 2001



NOTE: *Other* includes trains, ships, and all other modes of long-distance travel.

SOURCE: Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, "A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey," paper presented at the National Household Travel Survey Conference: Understanding Our Nation's Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

Scheduled Intercity Transportation in Rural America

Nearly 93 percent of the 82 million rural residents[1] in the United States lived within a 25-mile radius of an intercity rail station, an intercity bus or ferry terminal, or a nonhub or small hub[2] airport or within a 75-mile radius of a large or medium hub airport in April 2005 (figure 4-18). About 29 million rural residents (35 percent) were served by all three modes, while nearly 6 million lived outside this defined coverage area of any scheduled intercity transportation service [1].

These data result from an April 2005 update to a January 2003 geographic information system analysis conducted by the Bureau of Transportation Statistics (BTS) [1]. The results show that most rural residents can access scheduled transportation modes for long-distance intercity trips, based on the distance criteria BTS used. However, the analysis also shows that since the original study two years earlier about 1.1 million rural residents have lost access to intercity transportation. The most noteworthy change in the intercity network has been the elimination by Greyhound of bus service at over 400 locations as part of a system restructuring.[3] Amtrak also discontinued part of a long-distance train route, eliminating service in three cities in Ohio and one in Indiana.

[1] Rural residents are those who live outside of urbanized areas or urban clusters as defined by the U.S. Census Bureau.

[2] The term *hub* is used here within the context of individual airports rather than air traffic hubs, which can include more than one airport.

[3] Replacement service for some of the locations discontinued by Greyhound was initiated by several regional bus lines.

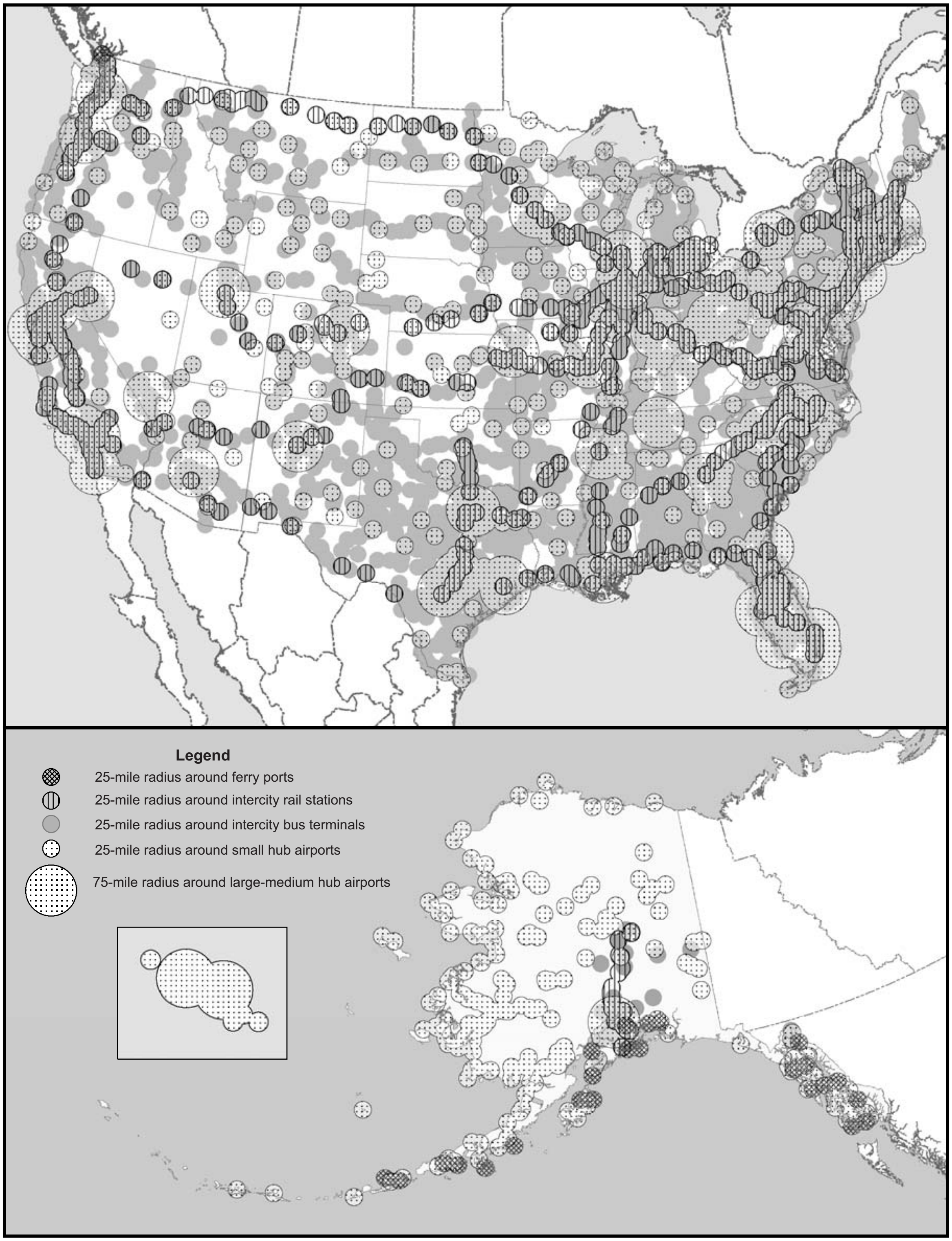
At the time of the April 2005 study, intercity buses reached nearly 73 million rural residents (89 percent) compared with nearly 75 million residents 2 years earlier. Scheduled airline service reached 58 million (71 percent), unchanged from 2003. Intercity rail (Amtrak and the Alaska Railroad) reached 35 million (42 percent), down by 300,000 from 2003. For 13 million residents in April 2005, bus was the sole mode providing service within 25 miles, air was the sole mode for 2.6 million rural residents, and rail was the only intercity mode for about 350,000 rural residents. The intercity ferries of the Alaska Marine Highway System, serving coastal Alaska communities as well as Bellingham, Washington, were accessible to 82,000 rural residents and provided the only intercity service to about 2,000 Alaska residents.

In April 2005, the United States had nearly 4,400 intercity passenger stations, terminals, and airports. Intercity bus served 72 percent of these facilities. Of the total, 278 of the stations, terminals, and airports were located in Hawaii and Alaska.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Scheduled Intercity Transportation and the U.S. Rural Population*, available at http://www.bts.gov/, as of June 2005.

FIGURE 4-18 Areas Served by Intercity Passenger Transportation



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Scheduled Intercity Transportation and the U.S. Rural Population*, available at http://www.bts.gov, as of June 2005.

Urban Highway Travel Times

Highway travel times increased between 1993 and 2003 in all but 2 of the 85 urban areas studied by the Texas Transportation Institute. The average Travel Time Index (TTI) for the 85 areas in 2003 was 1.37, an increase from 1.28 in 1993 [2]. This means that in 2003 it took 37 percent longer, on average, to make a peak period trip in these urban areas compared with the time it would take if traffic flowed freely (box 5-A).

Travel times tend to deteriorate as urban area population increases (figure 5-1). For instance, Los Angeles, California, had the highest TTI (1.75) in 2003, while Corpus Christi, Texas and Anchorage, Alaska, had the lowest (1.05). Of the 30 urban areas with the highest index in 2003, only five had a population under 1 million: Austin, Texas (1.33); Tucson, Arizona and Charlotte, North Carolina-South Carolina (1.31 each); Bridgeport-Stamford, Connecticut-New York (1.29); and Salt Lake City, Utah (1.28). At the other end of the spectrum, urban areas of over 1 million people with low indexes include: Cleveland, Ohio (1.09); Buffalo, New York, Pittsburgh, Pennsylvania, and Oklahoma City, Oklahoma (all 1.10); and Kansas City, Missouri-Kansas (1.11).

Between 1993 and 2003, the greatest increases in TTI occurred in very large, large, and medium urban areas, while the increases were more moderate in small urban areas[1] (figure 5-2). Overall, the average index for very large urban areas increased by 10 points (from 1.38 to 1.48), while the index increased by 9 points in large areas (from 1.19 to 1.28) and by 7 points in medium areas (from 1.11 to 1.18). The TTI in small urban areas increased by 4 points (from 1.06 to 1.10).

BOX 5-A Travel Time Index

Developed by the Texas Transportation Institute, the Travel Time Index is the ratio of peak period travel time to free-flow travel time. A value of 1.0 indicates that traffic is moving freely. A value of 1.3 indicates that it takes 30 percent longer to make a trip than in free-flow conditions. If, say, a trip takes 20 minutes in free-flow conditions and the index is 1.3, then the trip would take, on average, 6 minutes longer to complete during a peak period.

In urban areas, where highway infrastructure is typically well developed, the principal factor affecting travel times is highway congestion resulting from recurring and nonrecurring events. Recurring delay is largely a phenomenon of the morning and evening commutes, although in some places congestion may occur all day and on weekends. National estimates, based on model simulations, of the effect of nonrecurring events on freeways and principal arterials suggest that about 50 percent are due to crashes, followed by work zones (27 percent), breakdowns (13 percent), and weather (10 percent) [1].

[1] Very large urban areas have a population over 3 million; large urban areas, 1 million to 3 million; medium urban areas, 500,000 to 1 million; and small urban areas, less than 500,000.

Sources

1. S.M Chin, O. Franzese, D.L. Greene, H.L. Hwang, and R. Gibson, "Temporary Losses of Highway Capacity and Impacts on Performance: Phase 2," Oak Ridge National Laboratory, 2004, table ES-1.
2. Texas A&M University, Texas Transportation Institute, *2005 Urban Mobility Report* (College Station, TX: 2005).

FIGURE 5-1 Travel Time Index by Metro Area Population for 85 Metro Areas: 2003

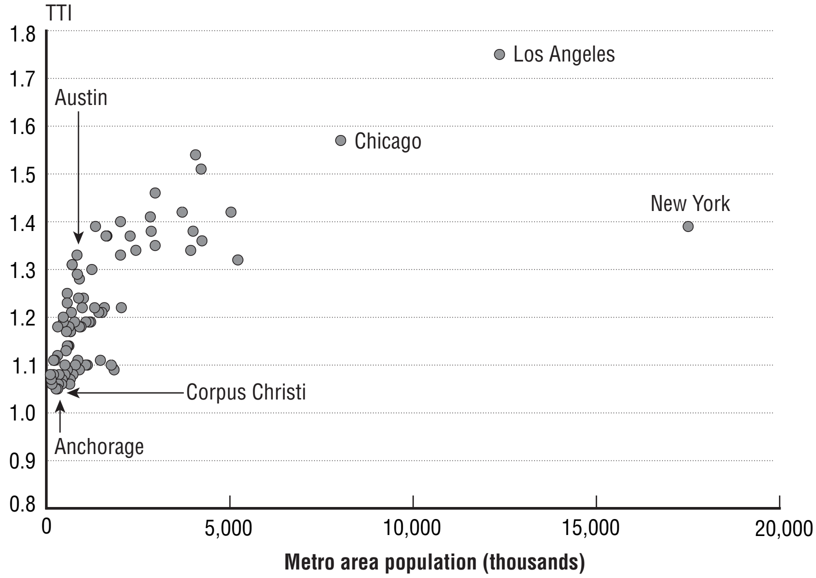
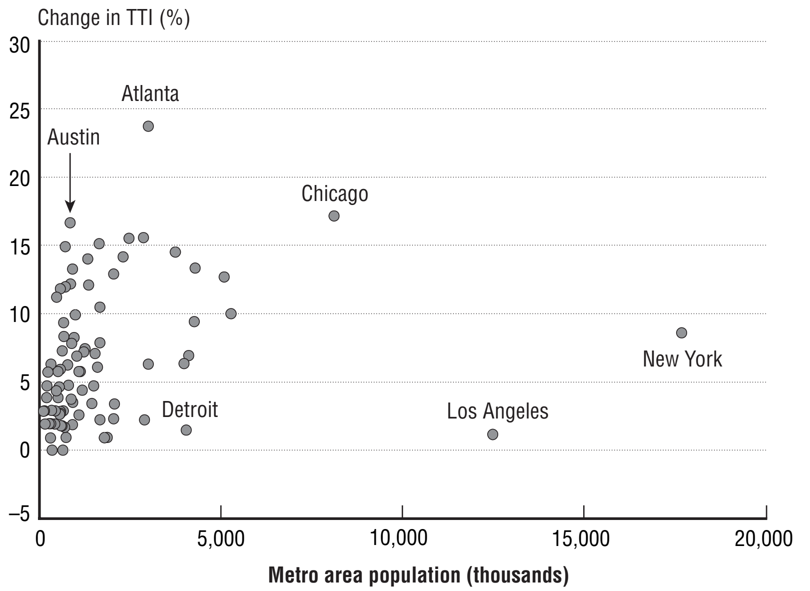


FIGURE 5-2 Change in Travel Time Index by Metro Area Population: 1993 and 2003



KEY: TTI = Travel Time Index.

NOTE: The TTI is the ratio of peak period travel time to free-flow travel time. It expresses the average amount of extra time it takes to travel in the peak period relative to free-flow travel.

SOURCE: Texas A&M University, Texas Transportation Institute, *2005 Urban Mobility Report* (College Station, TX: 2005), also available at http://tti.tamu.edu/, as of May 2005.

Surface Border Wait Times

While there are over 75 land ports along the U.S.-Canadian border and over 25 along the U.S.-Mexican border, freight traffic crossings are heavily concentrated at a few major gateways. Commercial trucks crossing into the United States at the busiest gateways—Detroit, Michigan, and Laredo, Texas—generate heavy north-south truck traffic from Detroit through to Memphis, Tennessee, and from Laredo through to San Antonio, Texas. This concentration affects traffic and congestion at the border as well as the growth of major transportation corridors [1].

The average wait time in 2004 for commercial vehicles entering the United States from Canada was 8.5 minutes and 7.3 minutes for those entering from Mexico[1] (figures 5-3 and 5-4). There was, however, wide variation in the 2004 wait times for commercial traffic at individual surface gateways. The average wait time at Texas' Laredo World Trade Bridge, a gateway dedicated exclusively to commercial traffic, was the longest (21 minutes) on the Mexican border, while Michigan's Port Huron Bluewater Bridge had the longest average wait time (25 minutes) on the Canadian border.

In contrast to the flow of freight traffic, surface border personal vehicle[2] wait times are twice as long at U.S.-Mexican borders than at U.S.-Canadian borders. Mexican border crossings averaged about 14.5 minutes of delay in 2003 and 2004, and Canadian border crossings averaged 8 minutes of delay in 2003 and 6 minutes of delay in 2004 (figure 5-5). Passenger mode of choice also differed between those entering from Canada and Mexico. Personal vehicle was the most popular mode in which to cross the U.S. border in 2004 from Canada (64.8 million passengers) and Mexico (190.9 million passengers). However, over 48 million pedestrians entered from Mexico in 2004, making walking the second-most common way to enter the United States through Mexico gateways[3] [2].

[1] Wait times for commercial vehicles (e.g., tractors pulling containers or beds, panel trucks, and pickup trucks and vans used for hauling commercial cargo) are recorded hourly for 16 surface border ports on the U.S.-Canadian border and for 17 surface border ports on the U.S.-Mexican border.

[2] Customs and Border Protection uses the term "private vehicles" and defines it as any vehicle of pickup truck size or smaller used for noncommercial purposes. This includes cars, sport utility vehicles, pickup trucks, and vans.

Sources

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *America's Freight Gateways*, available at http://www.bts.gov/, as of April 2005.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, *Data Warehouse CD-ROM*, May 2005.

[3] See "Passenger Border Crossings" in section 1 of this report.

FIGURE 5-3 Average Daytime Wait Times for Commerical Vehicles at Selected U.S.-Canada Surface Border Gateways: 2004

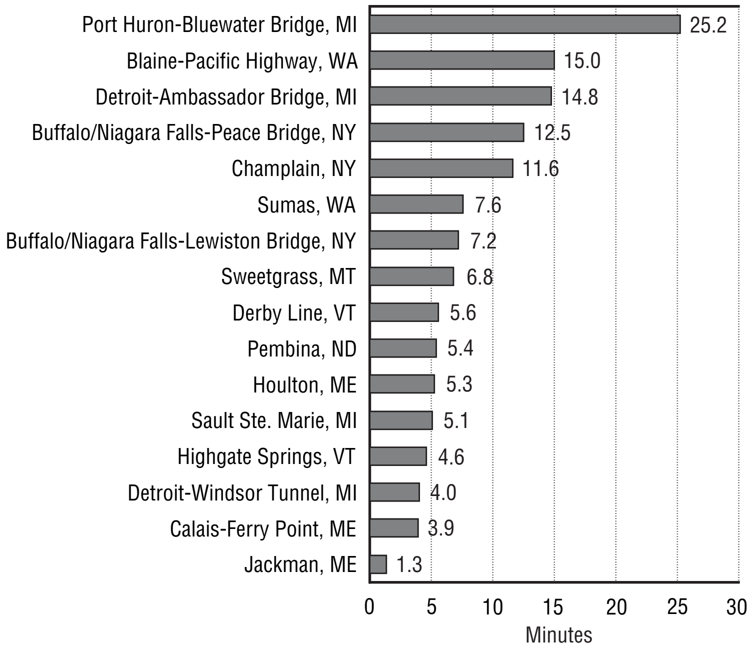


FIGURE 5-4 Average Daytime Wait Times for Commerical Vehicles at Selected U.S.-Mexican Surface Border Gateways: 2004

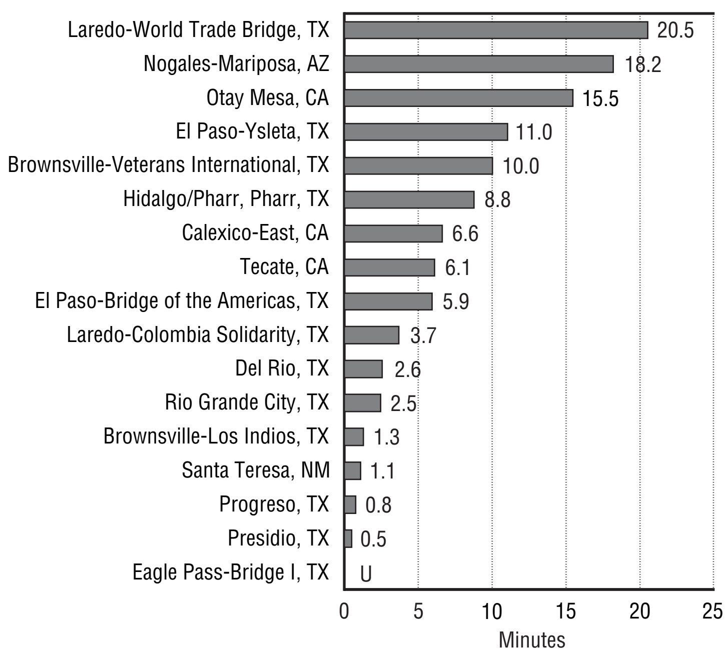
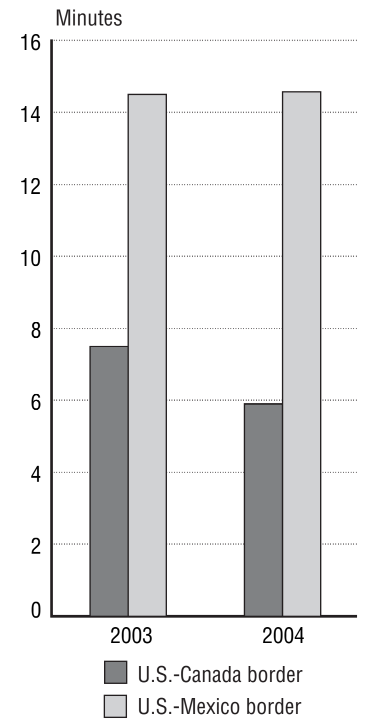


FIGURE 5-5 Average Daytime Wait Times for Personal Vehicles at U.S. Surface Border Gateways: 2003 and 2004



KEY: U = data are unavailable.

NOTES: Wait times for commerical and personal vehicles are recorded hourly. Daytime hours (between 8:00 am and 6:00 pm) are generally the busiest portion of the day and are representative of typical delays encountered by the majority of vehicles. Wait times can, however, vary considerably by crossing, time of day, and day of the week; and the actual delays that occur on occasion may be substantially longer than the averages represented above.

SOURCE: U.S. Department of Homeland Security, U.S. Customs and Border Protection, personal communication, April 2005.

U.S. Air Carrier On-Time Performance

About 78 percent of domestic air carrier scheduled flights arrived on time in 2004, compared with 79 percent in 1995. The number of on-time flights peaked in 2002 and 2003 (82 percent), after a low of 73 percent in 2000. The number of canceled and diverted flights declined to their lowest level in 2002 (less than 2 percent) (figure 5-6).

The total number of scheduled domestic passenger flights at the nation's airports rose 12 percent between 1995 and 2001 from 5.3 million to 5.9 million flights. After the shutdown of flight operations on September 11, 2001, the number of scheduled flights decreased 12 percent between 2001 and 2002 to 5.3 million flights. They then rose 23 percent to 6.5 million flights in 2003 and 10 percent to 7.1 millions flights the following year.

Air carriers with at least 1 percent of total domestic scheduled service passenger revenues have been required to report on-time performance data since 1987. As of mid-2003, the airlines began reporting data on the cause of delays as well.[1] A flight has an on-time departure if the aircraft leaves the airport gate less than 15 minutes after its scheduled departure time, regardless of the time the aircraft actually lifts off from the runway. An arriving flight is counted as on time if it arrives less than 15 minutes after its scheduled gate arrival time.

On average in 2004, National Airspace System delays[2] had the most impact on airline schedules, accounting for almost 40 percent of all delays (figure 5-7). Another 26 percent of delays occurred, on average, because of circumstances within an airline's control (e.g., maintenance or crew problems), while 30 percent were caused by a previous flight arriving late. At 5.0 percent and 0.3 percent, respectively, extreme weather and airport security caused the fewest delays, on average, in 2004. The number of weather-related delays, however, varied by month and was highest in June 2004 (9,339 delayed flights) and lowest in April 2004 (3,129 delayed flights). By month in 2004, total delays ranged from 15 percent to 36 percent of all scheduled flights.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Airline Service Quality Performance data, March 2005.

[1] See table 5-7 in appendix B for details on reporting carriers and detailed information on cause-of-delay categories.

[2] The reasons for National Airspace System delays include non-extreme weather conditions, airport operations, heavy traffic volume, and air traffic control.

FIGURE 5-6 U.S. Air Carrier On-Time Performance: 1995–2004

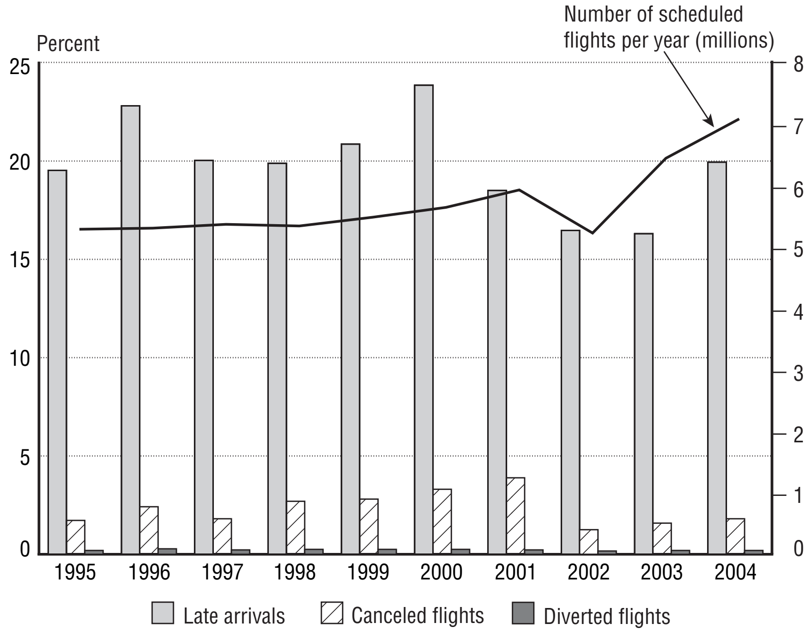
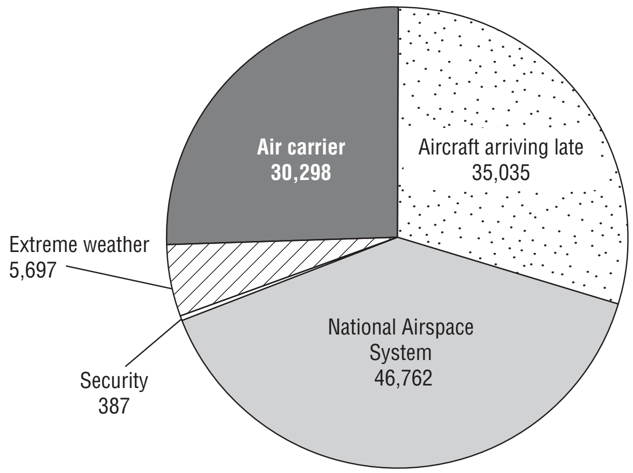


FIGURE 5-7 Average Monthly Number of Delays by Cause: 2004



NOTES: Flights are on time if they depart from or arrive at the gate less than 15 minutes after their scheduled departure or arrival times. See table 5-7 in appendix B for definitions of delay categories.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Airline Service Quality Performance data, March 2005.

Air Travel Time Index

Air travel times and the reliability of expected travel times are important determinants of customers' satisfaction, air system operating efficiency, and policymakers' success in meeting performance objectives. A major reason consumers choose to travel by air is that it is often the fastest way to travel long distances.

The Air Travel Time Index (ATTI) rose by 0.5 percent per year between 1990 and 2000 and then fell by 0.7 percent per year between 2000 and 2004 (figure 5-8). The ATTI measures average flight times of nonstop flights using the time elapsed between the scheduled departure and actual arrival, while controlling for different flight characteristics such as distance. In comparison, an index of the average scheduled travel time for nonstop flights in the United States rose by 0.2 percent per year between 1990 and 2000 and remained relatively unchanged between 2000 and 2004. The gap between the two measures widened from 8 minutes in 1990 to a maximum of 11 minutes in 2000 and then narrowed to 7 minutes in 2004.

The Air Travel Time Variability Index (ATTVI) rose by an average of 4 percent per year between 1990 and 2000 and then fell by 3 percent per year between 2000 and 2004 (figure 5-9). The ATTVI measures the variability of flight times of nonstop flights based on differences between travel times on individual flights and the average travel times for the same flight. Thus, not only did the travel time for a typical flight take longer between 1990 and 2000, but it also became more uncertain. However, between 2000 and 2004, both flight travel times and their variability improved despite an increase in the number of flight operations.[1]

[1] Improvement occurs when the ATTI and ATTVI decrease.

BOX 5-B Airline Service Quality Performance (ASQP) Data and Air Travel Time Indexes

To calculate these indexes, the Bureau of Transportation Statistics used ASQP data that airlines report monthly on both scheduled and actual flight times (based on gate-departure and gate-arrival). The data cover all domestic nonstop flight segments flown by U.S. carriers with at least 1 percent of passenger revenues in the previous year. The ATTVI is measured using standardized deviations of actual air travel time from its average value. Deviations are weighted to increase the variability index more for extreme deviations than for small deviations. Both the ATTVI and the ATTI are designed to control for changes in carriers, routes, and time of day in order to improve comparability over time. Airports included in the analysis are those that ranked in the top 50 (by passenger enplanements of all large certified carriers) for at least one year between 1990 and 2004. Analysis of the time-of-day for departure is based on four periods: morning offpeak (before 9 a.m.); midday peak (between 9 a.m. and 3 p.m.); evening peak (between 3 p.m. and 9 p.m.); and evening offpeak period (after 9 p.m.). Analysis of flight distance is based on three categories: 500 miles and less; 501 to 1,000 miles; and more than 1,000 miles.

The Bureau of Transportation Statistics (BTS) research developing the ATTI and ATTVI is intended to improve the measurement of air travel time and reliability. Using data BTS collects from airlines (box 5-B), the ATTI enables analysis of changes in air travel time nationally, as well as by airport, carrier, time of day, and flight distance. For instance, from 1990 to 2004, most improvements occurred in flights departing in the evening offpeak (after 9:00 p.m.). The least improved were flights departing in the evening peak (between 3:00 p.m. and 9:00 p.m.). Grouped by distance, flights of more than 1,000 miles were approximately unchanged, while travel times of flights of 500 miles or less increased.

FIGURE 5-8 Air Travel Time Index and Scheduled Air Travel Time: 1990–2004
Yearly averages

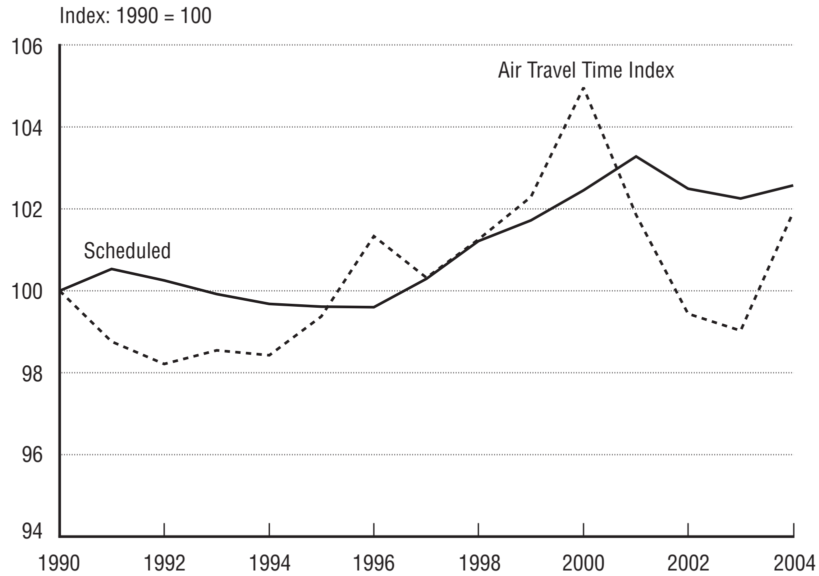
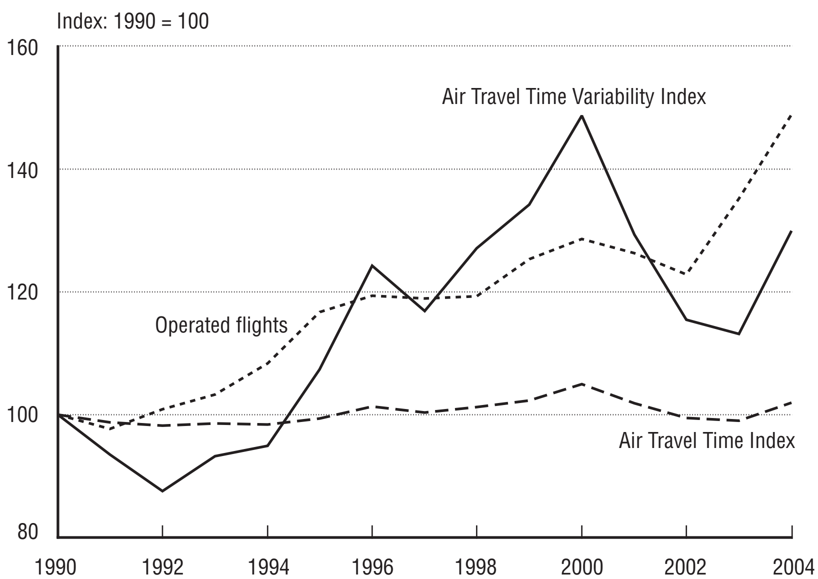


FIGURE 5-9 Air Travel Time Index and Air Travel Time Variability Index Compared with Operated Flights: 1990–2004
Yearly averages



NOTES: These results, based on ongoing research, are preliminary. **Figure 5-9**—Operated flights includes data for large certificated carriers only.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using the following: **Scheduled times and ATTI**—USDOT, BTS, Airline Service Quality Performance data, May 2005. **Flight operations**—USDOT, BTS, Airline Market and Segment (T-100) data, May 2005.

Amtrak On-Time Performance

Seventy-one percent of Amtrak trains arrived at their final destination on time in 2004 [2]. This was below the system's performance peak of 76 percent in 2002 (figure 5-10). Amtrak counts a train as delayed if it arrives at least 10 to 30 minutes beyond the scheduled arrival time, depending on the distance the train has traveled.[1] In addition, Amtrak on-time data are based on a train's arrival at its final destination and do not include delay statistics for intermediate points.[2]

Over the years, short-distance Amtrak trains—those with runs of less than 400 miles (including all Northeast Corridor and Empire Service trains)—have consistently registered better on-time performance than long-distance trains—those with runs of 400 miles or more. Annual on-time performance for short-distance trains reached a high of 87 percent in 2002 but fell to 76 percent in 2004. Sixty-eight percent of long-distance trains arrived on time in 2004, up from 49 percent in 1994 but short of their high of 70 percent in 2001 and 2002.[3]

Amtrak also collects data on the cause and cumulative hours of delay for its trains, including delays at intermediate points, and attributes the cause of each delay to Amtrak, the host railroad, or "other" (figure 5-11). Delays assigned to Amtrak represented 30 percent of all delay hours in 2004. Delays ascribed to host railroads represented 64 percent, and other delays accounted for the remaining 6 percent.[4] (Amtrak trains operate over tracks owned primarily by private freight railroads except in most of the Northeast Corridor, along a portion of the Detroit-Chicago route, and in a few other short stretches across the country [1].) Throughout the years, host railroad delays have consistently represented the largest share of delay hours. Between 2000 and 2004, host railroad and other delays increased each year. Amtrak-caused delay hours declined in both 2002 and 2003. However, delay hours in 2004 increased—accounting for the longest delay hours in four years.

Sources

1. National Passenger Railroad Corp., "Amtrak Facts," available at http://www.amtrak.com/, as of November 2003.
2. ______. personal communication, February 2005.

[1] Amtrak trips of up to 250 miles are considered on time if they arrive less than 10 minutes beyond the scheduled arrival time; 251–350 miles, 15 minutes; 351–450 miles, 20 minutes; 451–550 miles, 25 minutes; and greater than 550 miles, 30 minutes.

[2] Accordingly, a train traveling between Chicago and St. Louis (282 miles), for example, could arrive 15 minutes late at all intermediate points, yet arrive 12 minutes late at St. Louis and be reported as on time.

[3] Amtrak revised its methodology for collecting and calculating on-time performance data in 2001.

[4] In 2000, Amtrak revised the methodology for reporting delays by cause, which makes data beginning in 2000 not comparable to previous years. The Bureau of Transportation Statistics presented Amtrak cause-of-delay data for 1990 through 1999 in its 2003 *Transportation Statistics Annual Report*.

FIGURE 5-10 Amtrak Trains Arriving On Time: 1994–2000 and 2001–2004

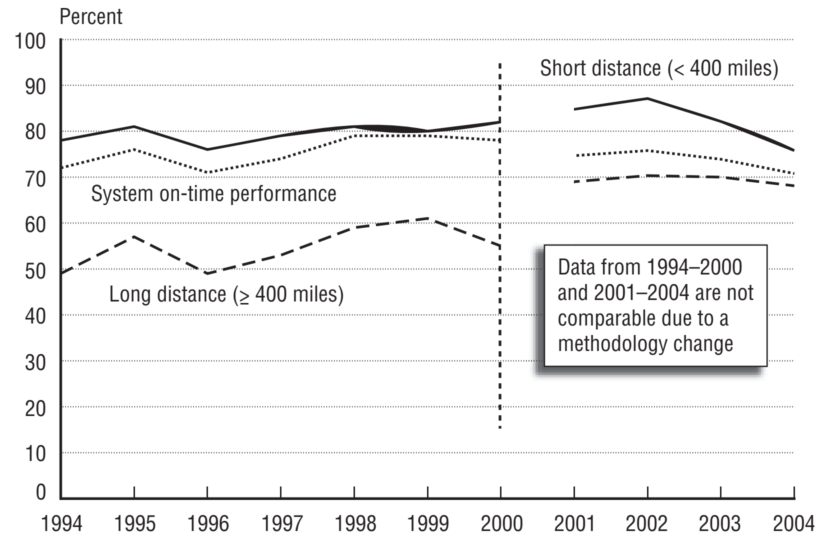
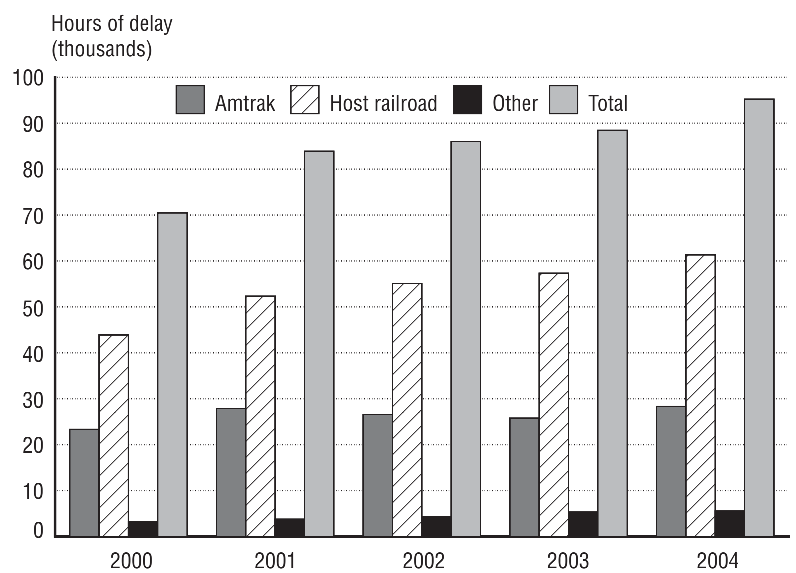


FIGURE 5-11 Amtrak Hours of Delay by Cause: 2000–2004



NOTES: Figure 5-10—Amtrak revised its methodology for collecting and calculating on-time performance data in 2001. This resulted in minor changes in short-distance, long-distance, and system on-time performance percentages starting in 2001 compared with previous years. **Figure 5-11**—In 2000, Amtrak revised the methodology for reporting delays by cause, which makes data beginning in 2000 not comparable to previous years. See table 5-11 in appendix B for definitions of the causes of delays.

SOURCES: 1994–1999—National Railroad Passenger Corp. (Amtrak), *Amtrak Annual Report* (Washington, DC: Annual Issues). **2000–2004**—Amtrak, personal communication, October 2003 and February 2005.

Rail Freight Times

Class I rail freight line-haul speeds averaged 21.8 miles-per-hour in the first-quarter of 2005, a decrease of 1.5 percent from the previous quarter[1] (figure 5-12). Between the first quarter of 2002 and the first quarter of 2005, average line-haul speeds decreased 15 percent. This decrease followed a general upward trend in line-haul speeds since late 1999.

Line-haul speed is a shipper-related indicator of the performance of the railroad industry. To put the average speeds in perspective, revenue ton-miles totaled 416.7 billion in the first quarter of 2005 (figure 5-13). This represented an increase in revenue ton-miles of 18 percent from the first quarter of 2002 to first quarter of 2005, the same time period in which average line-haul speeds were declining.

Terminal dwell time, the time a train spends in terminals, is not included in line-haul speed data (box 5-C). It is, thus, a rail freight time indicator that supplements line-haul speeds. Terminal dwell time of Class I railroads averaged 24.2 hours in the first quarter of 2005, an increase of 0.7 percent compared with the previous quarter [1].

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using Class I railroad data reported to the Association of American Railroads, available at http://www.railroadpm.org/.

[1] For the definition of Class I railroads, see the Glossary.

BOX 5-C Rail Freight Times Data

To improve understanding of rail freight travel times, the Bureau of Transportation Statistics (BTS) calculated the average overall line-haul speeds for the rail freight industry using published rail industry operational performance data.

Each Class I railroad in the United States reports its average *line-haul speed* on a weekly basis. The average speed is the over-the-road train speed and does not include terminal dwell time, time for local pickup and delivery, and the time shipments spend in storage yards. BTS calculated the average overall line-haul speed by taking a weighted average (using freight car-miles) of the individual railroad average speeds.

Average *terminal dwell time* is also reported weekly by each Class I railroad. For the overall average terminal dwell time, BTS uses freight cars on line as weights to combine these individual railroad averages. Average terminal dwell time applies principally to merchandise trains. These trains, which represent about 60 percent of total freight train traffic, generally transport individual carload shipments that may be switched, assembled, or disassembled at a number of terminals the trains travel through on their way from origin to destination. Unit trains, which comprise about 40 percent of rail freight traffic, carry a single commodity from origin to destination without switching at intermediate terminals. Unit trains are not significantly affected by terminal dwell time. Data are only available to calculate an industry average beginning in the second quarter of 2004 because railroads reported average terminal times as of the fifth week of 2004.

FIGURE 5-12 Rail Freight Average Line-Haul Speed: 1999–2005

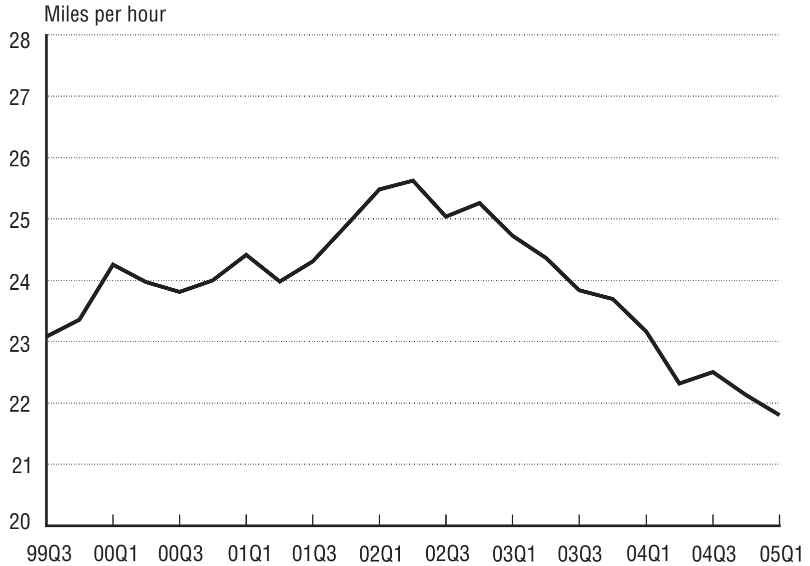
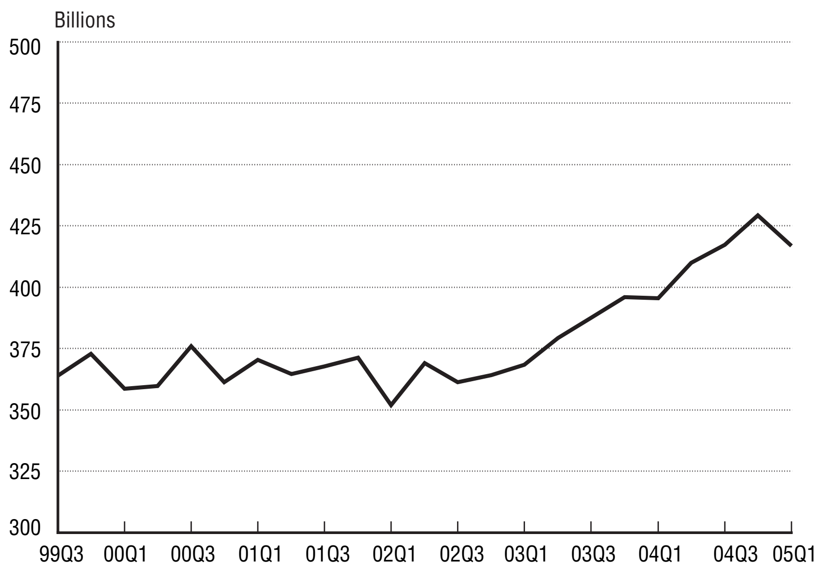


FIGURE 5-13 Rail Freight Revenue Ton-Miles: 1999–2005



NOTES: Data cover Class I railroads only (see Glossary for definition). Average line-haul speed data for 2004 and 2005 are preliminary.

SOURCES: Figure 5-12—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data reported by Class I railroads to the Association of American Railroads for posting at http://www.railroadpm.org/; and Surface Transportation Board (STB), *Statistics of Class I Railroads in the United States,* table 8, available at http://www.stb.dot.gov/, as of May 2005. **Figure 5-13**—STB, *Quarterly Selected Earnings Report,* available at http://www.stb.dot.gov/, as of May 2005.

Transit Passenger-Miles of Travel

Transit passenger-miles of travel (pmt) grew 26 percent between 1993 and 2003, from 36.2 billion pmt to 45.6 billion pmt [2] (box 6-A). However, transit pmt declined 1.2 percent between 2001 and 2002, and it declined another 0.6 percent between 2002 and 2003. As they have historically, buses maintained the largest pmt share in 2003 (42 percent) while generating 19.1 billion pmt (figure 6-1). Also in 2003, heavy-rail pmt totaled 13.6 billion or 30 percent and commuter rail leveled off at 9.5 billion pmt, for a 21 percent share.

Light rail and demand-response[1] services had only 3.2 percent and 1.5 percent, respectively, of transit pmt shares in 2003. However, pmt for light rail more than doubled between 1993 and 2003 and nearly doubled for demand-response services (figure 6-2). In comparison, bus pmt grew 10 percent between 1993 and 2003.

The top 20 transit authorities (ranked by pmt) logged 32 billion passenger-miles in 2003 or 70 percent of all transit pmt that year. In 2003, people riding New York City Transit traveled 9.5 billion passenger-miles (or 21 percent of all transit pmt) and the Chicago Transit Authority generated 1.8 billion passenger-miles or 4 percent [1].

[1] Demand-response transit operates on a nonfixed route and a nonfixed schedule in response to calls from passengers or their agents to the transit operator or dispatcher.

BOX 6-A National Transit Data

A large amount of transit data including the number of passenger-miles of travel (pmt) are available from both the Federal Transit Administration (FTA) and the American Public Transportation Association (APTA). FTA's National Transit Database (NTD) is based primarily on information reported by transit agencies that receive or benefit from Urbanized Area Formula Program funds. These data are supplemented with information from transit agencies that do not receive FTA funds but voluntarily submit data. A total of 622 transit agencies reported data in 2003. Data available from APTA combine FTA's information with information from transit operators that do not report to the NTD (private, very small, and rural operators). The result is APTA's national pmt estimate, which is typically about 5 percent higher than the estimate provided by FTA.

Sources

1. U.S. Department of Transportation, Federal Transit Administration, National Transit Database, *2003 Transit Profiles*, available at http://www.ntdprogram.com/, as of April 2005.
2. ______. *National Transit Summaries and Trends*, available at http://www.ntdprogram.com/, as of April 2005.

FIGURE 6-1 Transit Passenger-Miles by Type of Service: 1993–2003

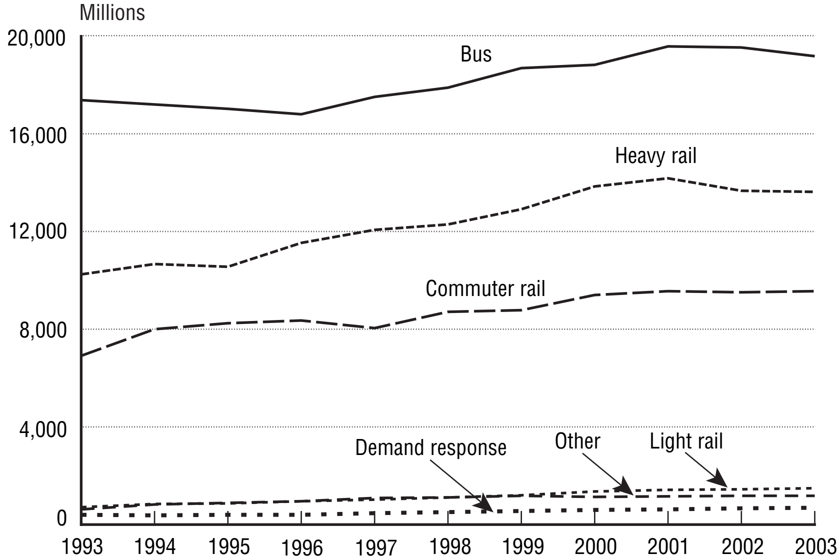
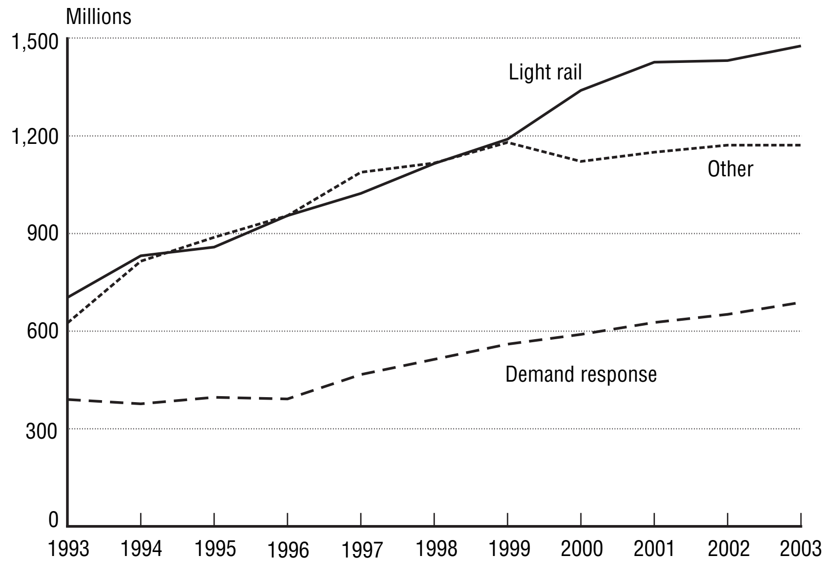


FIGURE 6-2 Detail of Transit Passenger-Miles by Selected Type of Service: 1993–2003



NOTE: *Other* includes modes such as automated guideway, Alaska Railroad, cable car, ferryboat, inclined plane, monorail, trolleybus, and vanpool.

SOURCE: U.S. Department of Transportation, Federal Transit Administration, National Transit Database, *National Transit Summaries and Trends,* annual reports, available at http://www.ntdprogram.com/, as of April 2005.

Transit Ridership by Trips

Transit ridership grew steadily from 1995 to 2002, reaching 9,017 million unlinked trips (box 6-B) in 2002, an increase of 20 percent. However, between 2002 and 2003, total transit ridership declined 1.6 percent as ridership in 2003 posted 8,876 million unlinked trips. This decline follows a slowing of growth in transit ridership between 2001 and 2002 (less than 1 percent) compared with ridership growth between 2000 and 2001 (3.3 percent) [1].

Bus ridership comprised the majority of unlinked trips in 2003 (5,147 million). After having grown 15 percent between 1995 and 2002, bus ridership declined 2.3 percent between 2002 and 2003 (figure 6-3). Rail transit ridership, with 3,414 million trips in 2003, posted strong growth from 1993 to 2003 (34 percent). Heavy rail grew 30 percent; light rail, 80 percent; and commuter rail, 28 percent (figure 6-4). However, among rail services only light-rail ridership grew between 2002 and 2003 (0.4 percent), while heavy-rail and commuter-rail ridership each declined 1 percent.

Heavy-rail ridership posted 2,667 million trips; commuter-rail, 410 million trips; and light-rail, 338 million trips in 2003. Other transit services, such as ferryboats and demand response, posted a combined 315 million trips.

Source

1. U.S. Department of Transportation, Federal Transit Administration, *National Transit Summaries and Trends*, annual reports, available at http://www.ntdprogram.com/, as of May 2005.

BOX 6-B Unlinked Passenger Trips vs. Number of Passengers

All transit ridership data relate to trips taken—not to people—because that is how data are collected and reported. The heavy use of passes, transfers, joint tickets, and cash by people transferring from one vehicle, service, or public transportation agency to another makes it impossible to count people. Only boardings (i.e., unlinked passenger trips) can be counted with any accuracy. At the largest public transportation agencies, even the number of boardings may be estimated for a portion of the ridership (e.g., free shuttle vehicles without fareboxes and light-rail service using a "proof-of-payment" system).

The majority of people using public transportation take two trips per day (one to work in the morning and one home in late afternoon or evening). A small proportion—perhaps 5 percent—make only one public transportation trip (e.g., they ride public transportation to the airport and then fly out of town, or they ride public transportation in the morning to work, but ride home in a friend's automobile at night). A somewhat larger proportion (primarily the public transportation-dependent) take 4, 6, 8, or even 10 trips per day.

At most agencies, perhaps 10 to 30 percent of riders must transfer to a second (and sometimes a third) vehicle to reach their final destination. Some transfer from bus to bus, from bus to train, from one agency's vehicle to another agency's vehicle, and so on. Thus, there is a large amount of double-counting of people. APTA's best estimate is that the number of people using public transportation on any day is about 45 percent of the number of trips reported.

Saturday ridership is often about 50 percent of weekday ridership, and Sunday ridership may be only 25 percent. In many smaller cities, public transportation service does not operate on Sundays; in a lesser number, there is no Saturday service.

Source: American Public Transportation Association, "Number of People Using Public Transportation," available at http://www.apta.com/, as of June 2005.

FIGURE 6-3 Transit Ridership by Selected Type of Servce: 1993–2003

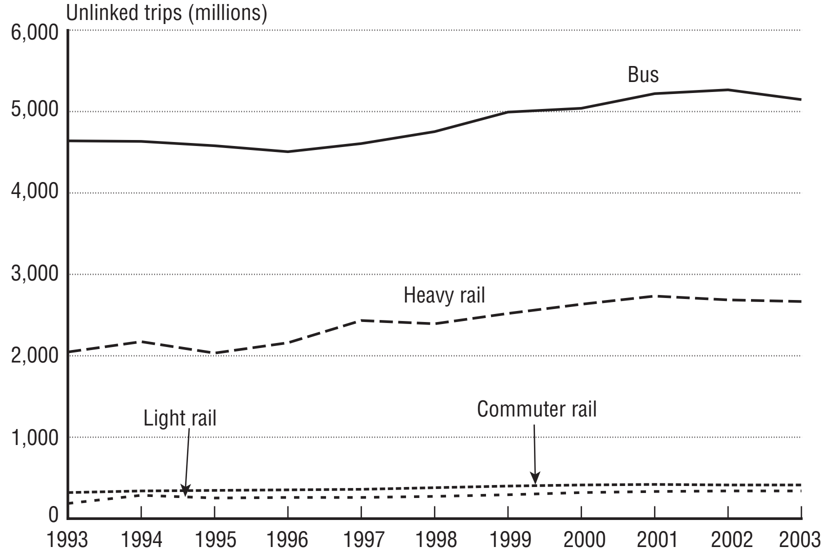
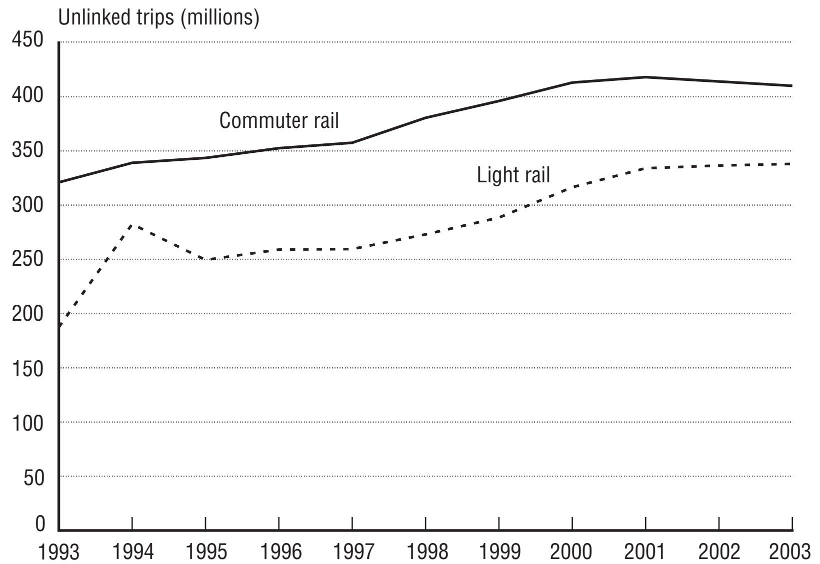


FIGURE 6-4 Detail of Commuter-Rail and Light-Rail Transit Ridership: 1993–2003



SOURCE: U.S. Department of Transportation, Federal Transit Administration, *National Transit Summaries and Trends,* annual reports, available at http://www.ntdprogram.com/, as of April 2005.

Transit Ridership by Transit Authority

Approximately 78 percent of all unlinked transit passenger trips in 2003 were made within the service area of just 30 transit authorities [1]. These 30 top authorities logged 6.9 billion unlinked trips in 2003[1] (figure 6-5). New York City Transit alone reported 2.6 billion or 38 percent of unlinked passenger trips for the top 30 authorities. The Chicago Transit Authority followed with 475 million or 7 percent of trips for the top 30 authorities.

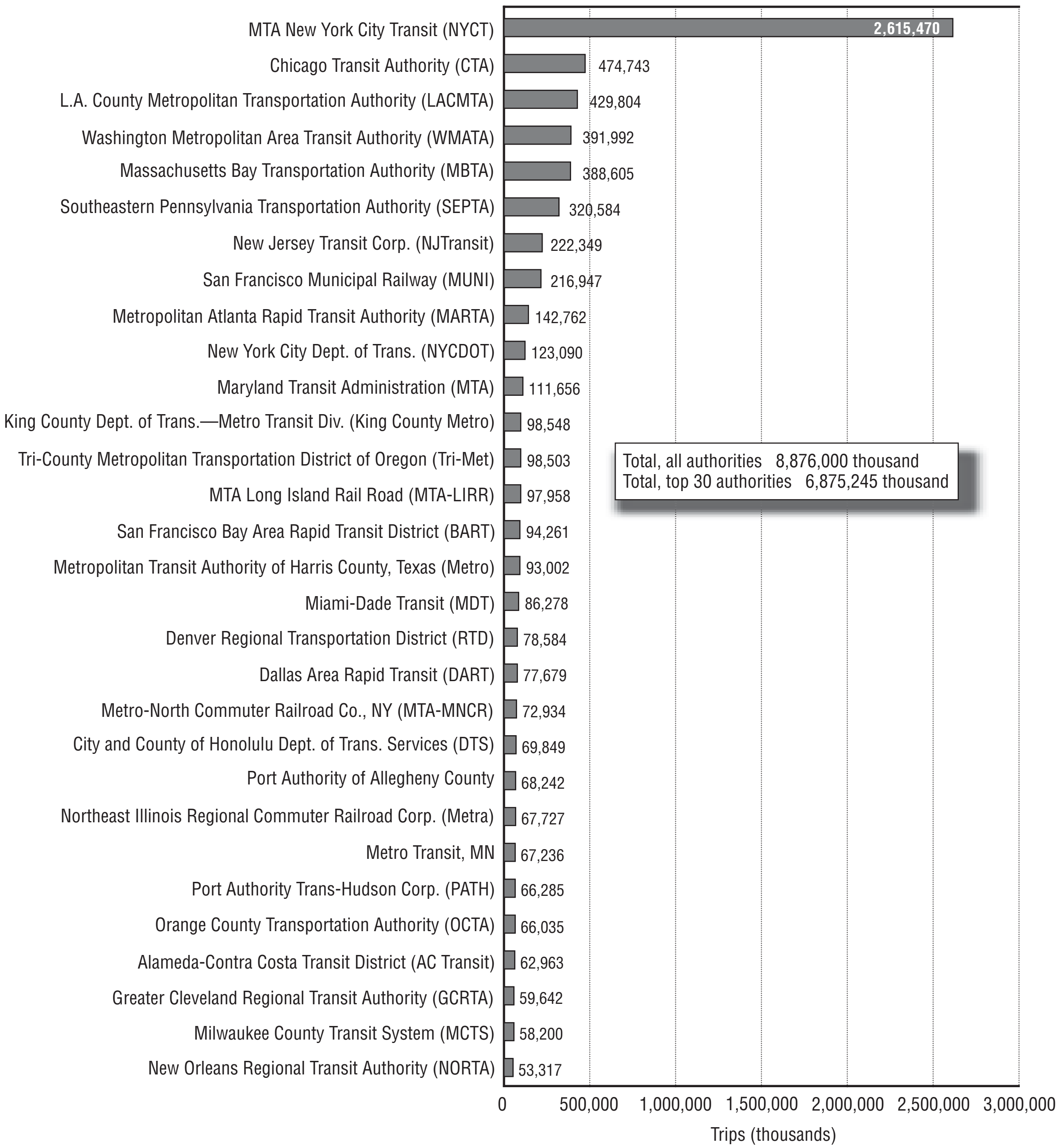
The top 30 transit authorities served a population of about 125 million in 2003. All transit authorities reporting to the National Transit Database estimate the population they serve using definitions of bus and rail service in the Americans with Disabilities Act of 1990 and their own local criteria for other service, such as ferryboat and vanpool. Some double-counting of populations served occurs, especially among authorities operating in the largest metropolitan areas such as New York City, Los Angeles, Chicago, and San Francisco.

[1] In 2003, 622 transit agencies submitted reports to the Federal Transit Administration. Of these, 74 reporting agencies operated nine or fewer vehicles across all modes and types of service and received waivers from detailed reporting. Thus, 548 transit agencies are included in the 2003 database.

Source

1. U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from USDOT, Federal Transit Administration, National Transit Database, available at http://www.ntdprogram.com/, as of April 2005.

FIGURE 6-5 Top 30 Transit Authorities by Unlinked Passenger Trips: 2003



SOURCES: U.S. Department of Transportation (USDOT), Federal Transit Administration (FTA), National Transit Database, available at http://www.ntdprogram.com/, as of April 2005. **Total, all authorities**—USDOT, FTA, personal communication, August 2005.

Accessible Rail Stations and Buses

Transit rail stations that are compliant with requirements under the Americans with Disability Act (ADA) (box 6-C) increased 178 percent from just 553 stations (out of 2,452) in 1993 to 1,537 stations (out of 2,799) in 2003 (figure 6-6). Yet, the rate at which compliance increased at commuter-rail, light-rail, and heavy-rail stations differed (figure 6-7).

The percentage of light-rail stations that are ADA accessible rose the fastest among the transit rail modes, from 24 percent compliant (92 stations) in 1993 to 76 percent (466 stations) in 2003 (figure 6-7). During the same time period, commuter-rail station accessibility grew from 23 percent (242 stations) to 56 percent (643 stations). Heavy-rail riders also experienced an increase in ADA-compliant stations, from 22 percent (217 stations) in 1993 to 41 percent (416 stations) in 2003.

Transit buses are also subject to ADA requirements. As of 2003, 95 percent of all transit buses were equipped with lifts or ramps to make them accessible to disabled riders.[1]

[1] For more information on accessible buses, see *Transportation Statistics Annual Report*, September 2004.

BOX 6-C Transit Accessibility Under the ADA

While the Americans with Disabilities Act (ADA) of 1990 requires public transit services, under specific conditions, to be accessible to persons with special needs, it did not impose a statutory deadline for fleet accessibility. The ADA did require all key stations to be accessible by July 1993 but allowed the Federal Transit Administration (FTA) to grant an extension up to July 2020 for stations requiring structural modifications to bring them into compliance.

FTA has collected data on ADA accessibility since 1993. An accessible station is one that provides ready access and does not have physical barriers that prohibit and/or restrict access by individuals with disabilities, including those who use wheelchairs.

Source

U.S. Department of Transportation, Federal Transit Administration, *FY 2002 Performance Plan* (Washington, DC: 2003).

Source

1. U.S. Department of Transportation, Federal Transit Administration, National Transit Database 2003, available at http://www.ntdprogram.com/, as of April 2005.

FIGURE 6-6 Transit Rail Stations that are ADA-Compliant: 1993–2003

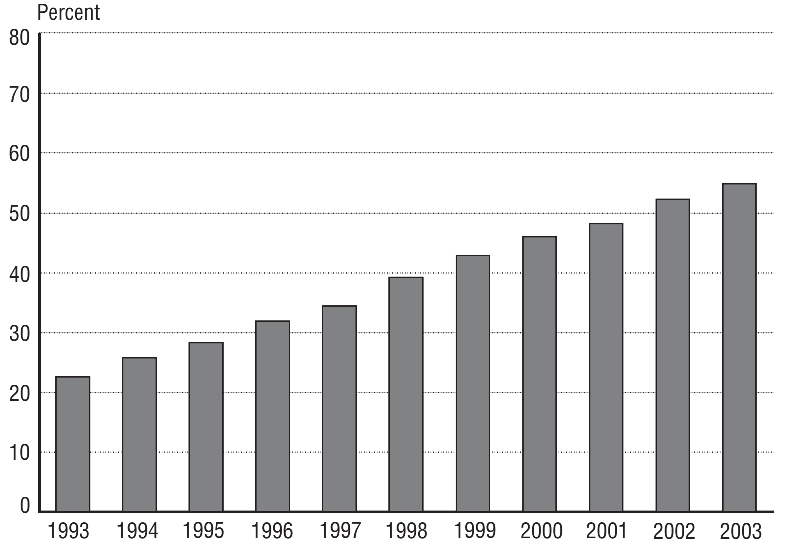
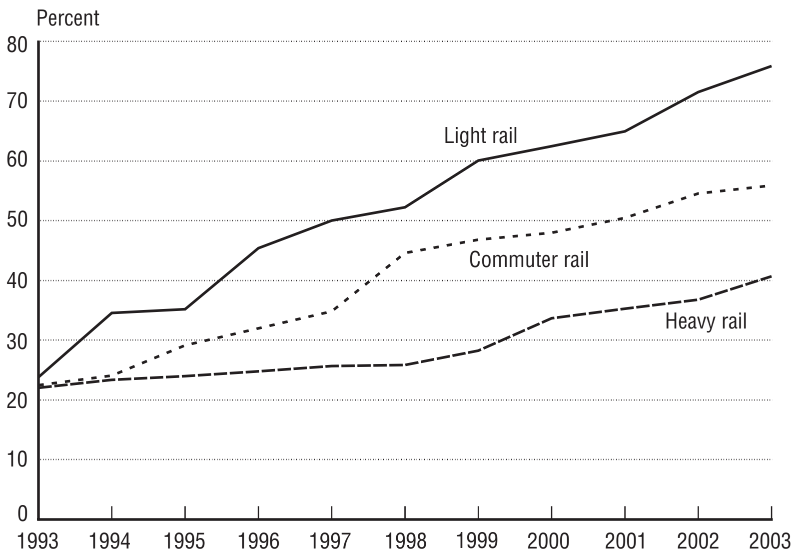


FIGURE 6-7 Transit Rail Stations that are ADA-Compliant by Service Type: 1993–2003



KEY: ADA = Americans with Disabilities Act.

NOTE: Figure 6-6—Data do not include automated guideway, jitney, and inclined plane transit stations.

SOURCES: 1993–2001: U.S. Department of Transportation (USDOT), Federal Transit Administration (FTA), personal communication, May 2005. **2002–2003:** USDOT, FTA, *National Transit Summaries and Trends,* annual reports, table 21, available at http://www.ntdprogram.com/, as of May 2005.

Household Spending on Transportation

On average, households spent $7,681 (in chained 2000 dollars[1]) on transportation in 2003. This represented 20 percent of all household expenditures that year. Only housing cost households more (31 percent)[2] [1].

Between 1993 and 2003, consumer spending on private transportation (mainly motor vehicles and related expenses) increased by 27 percent. On average, households spent $3,834 purchasing new and used motor vehicles in 2003, up 49 percent from $2,569 in 1993 (figure 7-1). Spending on other vehicle expenses (e.g., insurance, financing charges, maintenance, and repairs) also increased, from $1,806 to $2,216 (23 percent).

Meanwhile, gasoline and oil expenditures declined 1 percent, to $1,268 in 2003. This decline was largely because of a 7 percent drop in these expenditures between 2002 and 2003. On an annual basis, gasoline and oil expenditures declined 0.1 percent between 1993 and 2003. Other transportation, such as local transit and airplane and train trips, is the smallest category of household spending on transportation (4.7 percent of the total in 2003). On average, households spent $364 to pay for other transportation in 2003, a decrease of 1 percent between 1993 and 2003.

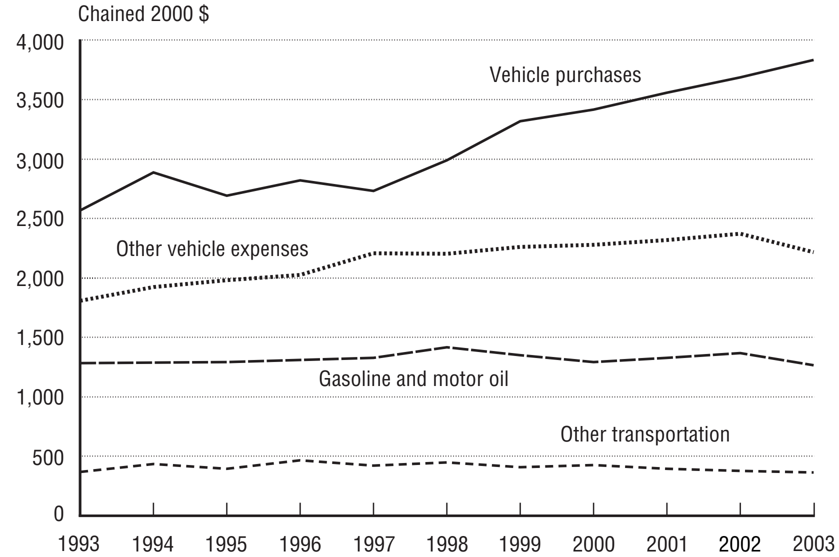
[1] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. Current dollar amounts (which are available in appendix B of this report) were adjusted to eliminate the effects of inflation over time.

[2] The Bureau of Labor Statistics (BLS) collects these data. In its survey, BLS uses the term *consumer units* instead of *households* and *public transportation* rather than *other transportation*. There are an average of 2.5 persons in each consumer unit, according to BLS. Public transportation, according to BLS, includes both local transit, such as bus travel, and long-distance travel, such as airplane trips. (See complete definitions of these categories on figure 7-1 and table 7-1 in appendix B.)

Source

1. U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Expenditure Survey,* data query, available from http://www.bls.gov/, as of March 2005.

FIGURE 7-1 Average Household Transportation Expenditures: 1993–2003



NOTES: Data are based on survey results. The Bureau of Labor Statistics (BLS) uses the term consumer unit rather than household. BLS defines consumer unit as 1) members of a household related by blood, marriage, adoption, or other legal arrangement; 2) a person living alone; sharing a household with others; rooming in a private home, lodging, or in permanent living quarters in a hotel or motel but who is financially independent; or 3) two or more persons living together and making joint expenditure decisions.

Other transportation includes fares for mass transit, buses, trains, airlines, taxis, school buses for which a fee is charged, and boats.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollar amounts (see table 7-1 in appendix B) to chained 2000 dollars.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Expenditure Survey,* available at http://www.bls.gov/, as of March 2005.

Cost of Owning and Operating an Automobile

Driving an automobile 15,000 miles per year cost 53¢ per mile in 2003, or 20 percent more than it did in 1993 when total costs were 44¢ per mile (figure 7-2). These data, which are expressed in 2000 chained dollars,[1] include fixed costs (e.g., depreciation, insurance, finance charges, and license fees) and variable costs (e.g., gasoline and oil, maintenance, and tires). Between 1993 and 2003, fixed costs represented an average of 75 percent of total per-mile costs. Gasoline and oil, a component of variable costs, represented 13 percent of driving costs per mile in 2003, down from 18 percent in 1993 [1].

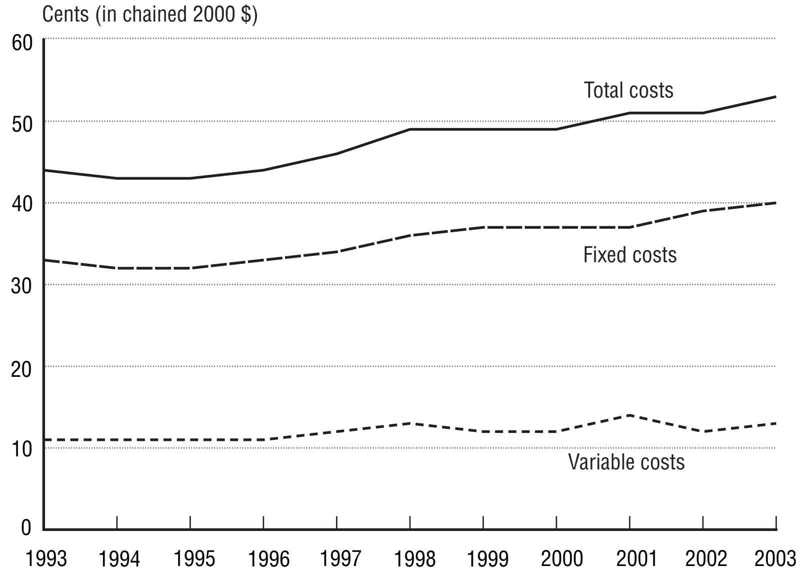
Annually, each person in the United States travels an average of 14,500 miles on daily trips [2]. About 89 percent of these trip-miles are by personal vehicle (e.g., cars, vans, sport utility vehicles, and light trucks). For the balance, people travel via public transportation or air, ride bicycles, walk, or travel by other means.

[1] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B of this report) to chained 2000 dollars.

Sources

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004* (Washington, DC: 2005), table 3-14.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and Federal Highway Administration, *Highlights of the 2001 National Household Travel Survey*, available at http://www.bts.gov/, as of August 2005.

FIGURE 7-2 Average Cost per Mile of Owning and Operating an Automobile: 1993–2003



NOTES: Data are the cost per mile based on 15,000 miles per year. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 7-2b in appendix B) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004* (Washington, DC: 2005), table 3-14.

Cost of Intercity Trips by Train and Bus

Amtrak collected an average of 23¢ per revenue passenger-mile in 2003 (in chained 2000 dollars[1]), up 46 percent from 16¢ per revenue passenger-mile in 1993 (figure 7-3). During the 1990s, Amtrak shifted its focus to urban routes in the Northeast and West. When Amtrak reduced its number of route-miles by 3 percent in 1995, revenue per passenger-mile increased by 3 percent the following year. When track operational length was further reduced by 7 percent in 1999, revenue per passenger-mile increased 4 percent the following year [1]. Today, Northeast Corridor trains serve 13 million riders annually, representing about 60 percent of Amtrak's ticket revenues [2].

Average intercity Class I bus fares rose 23 percent, from $23 to $28 (in chained 2000 dollars), between 1992 and 2002[2] (figure 7-4). The average bus fare is based on total intercity passenger revenues and the number of intercity bus passenger trips. Because passenger-mile data are not reported, average bus fare per passenger-mile cannot be calculated and compared with similar Amtrak fare data.

Sources

1. Association of American Railroads, *Railroad Facts* (Washington, DC: 1994–2004 issues).
2. National Railroad Passenger Corp. (Amtrak), *Amtrak Strategic Reform Initiatives and FY 06 Grant Request* (Washington, DC: 2005).

[1] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B of this report) to chained 2000 dollars.

[2] Intercity bus data through 2002 were reported by carriers to the Bureau of Transportation Statistics. These data are now reported to the U.S. Department of Transportation, Federal Motor Carrier Safety Administration, and data beyond 2002 were not available at the time this report was prepared.

FIGURE 7-3 Average Amtrak Revenue per Passenger-Mile: 1993–2003

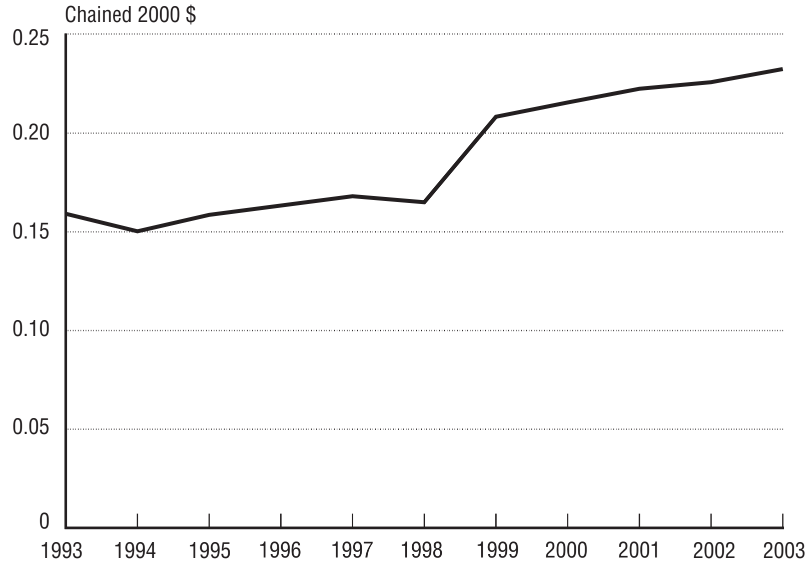
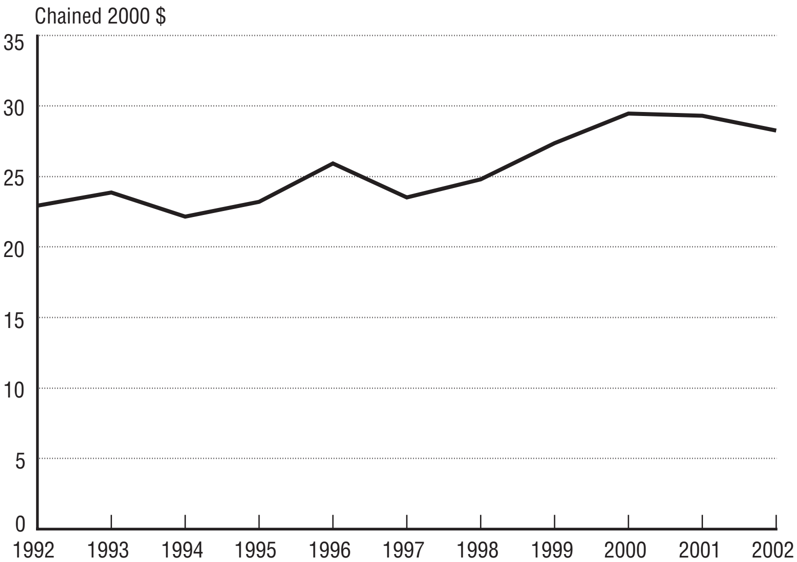


FIGURE 7-4 Average Class I Intercity Bus Fare: 1992–2002



NOTE: To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see tables 7-3 and 7-4 in appendix B) to chained 2000 dollars.

SOURCES: Figure 7-3—Association of American Railroads, *Railroad Facts* (Washington, DC: 1994–2004 issues). **Figure 7-4**—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), *National Transportation Statistics 2003,* table 3-15a and 3-15b, available at http://www.bts.gov/, as of May 2004. **2002**—USDOT, BTS, personal communication, May 2004.

Average Transit Fares

Transit fares remained relatively stable between 1993 and 2003 (figure 7-5). Increases in fares per passenger-mile for some types of transit service were offset by lower fares per passenger-mile for other types.

Local transit bus service, which accounted for 58 percent of public transportation ridership (by number of unlinked passenger trips[1]) in 2003, cost the same (18¢ per passenger-mile) in 2003 as it did in 1993 (in chained 2000 dollars),[2] although it rose to 21¢ in 2000 (figure 7-6).

Demand-response transit[3] fares rose the most between 1993 and 2003: from 19¢ to 23¢ per passenger-mile or 22 percent. These fares were at their highest point (33¢) in 1994. All rail transit fares declined during the 10-year period: commuter rail, –12 percent; heavy rail, –19 percent; and light rail, –17 percent. Rail transit, the second-most heavily used component of transit, accounted for 30 percent of unlinked passenger trips in 2003, while demand-response had less than 1 percent of the trips [1].

[1] See Transit Ridership in section 6, "Availability of Mass Transit," for a discussion of unlinked trips.

[2] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B of this report) to chained 2000 dollars.

[3] Demand-response transit operates on a nonfixed route and nonfixed schedule in response to calls from passengers or their agents to the transit operator or dispatcher.

Source

1. U.S. Department of Transportation, Federal Transit Administration, *National Transit Summaries and Trends, 2003 National Transit Profile*, available at http://www.ntdprogram.com/, as of April 2005.

FIGURE 7-5 Average Transit Fare per Passenger-Mile: 1993–2003

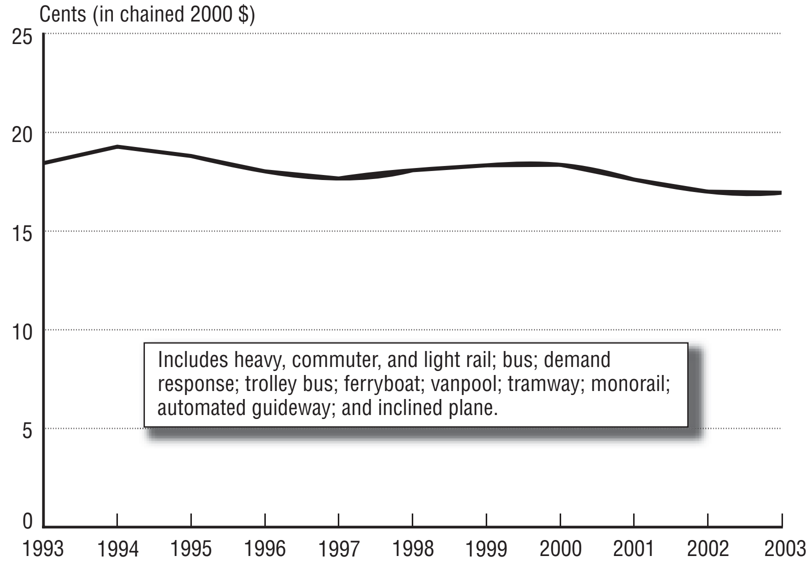
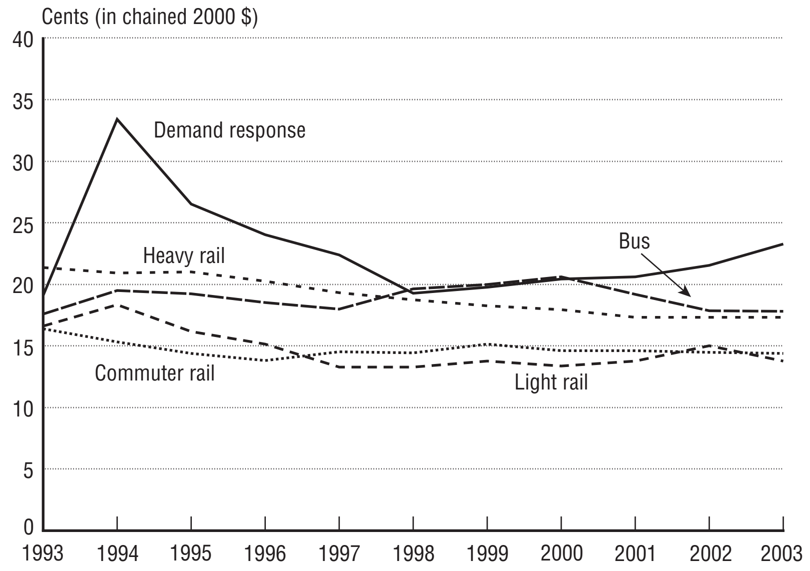


FIGURE 7-6 Average Transit Fare per Passenger-Mile by Selected Service Type: 1993–2003



NOTES: Data for 2003 are preliminary. Fares include subsidies. For definitions of service types, see Glossary.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 7-5b/7-6b in appendix B) to chained 2000 dollars.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on American Public Transportation Association, *Public Transportation Fact Book 2005* (Washington, DC: 2005), tables 11 and 71.

Air Travel Price Index

Commercial airlines offer a variety of discount fares to fill their flights, but these special airfares, facilitated by Internet commerce and "frequent flyer" programs, complicate efforts to measure changes in the prices people pay for commercial air travel. To improve these measurements, the Bureau of Transportation Statistics (BTS), in consultation with the Bureau of Labor Statistics (BLS), developed an Air Travel Price Index (ATPI) (box 7-A).

ATPI data can be used to compare changes in prices among many cities. In a comparison of three medium-sized cities, for instance, a dip appears between 1995 and 1998 for flights originating in Colorado Springs, Colorado (figure 7-7). During this time, the discount carrier Western Pacific operated flights from Colorado Springs, bringing airfares down before it withdrew from the market. Fluctuations in the ATPI of the major U.S. cities of New York, Los Angeles, and Chicago varied less than in Colorado Springs and the other selected medium-sized cities. The ATPI of the three selected U.S. cities collectively peaked in the first quarter of 2001 and have since declined (figure 7-8). Between the first quarter of 2001 and the fourth quarter of 2004, Chicago's ATPI declined by 21 percent, New York's by 15 percent, and Los Angeles' by 13 percent.

BOX 7-A
Air Travel Price Index (ATPI)

The Bureau of Transportation Statistics (BTS) quarterly *Passenger Origin and Destination Survey* provides the data for the ATPI. Through this survey, BTS collects data on a 10 percent sample of airline itineraries. Each sample observation comprises a fare value (actual fare paid, including tax), a sequence of airports and carriers, and other details of an itinerary traveled by a passenger or group of passengers.

BTS computes the ATPI series using a price index methodology similar to that used by other federal statistical agencies. Although the ATPI is computed using a tested index methodology, the effective application of this methodology to the airlines' data is still under development, and it was still considered a research series at the time this report was prepared. BTS updates the ATPI quarterly; see http://www.bts.gov/.

A comparison of the U.S. Origin and the Foreign Origin national-level ATPI reveals a diverging trend.[1] While the "U.S. Origin Only" ATPI increased 2.2 percent from 1995 to 2004, the "Foreign Origin Only" ATPI decreased 9.8 percent over this same period (figure 7-9). Unlike the "U.S. Origin Only" ATPI, which peaked in the first quarter of 2001, the "Foreign Origin Only" ATPI has been trending downward since the third quarter of 1997, while maintaining its overall pattern of peaks in the third or fourth quarters followed by declines in other quarters.

[1] The U.S. Origin ATPI only includes itineraries originating in the United States whether the destinations are domestic or international. The Foreign Origin ATPI includes itineraries with a foreign origin and a U.S. destination.

FIGURE 7-7 Air Travel Price Index by City of Origin for Three Medium-Sized U.S. Cities: 1995–2004
All classes of service combined

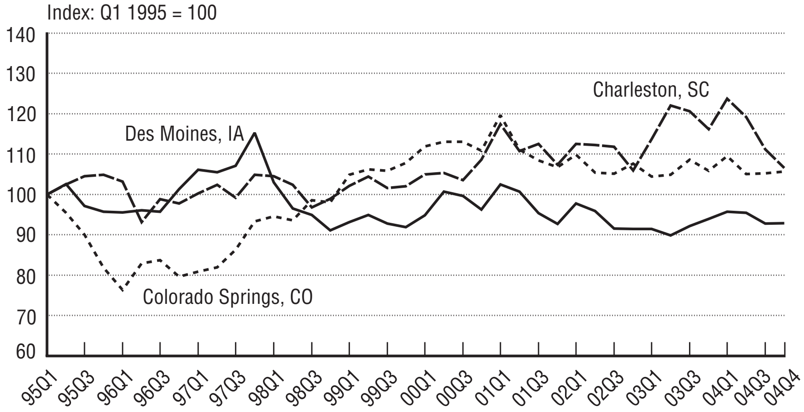


FIGURE 7-8 Air Travel Price Index by City of Origin for Three Major U.S. Cities: 1995–2004
All classes of service combined

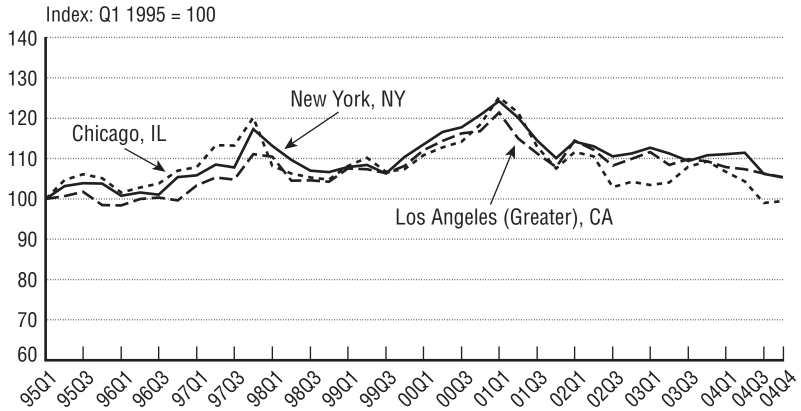
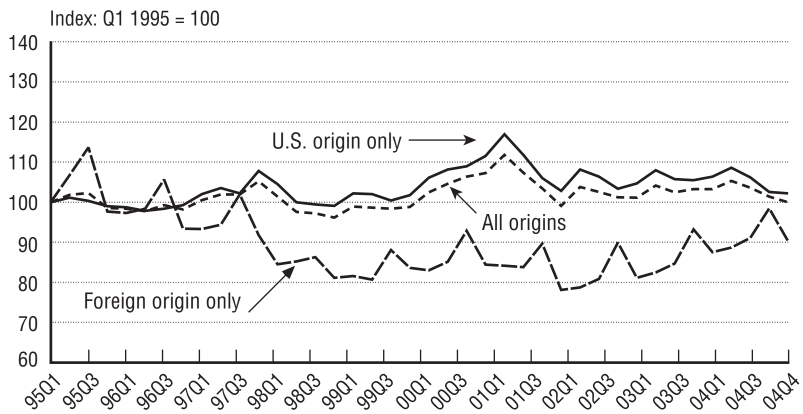


FIGURE 7-9 Comparision of Air Travel Price Indexes: 1995–2004
Not seasonally adjusted



NOTE: The Bureau of Transportation Statistics computes the *Air Travel Price Index* values using the Fisher Index formula.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Air Travel Price Index,* available at http://www.bts.gov/, as of May 2005.

Labor Productivity in Transportation

Labor productivity (output per hour) in the for-hire transportation services industries increased by 18 percent from 1992 to 2002. This compares with an increase of 47 percent for all manufacturing and 24 percent for the overall business sector (figure 8-1). Labor productivity, a common and basic productivity measure, is calculated as the ratio of output to hours worked or to the number of full-time equivalent employees.

The growth of individual transportation subsector labor productivity between 1992 and 2002 varied[1] (figure 8-2). Compared with the overall business sector, rail labor productivity increased at a considerably higher rate (60 percent). Meanwhile, labor productivity in air transportation increased 27 percent, and long-distance trucking productivity grew 12 percent.

Comparing annual growth rates is another way to interpret changes in labor productivity over time. For overall business, labor productivity grew at an annual rate of 2.1 percent between 1992 and 2002. Labor productivity in rail transportation—where productivity has been affected by consolidation of companies, more efficient use of equipment and lines, increased ton-miles (output), and labor force reductions—increased by 4.6 percent annually. For long-distance trucking and air transportation, annual rates of growth were 1.1 percent and 2.2 percent, respectively.

[1] At the time this report was prepared, data were only available through 2000 for local trucking, petroleum pipeline, and bus carriers. See detailed notes on tables 8-1 and 8-2 for further information.

FIGURE 8-1 Labor Productivity of Major Sectors: 1992–2002
Output per hour

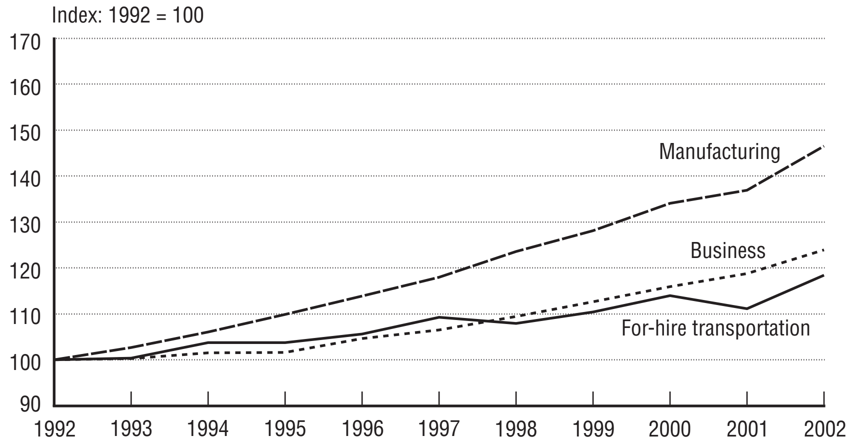
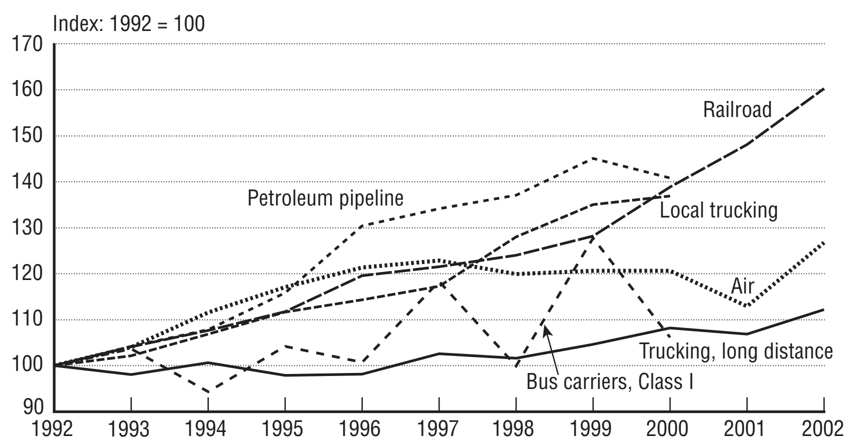


FIGURE 8-2 Labor Productivity of For-Hire Transportation Industries: 1992–2002
Output per hour, except as noted



NOTES: Figure 8-2—No data are available for water transportation or natural gas pipeline. Data for local trucking, bus carriers, and petroleum pipeline are not available beyond 2000. Petroleum pipeline productivity is output per employee.
See tables 8-1 and 8-2 in appendix B for detailed notes on these datasets.

SOURCES: Transportation—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Labor (USDOL), Bureau of Labor Statistics (BLS), Office of Productivity and Technology, "Industry Productivity Database," available at http://www.bls.gov/, as of November 2004; and U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry," available at http://www.bea.gov/, as of November 2004. **Manufacturing and business**—USDOL, BLS, Office of Productivity and Technology, "Industry Productivity Database," available at http://www.bls.gov/, as of November 2004.

Multifactor Productivity

Multifactor productivity (MFP) in air transportation increased by 16 percent between 1991 and 2001 (an annual rate of 1.5 percent), while in the overall private business sector, MFP increased by 10 percent (just under 1 percent annually) (figure 8-3). Thus, the air transportation industry has contributed positively to increases in MFP in the business sector and to the U.S. economy over this period. Data are not available for the same period for rail transportation, but between 1991 and 1999, MFP in this industry increased by 26 percent (an annual rate of 3 percent).

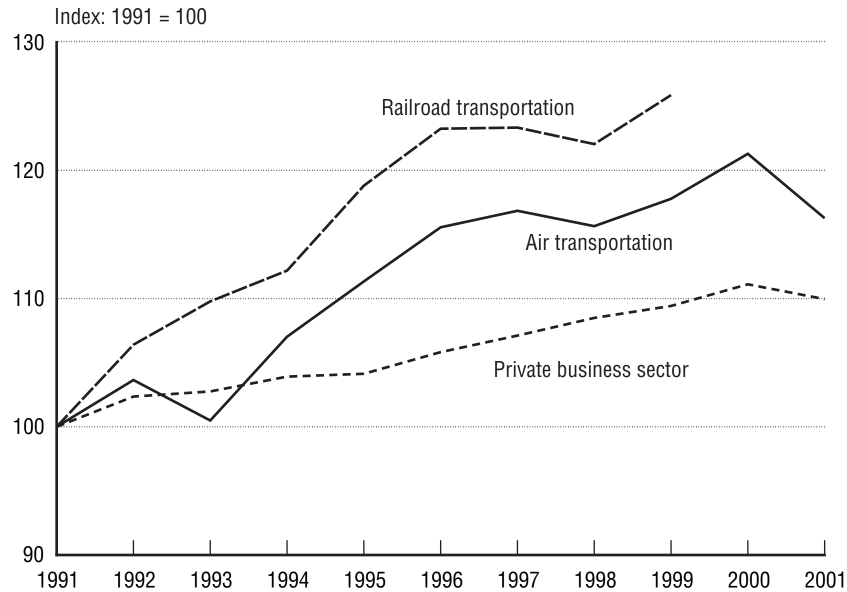
While MFP measures are difficult to construct, they provide a much more comprehensive view of productivity than labor productivity measures. The conventional methodology for calculating multifactor productivity, which is used here, employs growth rates of inputs weighted by their share in total costs. This methodology has been developed and used by various academic researchers and government agencies, such as the Bureau of Labor Statistics.[1]

Transportation MFP data are currently available from the Bureau of Labor Statistics for the rail and air transportation sectors only. The Bureau of Transportation Statistics is developing MFP measures for other transportation industries, such as trucking and pipelines. These data will provide more complete information on the relative importance of transportation in increasing the productivity of the U.S. economy and, hence, transportation's contribution to the economic growth of the country.

---

[1] See, for instance, the discussion on MFP by the Bureau of Labor Statistics in their *Handbook of Methods*, available at http://www.bls.gov/, as of August 2005.

FIGURE 8-3 Multifactor Productivity: 1991–2001



NOTE: Rail productivity data are only available through 1999. Source data are indexes with base years of 1997 (air), 1996 (business), and 1987 (rail). The Bureau of Transportation Statistics reindexed these data so that 1991 is the base year for all.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, available at http://www.bls.gov/, as of October 2003. **Business sector**—"Most Requested Statistics." **Rail**—"Industry Multifactor Productivity Data Table by Industry, 1987–1999." **Air**—"Multifactor Productivity Data for Air Transportation."

Transportation Services Index

The Transportation Services Index (TSI) rose to 112.6 in May 2005,[1] the highest level attained in the 15-year period beginning January 1990, and a 4.0 percent increase from its May 2004 level of 108.3 (figure 9-1). The TSI is an experimental, seasonally adjusted index of monthly changes in the output of services of the for-hire transportation industries, including railroad, air, truck, inland waterways, pipeline, and local transit [1].

The Bureau of Transportation Statistics (BTS), which produces the measure, calculates the TSI as a single transportation index and as separate indexes for its two components—freight and passenger transportation. The freight TSI rose to 113.1 in May 2005, 2.4 percent higher than May 2004 (110.5), and reached a record high for the 15-year period covered by the index. In May 2005, the passenger TSI was 111.2, an increase of 8.2 percent from 102.8 in May 2004.

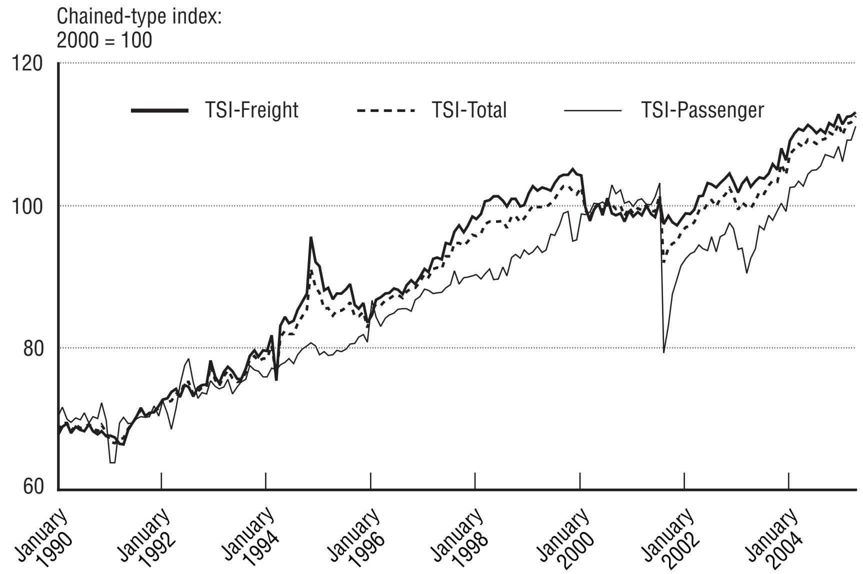
BTS released the first TSI data (covering January 1990 through December 2003) in March 2004. The index is still under development as BTS works to refine the index data sources, methodologies, and interpretations. A prototype version of the TSI suggested a significant relationship with the economy, in particular, with cyclical downturns. To verify these linkages, however, more research is needed.

[1] The TSI is a chained-type index where 2000 = 100.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Transportation Services Index*, available at http://www.bts.gov/, as of August 2005.

FIGURE 9-1 Transportation Services Index: January 1990–May 2005
Monthly data, seasonally adjusted



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Transportation Services Index,* available at http://www.bts.gov/, as of August 2005.

Transportation-Related Final Demand

Total transportation-related final demand rose by 33 percent between 1993 and 2003 (in 2000 chained dollars[1]) from $833.8 billion to $1,112.8 billion (figure 9-2). However, transportation-related final demand as a share of Gross Domestic Product (GDP) showed little change throughout the period. This implies that transportation-related final demand grew at about the same rate as GDP. In 2003, the share of transportation-related final demand in GDP was 10.7 percent, compared with 11.1 percent in 1993 [1].

Personal consumption of transportation—which includes household purchases of motor vehicles and parts, gasoline and oil, and transportation services—is the largest component of transportation-related final demand. It amounted to $911.8 billion in 2003 and accounted for 82 percent of the total transportation-related final demand (figure 9-3). Government purchases and private domestic investment commanded equal shares of transportation-related final demand in 1999. However, during the rest of the 1993 to 2003 period, government purchases held a greater share. Government purchases reached $199.8 billion in 2003 (an 18 percent share), while private investment totaled $127.3 billion (an 11 percent share).

The United States imported more transportation-related goods and services than it exported between 1993 and 2003. This gap has widened in recent years. In 1993, net exports were 3.9 percent of total transportation-related final demand. By 2003, net exports rose to 11 percent. Deficits in the trade of automobiles and other vehicles and parts have been the primary component of the deficit in transportation-related goods and services.

Transportation-related final demand is the total value of transportation-related goods and services purchased by consumers and government and by business as part of their investments.[2] Transportation-related final demand is part of GDP, and its share in GDP provides a direct measure of the importance of transportation in the economy from the demand side. The goods and services included in transportation-related final demand are diverse and extensive, ranging from automobiles and parts, fuel, maintenance, auto insurance, and so on, for user-operated transportation to various transportation services provided by for-hire transportation establishments.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Account tables, available at http://www.bea.gov/, as of January 2005.

[1] To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B of this report) to chained 2000 dollars.

[2] Also included are the net exports of these goods and services, because they represent spending by foreigners on transportation goods and services produced in the United States. Imports, however, are deducted because consumer, business, and government purchases include imported goods and services. Therefore, deducting imports ensures that total transportation-related spending reflects spending on domestic transportation goods and services.

FIGURE 9-2 Transportation-Related Final Demand and Share of GDP: 1993–2003

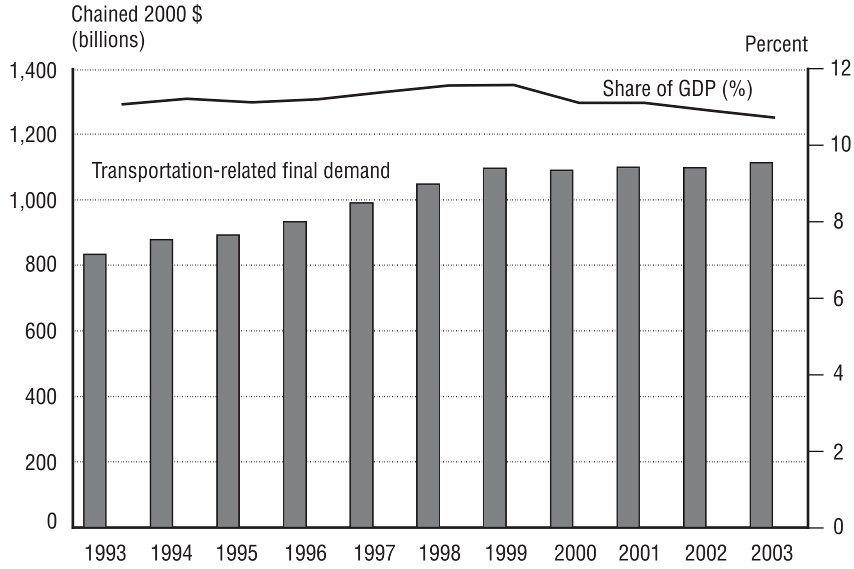
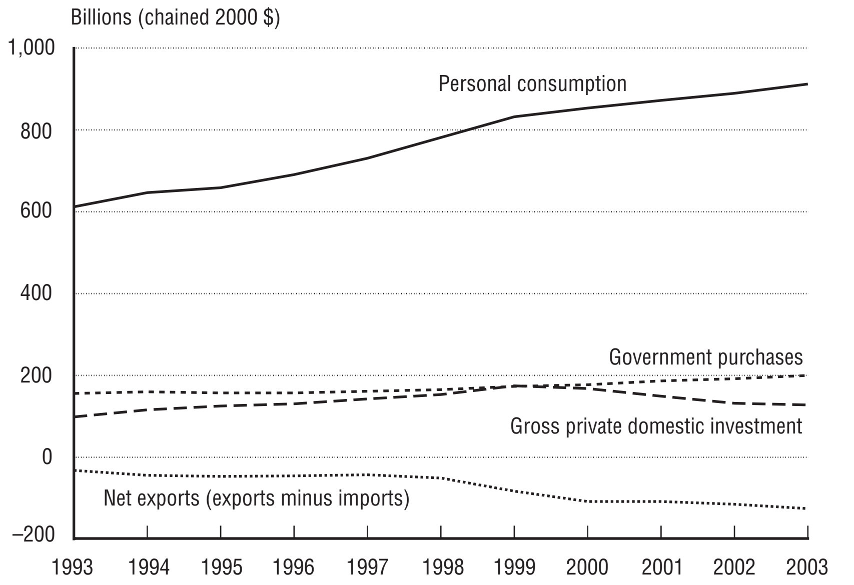


FIGURE 9-3 Transportation-Related Final Demand by Type: 1993–2003



KEY: GDP = Gross Domestic Product.

NOTES: *Total transportation-related final demand* is the sum of all consumer, private business, and government purchases of transportation-related goods and services, plus net exports (i.e., the difference between transportation imports and transportation exports). *Gross private domestic investment* covers transportation equipment and structures for railroads and petroleum pipelines. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 9-2b in appendix B) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts, available at http://www.bea.doc.gov/, as of January 2005.

For-Hire Transportation

For-hire transportation industries contributed $314.3 billion to the U.S. economy[1] in 2003, a less than 1 percent increase from $217.2 billion in 1993 (in 2000 chained dollars[2]) (figure 9-4). Over the same period, this segment's share in Gross Domestic Product (GDP) hovered around 3 percent. This suggests that the for-hire transportation segment of the economy has been growing at about the same rate as has GDP.

Among for-hire transportation industries, trucking, air, and the combined category of other transportation and support activities[3] contributed the largest amount to GDP (figure 9-5). In 2003, they accounted for $88.0 billion, $73.7 billion, and $71.3 billion, respectively—almost three-quarters of the net output of the for-hire transportation industries.

Air transportation's contribution grew the most (146 percent) between 1993 and 2003, despite a slight dip of 1 percent between 2000 and 2001. Air more than gained back this loss by increasing its contribution to GDP by 7 percent the next year. The contributions of warehousing and storage and other transportation and support activities grew 96 percent and 32 percent, respectively between 1993 and 2003. Meanwhile, rail's contribution grew the least at 5 percent, while water transportation rose 13 percent and pipeline, 10 percent [1].

For-hire transportation is one component of the nation's transportation services. The second is in-house transportation services. For-hire transportation services are provided by firms for a fee, while in-house transportation services are provided by nontransportation establishments for their own use. For instance, when a retail store uses its own trucks to move goods from one place to another, it is providing an in-house service.

Time-series data on in-house transportation services are not readily available. The Bureau of Transportation Statistics analyzed the contribution of in-house transportation services to GDP in 2000, using 1996 data, and is in the process of updating that work. The earlier analysis estimated that in-house transportation contributed $142 billion (in 1996 dollars) to the economy in 1996, while for-hire transportation contributed $243 billion.[4]

[1] As measured in net output or value added to the economy.

[2] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B of this report) to chained 2000 dollars.

[3] This segment includes scenic and sightseeing transportation, support activities for transportation (see table 9-5 in appendix B for examples), and couriers and messengers.

Source

1. U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry," available at http://www.bea.gov/, as of January 2005.

[4] The full results of the 2000 study appear in *Transportation Statistics Annual Report 2000*, available at http://www.bts.gov/, as of March 2005.

FIGURE 9-4 Value Added by For-Hire Transportation to U.S. GDP and Share of GDP: 1993–2003

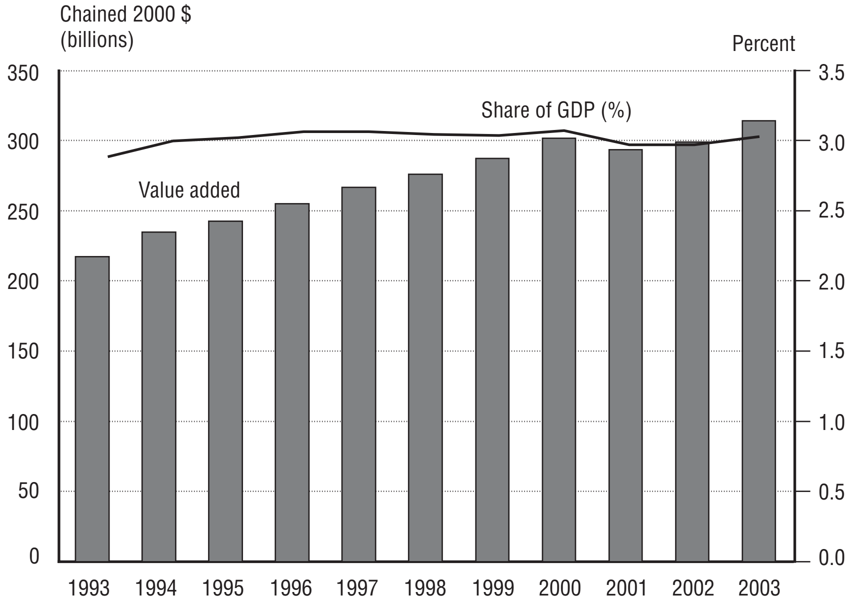
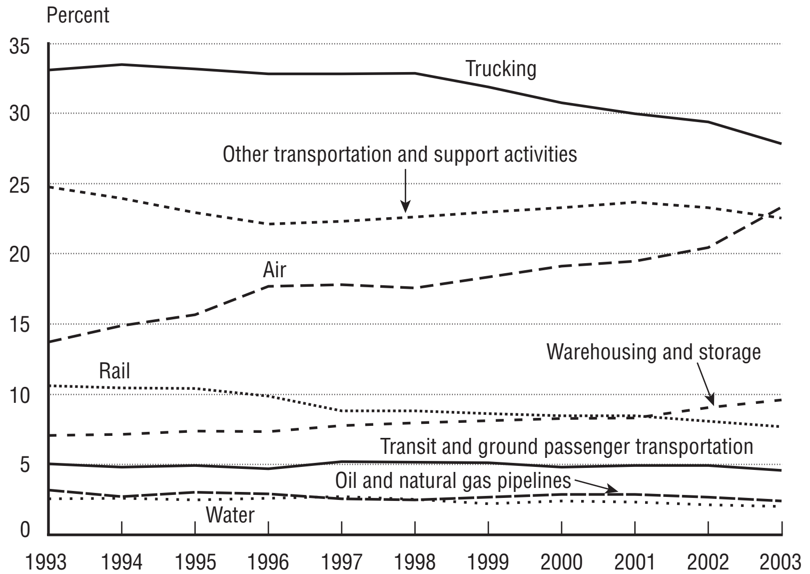


FIGURE 9-5 For-Hire Transportation Value Added by Mode: 1993–2003



KEY: GDP = Gross Domestic Product.

NOTES: To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 9-4b in appendix B) to chained 2000 dollars. Definitions of subsectors are in table 9-5 in appendix B.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry," available at http://www.bea.gov/, as of January 2005.

Government Transportation Revenues

Federal, state, and local government transportation revenues dedicated to finance transportation programs[1] increased from $97.4 billion in fiscal year 1991 to $122.1 billion in fiscal year 2001 (in 2000 chained dollars[2]) for an annual growth rate of 2.3 percent (figure 10-1). However, the share of transportation revenues in total government revenues decreased slightly from 3.9 percent to 3.5 percent during the same period [1, 2].

The federal government share of these revenues averaged 32 percent per year between fiscal years 1991 and 1997 and then rose to an average share of 37 percent per year from fiscal years 1998 to 2001. Meanwhile, state governments' share of revenues dropped from an average of 48 percent in fiscal years 1991 through 1997 to 43 percent between fiscal years 1998 and 2001. The rise in the federal government share after fiscal year 1997 can be attributed to increased federal motor fuel taxes, the introduction of new transportation user charges, and the shift of transportation receipts from the general fund to transportation trust funds [3].

Among all transportation modes, highway usage generates the largest amount of government transportation revenues, accounting for $83.9 billion or 69 percent of the total in fiscal year 2001 (figure 10-2). Air transportation produces the second largest share (18 percent). Transit revenues, a combination of highway fees paid into the mass transit account of the Highway Trust Fund for transit purposes and proceeds from operations of the public mass transportation system, represent 11 percent of the total.

With annual growth rates of 15 percent and 6 percent, respectively, pipeline and air revenues grew faster than did other modes from fiscal year 1991 to fiscal year 2001 [3]. Rail is not represented, because fuel and property tax receipts from rail are channeled into the general fund and, hence, do not fall under the definition of transportation revenues used by the Bureau of Transportation Statistics. Amtrak generates revenues from passenger fares; but because Amtrak is not considered a government entity, its revenues are not included.

[1] Money collected by government from transportation user charges and taxes to finance transportation programs are counted by the Bureau of Transportation Statistics as transportation revenues. The following types of receipts are excluded: 1) revenues collected from users of the transportation system that are directed to the general fund and used for nontransportation purposes, 2) nontransportation general fund revenues that are used to finance transportation programs, and 3) proceeds from borrowing.

[2] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B) to chained 2000 dollars.

Sources

1. Executive Office of the President of the United States, Office of Management and Budget, *Historical Tables, Budget of the United States Government, Fiscal Year 2005*, available at http://www.whitehouse.gov/omb/, as of January 2005.
2. U.S. Department of Commerce, U.S. Census Bureau, *State and Local Government Finances*, available at http://www.census.gov/, as of January 2005.
3. U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from USDOT, BTS, *Government Transportation Financial Statistics 2003*, available at http:/www.bts.gov/, as of February 2005.

FIGURE 10-1 Federal, State, and Local Government Transportation Revenues: Fiscal Years 1991–2001

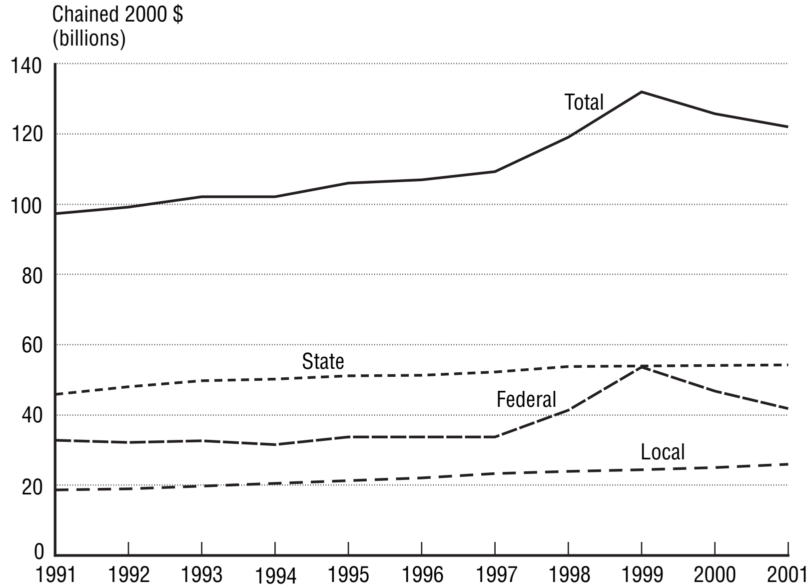
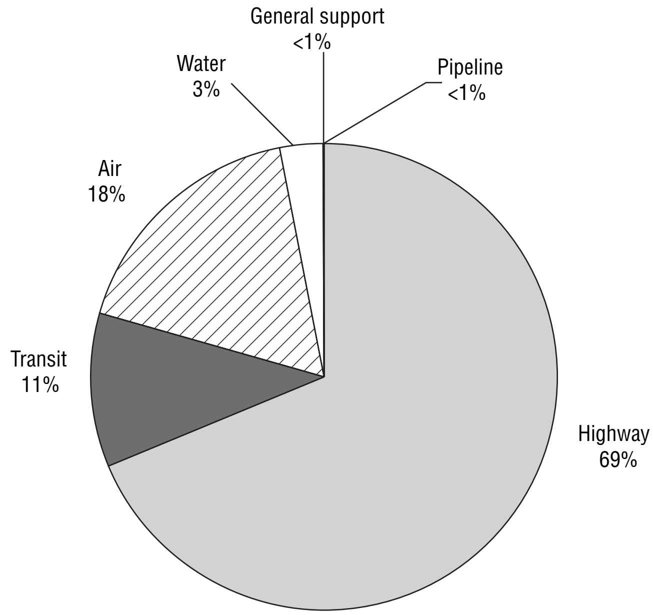


FIGURE 10-2 Shares of Government Transportation Revenues by Mode: Fiscal Year 2001



NOTE: To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 10-1b in appendix B) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003,* available at http://www.bts.gov/, as of February 2005.

Government Transportation Expenditures

Spending on building, maintaining, operating, and administering the nation's transportation system by all levels of government totaled $176.2 billion in fiscal year 2001 (in chained 2000 dollars[1]). The federal government spent 30 percent of the funds; state and local governments, the other 70 percent (figure 10-3).

Between fiscal years 1991 and 2001, federal, state, and local government transportation expenditures grew faster than their total government expenditures. This growth increased transportation's share of total government expenditures from 4.9 percent to 5.3 percent. In addition, state and local government spending on transportation grew slightly faster. State and local governments also spent more on transportation, as a percentage of their total expenditures, than the federal government. In fiscal year 2001, the respective shares were 8 percent and 3.0 percent [1, 2, 3].

Among all modes of transportation, highways receive the largest amount of government transportation funds. In fiscal year 2001, highway funding was $107.7 billion, accounting for 61 percent of the total (figure 10-4). Transit and air modes accounted for 19 percent and 14 percent, respectively, while rail and pipeline modes accounted for less than 1 percent each. Between fiscal years 1991 and 2001, government expenditures on all modes except pipeline and rail transportation increased at about the same rate, leaving the overall modal distribution of government transportation expenditures almost unchanged. During this period, federal government pipeline expenditures[2] rose 133 percent, from $12 million in 1991 to $28 million in 2001, and rail expenditures decreased 27 percent, from $987 million to $723 million [3].

[1] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B) to chained 2000 dollars.

Sources

1. Executive Office of the President of the United States, Office of Management and Budget, *Historical Tables, Budget of the United States Government, Fiscal Year 2005*, available at http://www.whitehouse.gov/omb/, as of January 2005.
2. U.S. Department of Commerce, U.S. Census Bureau, *State and Local Government Finances*, available at http://www.census.gov/, as of January 2005.
3. U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from USDOT, BTS, *Government Transportation Financial Statistics 2003*, table 4-B, available at http://www.bts.gov/, as of February 2005.

[2] State and local expenditures data for pipeline are not available after 1995.

FIGURE 10-3 Federal, State, and Local Government Transportation Expenditures: Fiscal Years 1991–2001

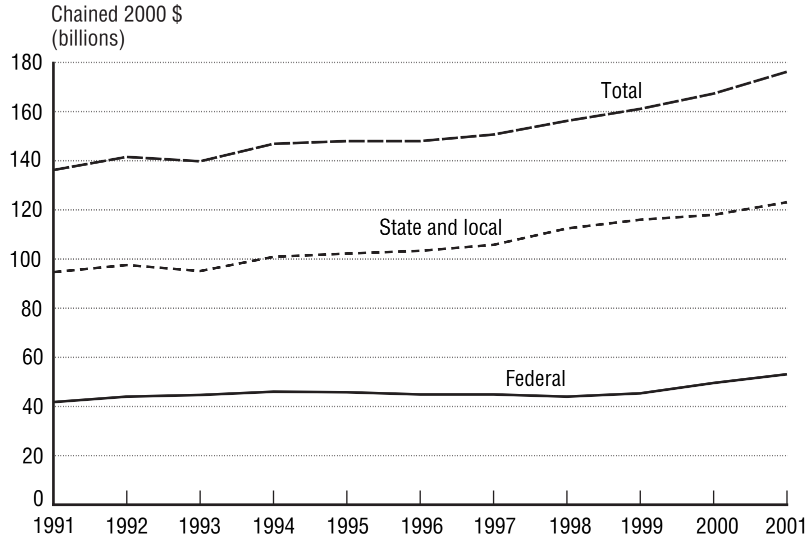
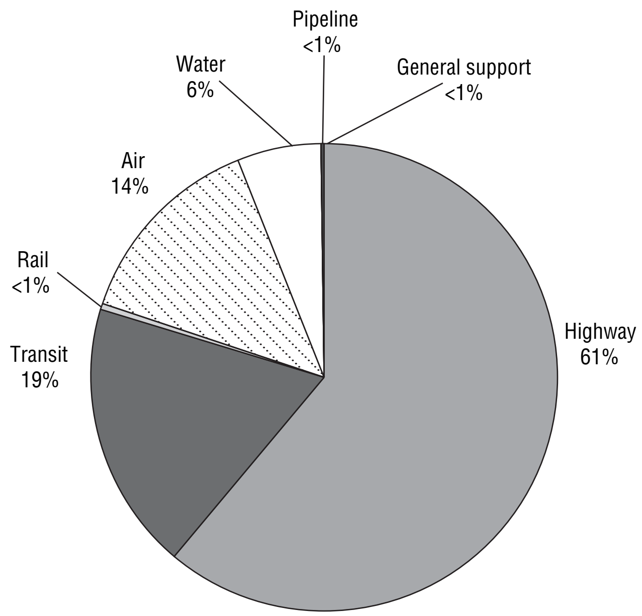


FIGURE 10-4 Shares of Government Transportation Expenditures by Mode: Fiscal Year 2001



NOTES: Federal transportation expenditures consist of outlays of the federal government including not only direct spending but also grants made to state and local governments. To avoid double counting, state and local transportation expenditures include their outlays from all sources of funds except federal grants received. Pipeline data only include federal-level expenditures, as state and local data are not available. State and local data are reported together, because disaggregated federal grants data are not available.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 10-3b in appendix B) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003,* available at http://www.bts.gov/, as of February 2005.

Government Transportation Investment

Gross government transportation investment,[1] including infrastructure and vehicles, increased steadily over the last decade. The Bureau of Transportation Statistics estimates that total gross government transportation investment reached $88.8 billion in 2001, compared with $62.2 billion in 1991 (in chained 2000 dollars[2]), an annual growth rate of 3.2 percent[3] (figure 10-5). Government transportation investment grew faster than did other government investments. As a result, the share of transportation in total government investment increased from 24 percent in 1991 to 27 percent in 2001 [1, 2]. However, the share of government transportation investment in the Gross Domestic Product (GDP) changed little, remaining at almost 1 percent each year [2]. This indicates that funds allocated by government for improving and expanding transportation capital have been growing at the same pace as GDP.

State and local governments are the main investors in transportation infrastructure, but their relative role has decreased slightly over time. Direct federal infrastructure investment rose from $3.7 billion to $4.1 billion—an annual growth rate of 1.1 percent between 1991 and 2001. State and local investment in transportation infrastructure grew from $54.2 billion to $75.3 billion, an annual growth rate of 3.3 percent (figure 10-6).

Infrastructure accounted for up to 93 percent of the total government transportation investment between 1991 and 2001; over 73 percent of which was allocated to highways in 2001 (figure 10-7). The share of highway investment in total infrastructure investment has gone down somewhat since 1991 (76 percent), reflecting slight increases in other modes.

Sources

1. U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Account tables, available at http://www.bea.gov/, as of June 2005.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Transportation Investment," forthcoming.

[1] *Transportation investment* is the purchase value of transportation equipment and the purchase or construction value of transportation facilities and structures, namely, roads, railways, airports, air traffic control facilities, water ports, pipelines, and so forth, that have a service life of longer than one year. The total purchase or construction value of new transportation capital in a year is gross investment. While investment increases the stock of transportation capital, the existing transportation capital stock depreciates or wears out over time. Therefore, gross investment minus depreciation provides net investment.

[2] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B) to chained 2000 dollars.

[3] Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years.

FIGURE 10-5 Gross Government Investment in Transportation Infrastructure and Rolling Stock: 1991–2001

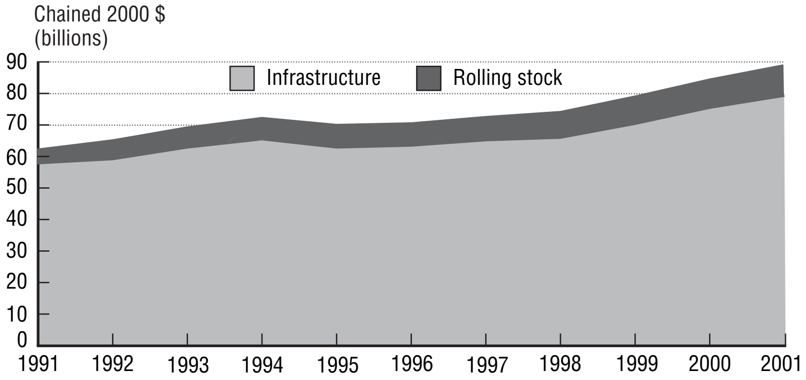


FIGURE 10-6 Gross Government Investment in Transportation Infrastructure by Level of Government: 1991–2001

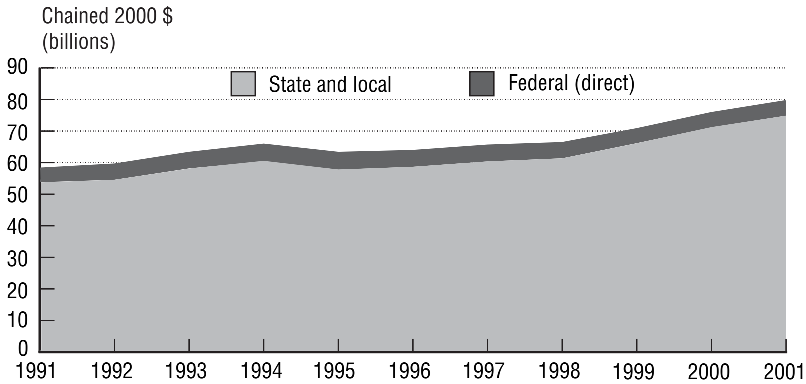
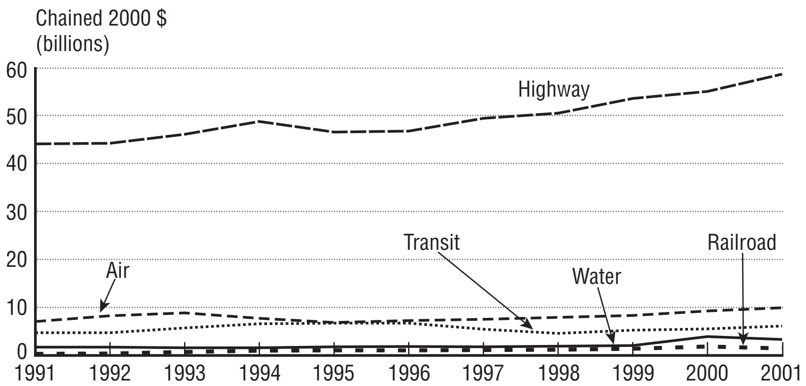


FIGURE 10-7 Gross Government Investment in Transportation Infrastructure by Mode: 1991–2001



NOTES: Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years. *Investment in transportation infrastructure* constitutes the purchase or construction value of transportation facilities and structures. *Investment in rolling stock* data consist of government outlays for motor vehicles only, because data for other rolling stock (e.g., aircraft, vessels, and boats) are not available. Data include all modes except pipeline. **Figures 10-5 and 10-7**—Federal, state, and local data are combined. State and local rail data were only available from 1993–2000 when this report was prepared.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see tables 10-5b, 10-6b, and 10-7b in appendix B) to chained 2000 dollars.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Transportation Investment," forthcoming. U.S. Department of Commerce, U.S. Census Bureau, "Value of Construction Put in Place Statistics," Detailed Construction Expenditures Tables, available at http://www.census.gov/, as of June 2005.

Federal Subsidies to Passenger Transportation

The net flow of funds to and from the federal government for passenger transportation varies by mode and over time (figure 10-8). On average, transit received $5.1 billion (in chained 2000 dollars[1]) per year in net federal subsidies[2] between 1992 and 2002, more than any other mode of transportation. During this same period, highway users paid an average of $7.8 billion a year in excess of user charge payments, such as fuel taxes, over their allocated costs, making highway travel the only mode of transportation whose net federal subsidy showed negative values for the entire period [1].

The pattern of net federal subsidies to passenger transportation changes when subsidies are normalized by passenger-miles (figure 10-9). By this measure, rail passenger transportation is the most heavily subsidized mode of passenger transportation, averaging $196 per thousand passenger-miles in federal subsidies.[3] Aviation has also received a sizable federal subsidy during recent years, despite a decline in net federal subsidy per thousand passenger-miles from 1997 to 2000. The decline in aviation's federal subsidies in this earlier period occurred because of an increase in federal receipts from aviation users. (An increase in excise tax rates and the introduction of new taxes in 1997 preceded increases in expenditures.) In contrast, users of automobiles, pickup trucks, and vans paid an average of $2 per thousand passenger-miles in excess of their allocated subsidy from 1992 to 2002. Meanwhile, highway bus transportation received an average federal subsidy of about $4 per thousand passenger-miles [1].

[1] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B of this report) to chained 2000 dollars.

[2] Net federal subsidies constitute the excess of expenditures over revenues.

[3] Rail includes both Amtrak and Alaska Railroad.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Federal Subsidies to Passenger Transportation*, December 2004, available at http://www.bts.gov/, as of February 2005.

FIGURE 10-8 Net Federal Subsidies to Passenger Transportation by Mode: Fiscal Years 1992–2002

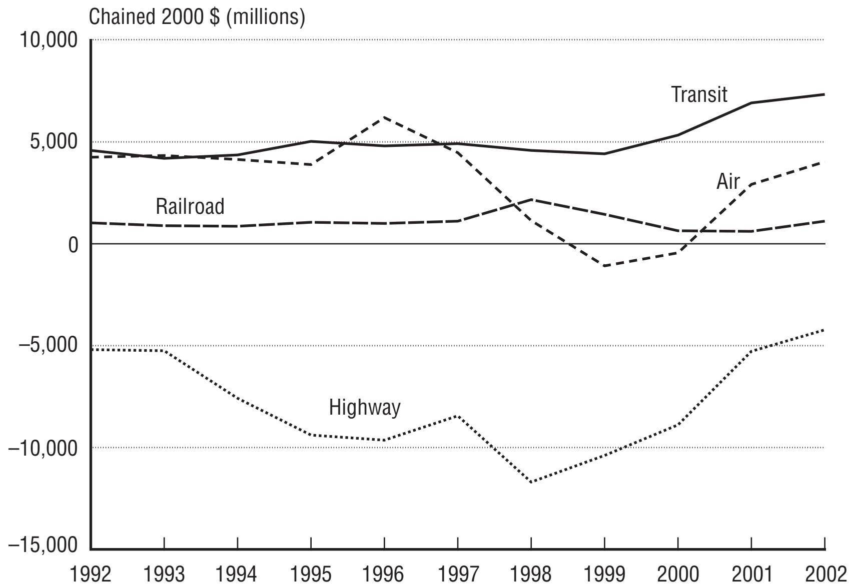
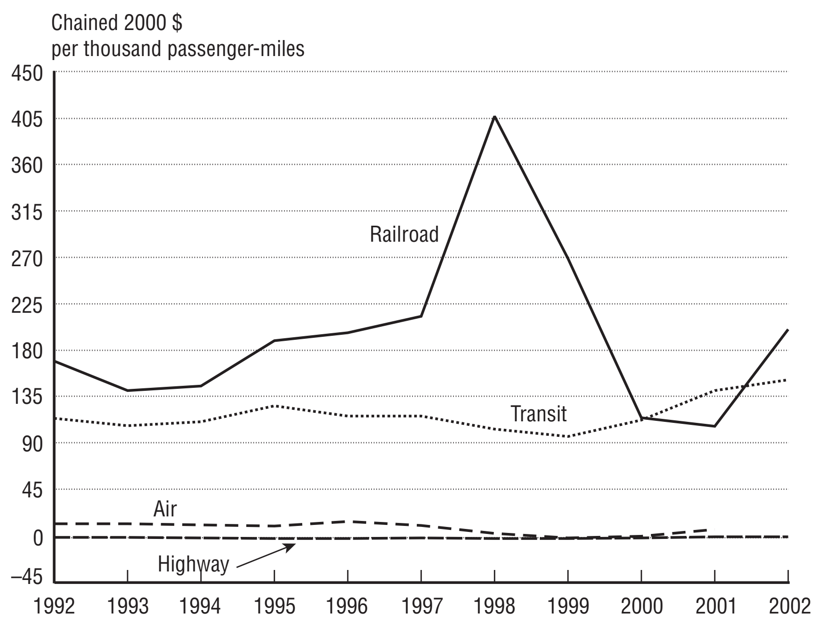


FIGURE 10-9 Net Federal Subsidies to Passenger Transportation by Mode: Fiscal Years 1992–2002



NOTES: *Net federal subsidy* is estimated as federal outlays minus federal receipts from transportation taxes and user fees. Actual outlays and receipts are used in the calculation. Negative numbers show user charge payments to the federal government in excess of cost responsibility. See detailed notes in tables 10-8 and 10-9 in appendix B.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see tables 10-8b and 10-9b in appendix B) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Federal Subsidies to Passenger Transportation," December 2004, available at http://www.bts.gov/, as of February 2005.

Relative Prices for Transportation Goods and Services

The United States had relatively lower prices for transportation goods and services in 2001[1] than did 9 out of 24 Organization for Economic Cooperation and Development (OECD) countries (figure 11-1). However, the nation's top two overall merchandise trade partners, Canada and Mexico, had lower relative prices in 2001 than did the United States. Many of the OECD countries that had less expensive transportation goods and services than the United States have developing and transitional economies.

Prices in 2001 for transportation goods and services in Japan and the United Kingdom—both major U.S. trade partners—were much higher than in the United States. However, between 1999 and 2001, these prices in some countries, such as Germany, France, and Belgium, decreased leading to lower relative prices than in the United States [1, 2].

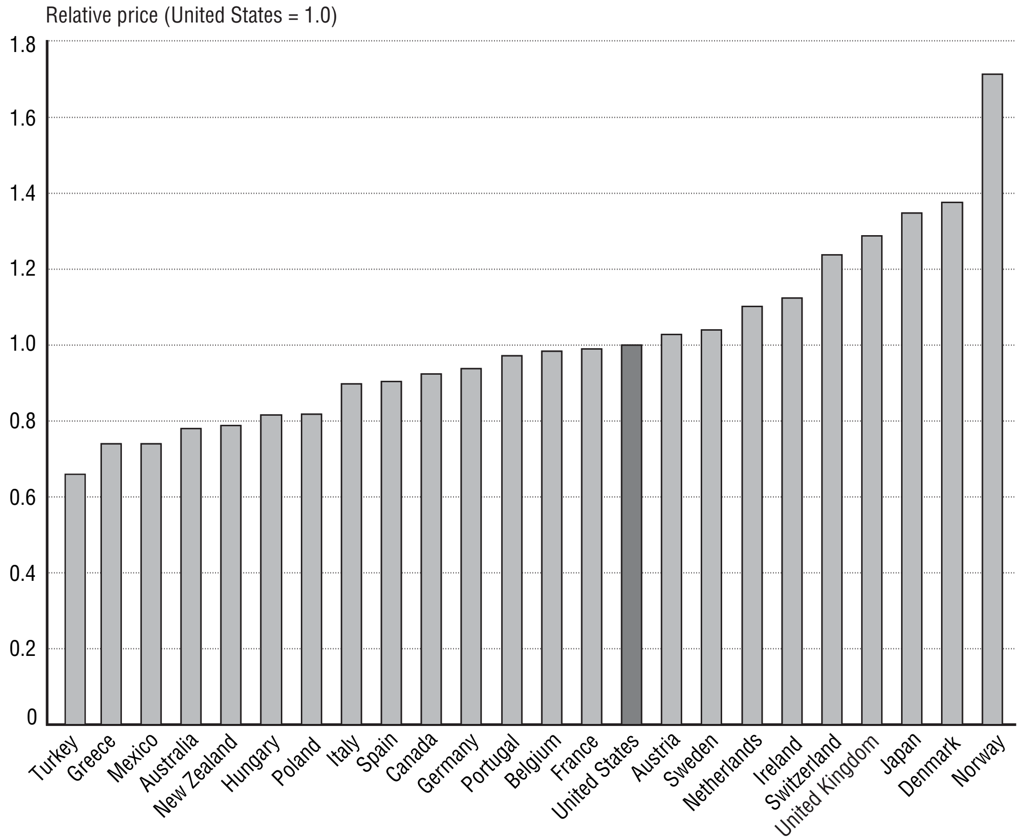
Relative price comparisons may indicate how domestic U.S. transportation industries, goods, and services stack up against their foreign counterparts. The relative price for a good or service traded between two countries is the price for that commodity in one country divided by the price for the same commodity in another country, with the prices for the goods and services in both countries expressed in a common currency. However, relative prices for goods and services alone do not reveal why transportation is more expensive in one country than another. They also do not reveal the quality or reliability of the transportation or fully take into account differences in geospatial factors between countries.

[1] The most recent year for which comparable international data were available at the time this report was prepared.

Sources

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Transportation Statistics Annual Report, October 2003* (Washington DC: 2003), p. 120.
2. ______. *Transportation Statistics Annual Report, September 2004* (Washington DC: 2004), p. 138.

FIGURE 11-1 Relative Prices for Transportation Goods and Services for the United States and Selected Trade Partners: 2001



NOTES: 2001 was the most recent year for which these data were available by country at the time this report was prepared. Data are not available for goods and services separately.

Relative prices are based on purchasing power parity for transportation-related goods and services.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from Organisation for Economic Co-operation and Development (OECD), *Purchasing Power Parities and Real Expenditures, 1999 Results* (Paris, France: August 2002), table 11; and OECD, Main Economic Indicators, January 2002, for 1999 and 2000 Gross Domestic Product implicit price index, consumer price index, and exchange rates.

U.S. International Trade in Transportation-Related Goods

The United States traded $329.9 billion worth (in current dollars[1]) of transportation-related goods (e.g., cars, trains, boats, and airplanes and their related parts) in 2004 with its partners (figure 11-2). Motor vehicles and automotive parts constituted by far the largest share of U.S. international trade in transportation-related goods ($264.4 billion) in 2004; however, they resulted in a subsector trade deficit of $118.2 billion. Trade in aircraft, spacecraft, and parts ($58.6 billion) generated the largest single surplus of any transportation-related commodity category ($25.6 billion) [1]. This surplus was due to trade with several partners, particularly Japan. The only deficits for aircraft products were with Canada, Brazil, and France, countries that have large aviation manufacturing sectors.

Throughout the 1994 to 2004 period, the United States has had a trade deficit (exports minus imports) in transportation-related goods (figure 11-3). By 2004, the trade deficit reached $92.4 billion. This 2004 deficit resulted from the U.S. trade deficit in motor vehicles and parts, which also accounted for 18 percent of the total U.S. merchandise trade deficit of $653.1 billion that year. Over one-third of the motor vehicles and parts deficit involved U.S. trade with Japan (37 percent), while about one-fifth was with Canada (17 percent) [1].

The United States had a relatively small deficit ($304 million) in trade of ships, boats, and floating structures in 2004, following a $257 million deficit in 2003 [1]. A $470 million trade surplus for railway locomotives and parts was down from $504 million in 2003. This 2004 surplus can largely be attributed to the United States supplying railcars and parts to Canada, the largest U.S. trade partner for rail products.

Trade balances indirectly measure U.S. competitiveness in supplying transportation-related goods globally and indicate the U.S. competitive position in the production, provision, and delivery of these goods compared with other major trading partners.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, U.S. International Trade Commission, Interactive Tariff and Trade DataWeb, available at http://dataweb.usitc.gov/, as of May 2005. Also see table 11-2b in appendix B.

[1] All dollar amounts in this section are in current dollars. While it is useful to compare trends in economic activity using constant or chained dollars to eliminate the effects of price inflation, it is not possible to do so in this instance (see note on the figures and on tables 11-2 and 11-3 in appendix B).

FIGURE 11-2 U.S. Trade in Transportation-Related Goods: 1994–2004

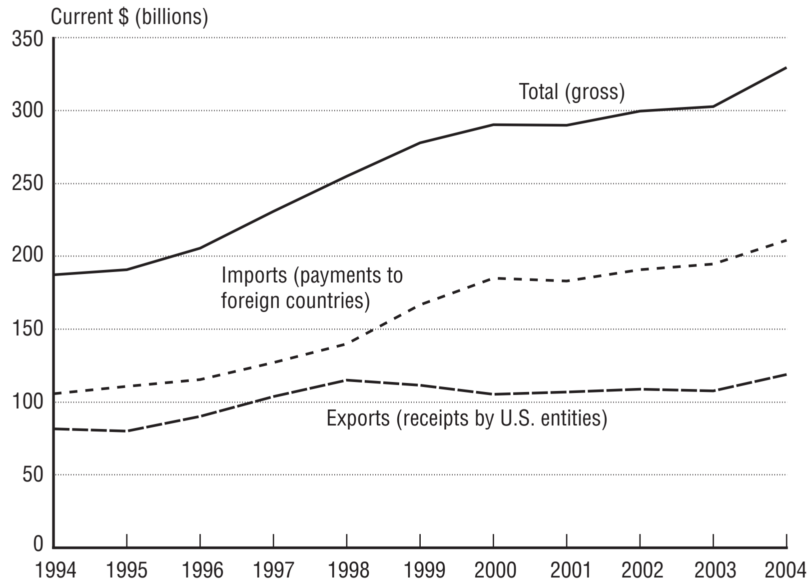
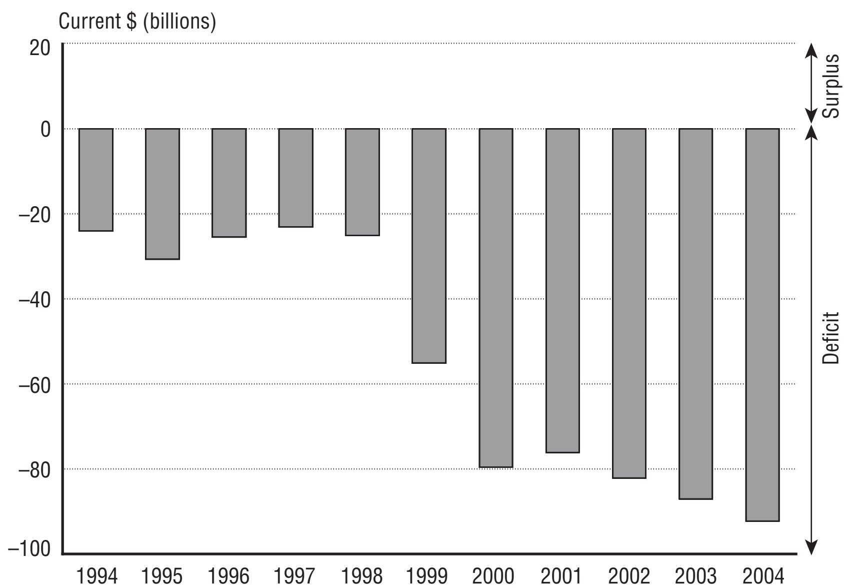


FIGURE 11-3 U.S. Trade Balance In Transportation-Related Goods: 1994–2004



NOTES: *Transportation-related goods* are motor vehicles and parts, aircraft and spacecraft and parts, railway vehicles and parts, and ships and boats. All dollar amounts are in current dollars. These data have not been adjusted for inflation because there is no specific deflator available for transportation-related goods. In addition, it is difficult to control for trading partners' inflation rates as well as currency exchange fluctuations when adjusting the value of internationally traded goods and services for inflation.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, U.S. International Trade Commission, Interactive Tariff and Trade DataWeb, available at http://dataweb.usitc.gov/, as of May 2005.

U.S. International Trade in Transportation-Related Services

U.S. trade in transportation services totaled $133.5 billion (in current dollars[1]) in 2004, up 67 percent from $79.8 billion in 1994 (figure 11-4). However, this growth in transportation-related services trade has not been steady as increases in 2002 and 2003 occurred after two years of decline [1].

By 2004, 58 percent of trade was imports (payments to foreign countries), resulting in a trade deficit of $21.5 billion—the largest trade deficit for transportation services since 1998 (figure 11-5). Unlike trade in transportation-related goods, the United States had a surplus in transportation services from 1994 through 1997. The trade surplus was highest in 1996, at $3.3 billion.

U.S. exports and imports in transportation services include freight services provided by carriers; port services provided by airports, seaports, and terminals; and passenger travel services provided by carriers (box 11-A). U.S. trade in transportation services generates substantial revenues for U.S. businesses in receipts to U.S. carriers and ports. These services also result in payments by U.S. companies to foreign freight and passenger carriers and ports. Because an efficient transportation system puts a premium on system reliability and speed, the performance of freight carriers and ports directly influences the competitiveness of U.S. businesses engaged in international trade.

[1] All dollar amounts in this section are in current dollars. While it is useful to compare trends in economic activity using constant or chained dollars to eliminate the effects of price inflation, it is not possible to do so in this instance (see the note on the figures and tables 11-4 and 11-5 in appendix B).

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, International Transactions Accounts, available at http://www.bea.doc.gov/, as of May 2005.

BOX 11-A
Components of Service Trade

Exports of freight transportation services occur when a U.S. carrier *receives* payments from a foreign company or individual for transporting merchandise. Imports of freight transportation services occur when a U.S. company or individual *pays* a foreign carrier for transporting merchandise. Similarly, U.S. exports of port services occur when foreign carriers purchase services and goods (e.g., fuel) at U.S. airports and seaports. U.S. imports of port services occur when a U.S. carrier purchases services and goods at ports in foreign countries. For passenger travel services, exports consist of fares received by U.S. carriers from foreign residents for travel between the United States and foreign countries and between two foreign points. Imports of travel services consist of fares paid by U.S. residents to foreign carriers for travel between the United States and foreign countries.

Source

U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, November 2001.

Figure 11-4 U.S. Trade in Transportation-Related Services: 1994–2004

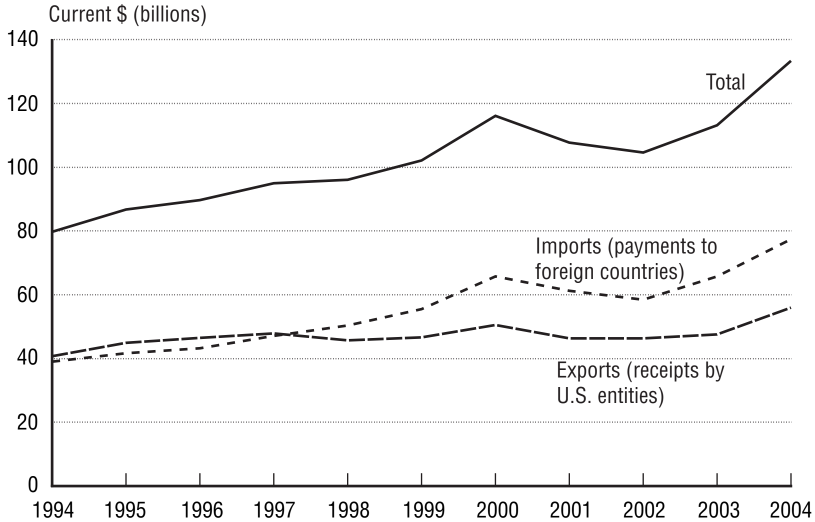
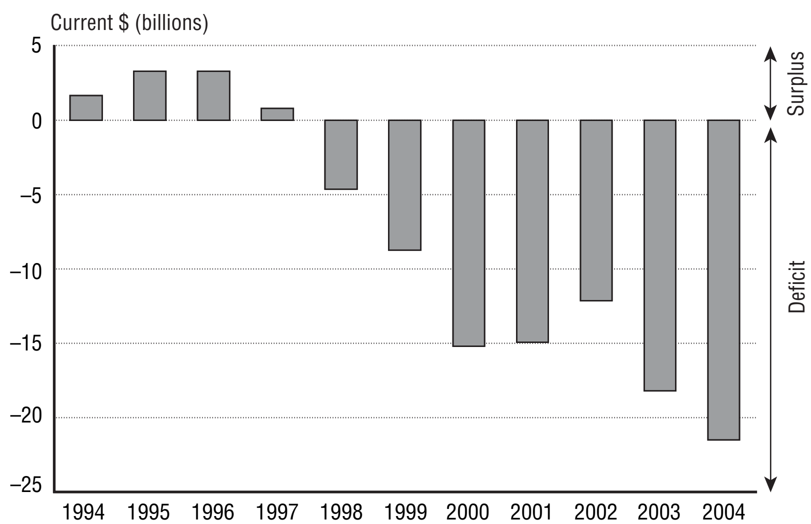


Figure 11-5 U.S. Trade Balance in Transpotrtation-Related Services: 1994–2004



NOTES: *Transportation-related services* include passenger fares and freight and port services. They exclude receipts and payments for travel services, which include purchases of goods and services (e.g., food, lodging, recreation, gifts, entertainment, and any incidental expense on a foreign visit).

These data have not been adjusted for inflation, because there is no specific deflator available for transportation-related services. In addition, it is difficult to control for trading partners' inflation rates as well as currency exchange fluctuations when adjusting the value of internationally traded goods and services for inflation.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, Bureau of Economic Analysis, International Transactions Accounts data, available at http://www.bea.doc.gov/, as of May 2005.

Commercial Motor Vehicle Repairs

In the United States, there were over 677,000 active motor carriers—common, contract, or private—using buses or trucks to provide commercial transportation of passengers or freight in 2004 [1]. Trucking accounted for 40 percent of the nation's freight ton-miles in 2002 [2]. Repair data for most trucks are not public information.

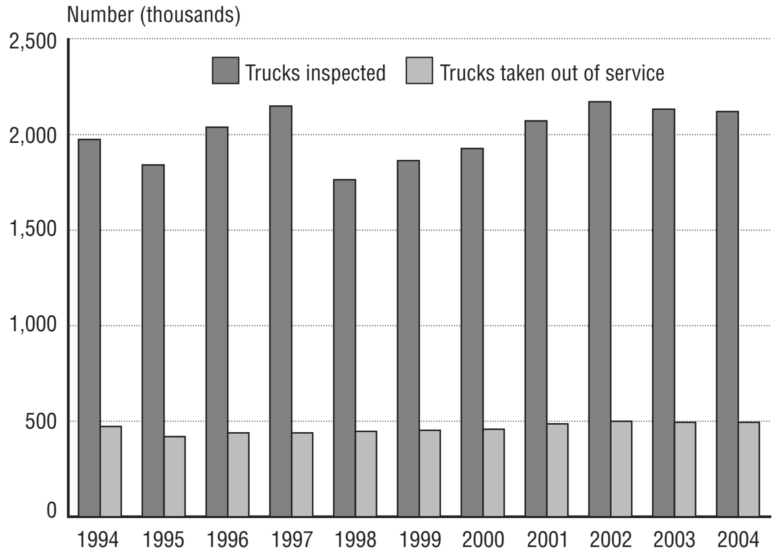
Over 2.1 million roadside truck inspections were completed in 2004, up from 2.0 million in 1994, to ensure that trucks are in compliance with federal safety regulations and standards (figure 12-1). Nearly one-quarter of those inspected in 2004 were taken out of service for repairs. Trucks are taken out of service when they receive a serious violation during the inspection process.

The downtime for a truck undergoing an inspection can vary from 30 to 60 minutes. Trucks that are placed out of service for repairs may be delayed from a few minutes to several days, depending on circumstances.

Sources

1. U.S. Department of Transportation, Federal Motor Carrier Safety Administration, *Commercial Motor Vehicle Facts*, available at http://www.fmcsa.dot.gov/, as of April 2005.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce, U.S. Census Bureau, *2002 Economic Census, Transportation, 2002 Commodity Flow Survey* (Washington, DC: 2004), table 1a.

FIGURE 12-1 Roadside Truck Inspections: 1994–2004



NOTES: Trucks are taken out of service (OOS) when inspectors find serious violations that warrant the issuance of a vehicle OOS order. There may be data inconsistencies across the 1994–2004 time series. The Bureau of Transportation Statistics obtained the data at different times (see Sources) and was unable to verify the consistency of the entire data series prior to publication.

SOURCES: 1994–1998—U.S. Department of Transportation (USDOT), Federal Motor Carrier Safety Administration (FMCSA), Motor Carrier Management Information System, available at http://www.fmcsa.dot.gov/, as of June 2003. **1999–2000**—USDOT, FMCSA, personal communication, Aug. 11, 2003. **2001**— USDOT, FMCSA, Roadside Inspection Activity Summary by Inspection Type, available at http://ai.volpe.dot.gov/, as of March 2005. **2002–2004**—USDOT, FMCSA, Roadside Inspection Activity Summary by Inspection Type, available at http://ai.volpe.dot.gov/, as of May 2005.

Rail Infrastructure and Equipment Repairs

Railroads provide vital freight transportation services—carrying over two-fifths of domestic freight ton-miles each year [2]. Class I railroads[1] maintained 169,069 miles of track in 2003, down 9 percent from 186,288 miles in 1993 [1]. Class I track mileage declined for many decades especially on lines with lower traffic, in part because ownership and maintenance is expensive.[2] As such, rail companies have focused more on replacing worn rails and crossties than on laying new track.

Between 1993 and 2003, rail companies replaced an average of 705,400 tons of rail each year (figure 12-2). The yearly replacements, which can vary substantially because of the long life of rails, ranged from a high of 824,300 tons in 1993 to a low of 632,600 tons in 2003. Using the most common rail weight (130 to 139 lb per yard of rail), it would take approximately 240 tons (120 tons per rail) to cover one mile of track.

There was some growth in the amount of new rails added to the Class I system in the late 1990s as firms increased capacity to handle growing amounts of coal traffic and reconfigured their systems as a result of mergers. Over 200,000 tons of new rail were added both in 1998 and 1999, up from 19,000 in 1990. By 2003, additions were down to 139,400 tons. However, this was an increase of 11 percent over the tons of new rails added in 2002.

Railroads also replace crossties periodically to ensure the integrity of their tracks. Between 1993 and 2003, railroads replaced an average of 12.0 million crossties each year (figure 12-3). The yearly replacements ranged from a high of 13.4 million crossties in 1996 to a low of 10.4 million in 1998. There was some growth in the number of new crossties added to the Class I system in the late 1990s as firms increased capacity or reconfigured their systems. In 1998, 1.8 million new crossties were added; but by 2003, the number of new crossties added declined to the level seen a decade earlier.

Railroads also periodically replace or rebuild locomotives and freight cars. On average, new and rebuilt locomotives made up 4.4 percent of Class I railroad fleets between 1993 and 2003 (figure 12-4). However, the number of both locomotives and freight cars built and rebuilt reached a peak in 1998. There were, for instance, 49,921 fewer new and rebuilt cars in 2003 compared with 1998.

[1] Class I railroads, as defined by the Surface Transportation Board are, rail companies with annual operating revenues of $277.7 million or more in 2003.

[2] Some Class I railroad trackage was sold to smaller railroads rather than being totally abandoned.

Sources

1. Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 48.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, and U.S. Department of Commerce, U.S. Census Bureau, *2002 Economic Census, Transportation, 2002 Commodity Flow Survey* (Washington, DC: December 2004), table 2a.

FIGURE 12-2 Rail Replaced or Added by U.S. Class I Railroads: 1993–2003

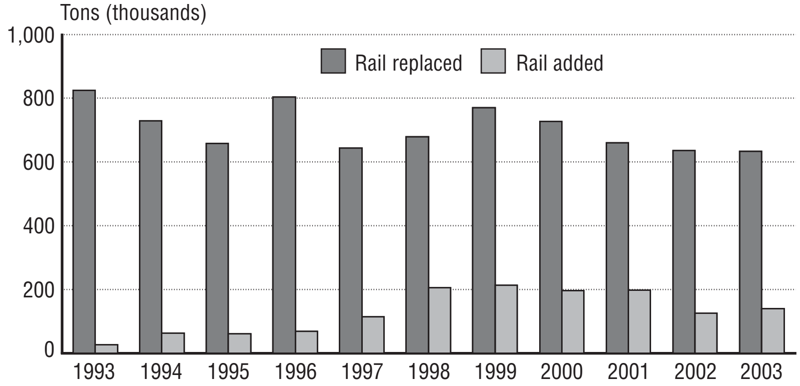


FIGURE 12-3 Crossties Replaced or Added by U.S. Class I Railroads: 1993–2003

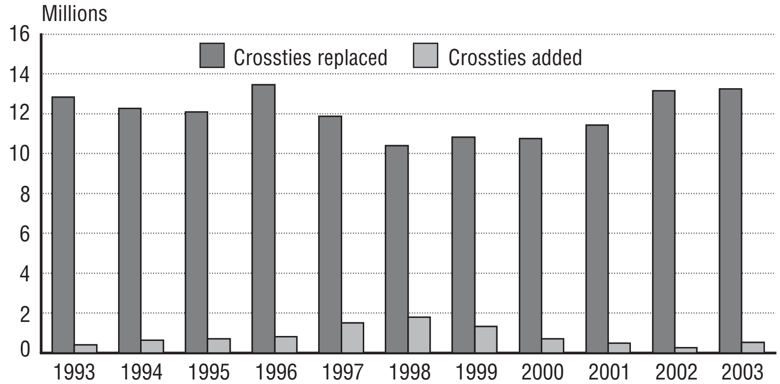
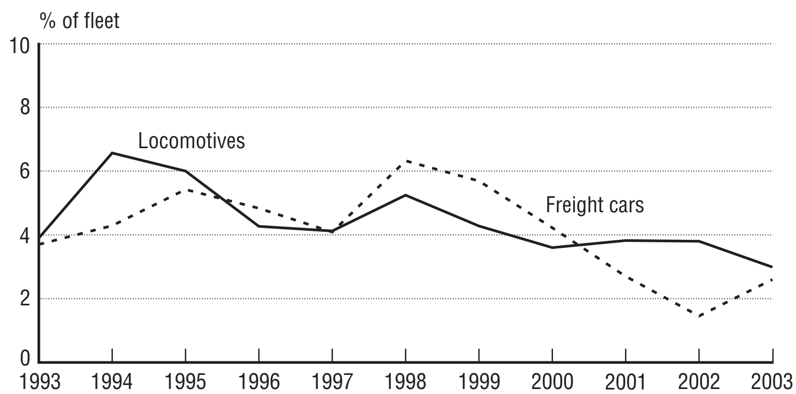


FIGURE 12-4 New and Rebuilt Locomotives and Freight Cars: 1993–2003



NOTES: Locomotive data are for Class 1 railroads only. Freight car data cover Class 1 railroads, other railroads, and private car owners.

SOURCES: Figures 12-2 and 12-3—Association of American Railroads, *Railroad Ten-Year Trends, 1990–2000* (Washington, DC: 2000); **2000–2003**—Association of American Railroads, *Analysis of Class I Railroads* (Washington, DC: 2001-2004). **Figure 12-4**—Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), pp. 49, 51, and 55.

Transit Vehicle Reliability

Transit service interruptions due to mechanical failures remained relatively level from 1995 through 2000, averaging 13 mechanical problems per 100,000 revenue vehicle-miles. However, between 2001 and 2003—after the definition of service interruption changed in 2001—motor bus interruptions of service declined such that total transit interruptions averaged 8 mechanical problems per 100,000 revenue vehicle-miles.[1] Buses had the largest change in reported interruptions after 2001, averaging between 24 mechanical problems per 100,000 revenue vehicle-miles after the reporting change as opposed to averaging 38 mechanical problems per 100,000 revenue vehicle-miles prior to 2001 [1, 2] (figure 12-5).

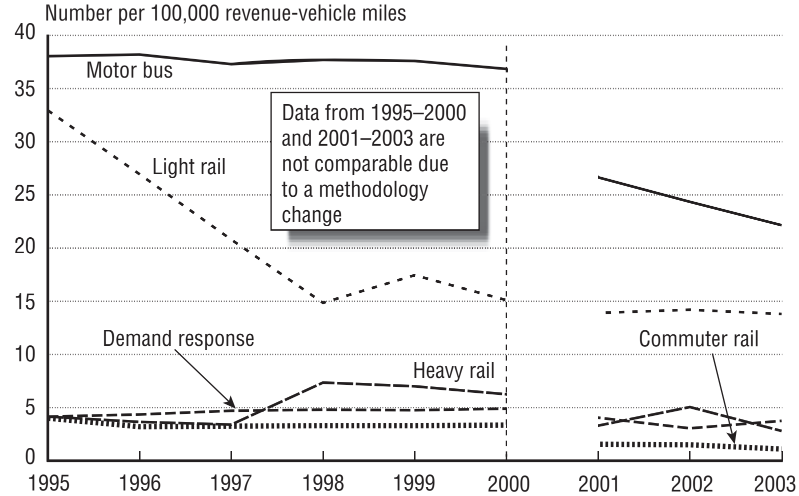
Among transit vehicles, buses and light rail had the highest rates of mechanical failure in 2003. Buses broke down an average of 22 times per 100,000 revenue vehicle-miles, while light-rail vehicles broke down 14 times per 100,000 revenue vehicle-miles. Light-rail vehicle breakdowns have changed the most since 1995. In that year, there were 33 mechanical failures per 100,000 revenue vehicle-miles. The rate of failure then dropped 56 percent to 15 per 100,000 revenue vehicle-miles by 2000. During this period, the number of light-rail revenue vehicles increased 58 percent from 999 vehicles to 1,577 vehicles.

[1] Data prior to 1995 and later than 2000 were collected using different definitions of what constitutes an interruption of service and are not comparable. For 2001 data and later, for instance, if the vehicle operator was able to fix the problem and return the vehicle to service without assistance, the incident is no longer considered an interruption of service.

Sources

1. U.S. Department of Transportation, Federal Transit Administration, *National Summaries and Trends* (Washington, DC: Annual issues), also available at http://www.ntdprogram.com/, as of April 2005.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004* (Washington, DC: 2005), table 1-32 and Transit Profile, available at http://www.bts.gov/, as of April 2005.

FIGURE 12-5 Interruptions of Service by Transit Type: 1995–2000 and 2001–2003



NOTES: *Interruptions* of service include major and minor mechanical failures. Since 2001, if the vehicle operator was able to fix the problem and return the vehicle to service without assistance, the incident has not been considered an interruption of service.

For definitions of service types, see Glossary.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on various data. **Revenue vehicle-miles**—USDOT, Federal Transit Administration (FTA), National Transit Database, *2003 National Transit Summaries and Trends,* 2003 NTST Table of Charts, available at http://www.ntdprogram.com/, as of April 2005. **1995–2002 interruptions of service**—USDOT, FTA, National Transit Database, 2003 Data Tables, Revenue Vehicle Maintenance Performance table, available at http://www.ntdprogram.com/, as of April 2005. **2003 interruptions of service**—American Public Transportation Association, personal communication, April 2005.

Lock Downtime on the Saint Lawrence Seaway

Locks along the Saint Lawrence Seaway (the Seaway) are usually closed from late December to late March because of ice. At other times of the year, shipping can be disrupted when locks are closed for other reasons, such as vessel incidents and weather.

Excluding the winter closure, the 2004 season for the two locks in the Seaway maintained and operated by the United States consisted of 281 days. The U.S. locks, located between Montreal and Lake Ontario, had 66 hours (almost 3 days) of downtime during the 2004 season. Weather-related poor visibility, high winds, and ice caused 66 percent of all lock downtime; vessel incidents caused another 23 percent [3].

Weather or vessel incidents caused most of the lock downtime between 1994 and 2004. In all but three years (1997 through 1999), over 50 percent of lock downtime was because of weather (figure 12-6). Weather and vessels each caused 43 hours of downtime in 1998, and vessels caused 46 hours of downtime in 1999. Although weather was responsible for the majority of downtime hours in 2001, vessel incidents that year accounted for 45 hours of downtime.

Lock downtime is not the only way Seaway shipping is impacted. For instance, in 2000 and 2001, water levels in the Great Lakes were at their lowest point in 35 years. During these reduced water level periods, some vessels could only carry approximately 90 percent of their normal shipment loads [1, 2].

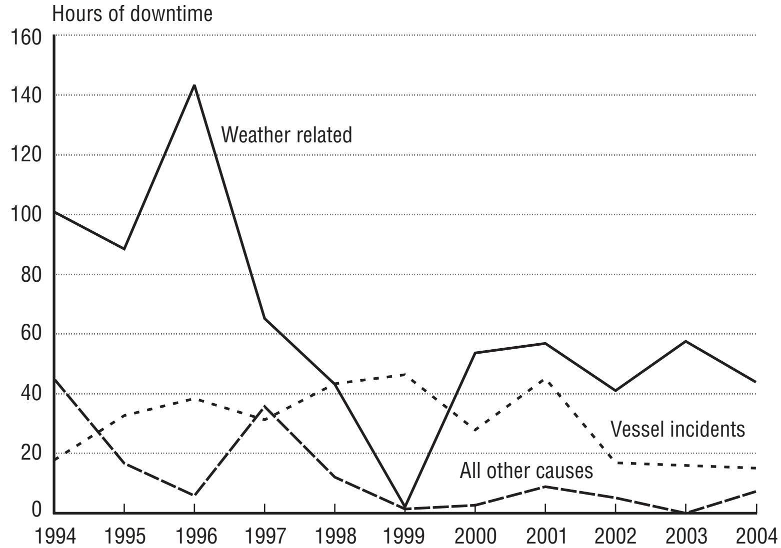
The Seaway is part of the Great Lakes Saint Lawrence Seaway System jointly operated by the United States and Canada.[1] The entire system encompasses the Saint Lawrence River, the five Great Lakes, and the waterways connecting the Great Lakes and extends 2,340 miles—from the Gulf of the Saint Lawrence at the Atlantic Ocean in the east to Lake Superior in the west (figure 12-7). During the 2004 navigation season, 30.5 million metric tons of cargo were transported through the Montreal-Lake Ontario section of the Seaway. Grain, iron ore, and other bulk commodities as well as manufactured iron and steel constituted the majority of shipments [3].

Sources

1. U.S. Department of Transportation, Saint Lawrence Seaway Development Corp., *Fiscal Year 2000 Annual Report: Great Lakes Seaway System Moves Forward into the 21st Century*, available at http://www.greatlakes-seaway.com/, as of July 2004.
2. ______. *Fiscal Year 2001 Annual Report: Linking North America's Heartland to the World*, available at http://www.greatlakes-seaway.com/, as of July 2004.
3. ______. personal communication, February 2005.

[1] The U.S. Saint Lawrence Seaway Development Corp. operates and maintains the U.S. portion of the Saint Lawrence Seaway between the Port of Montreal and Lake Erie.

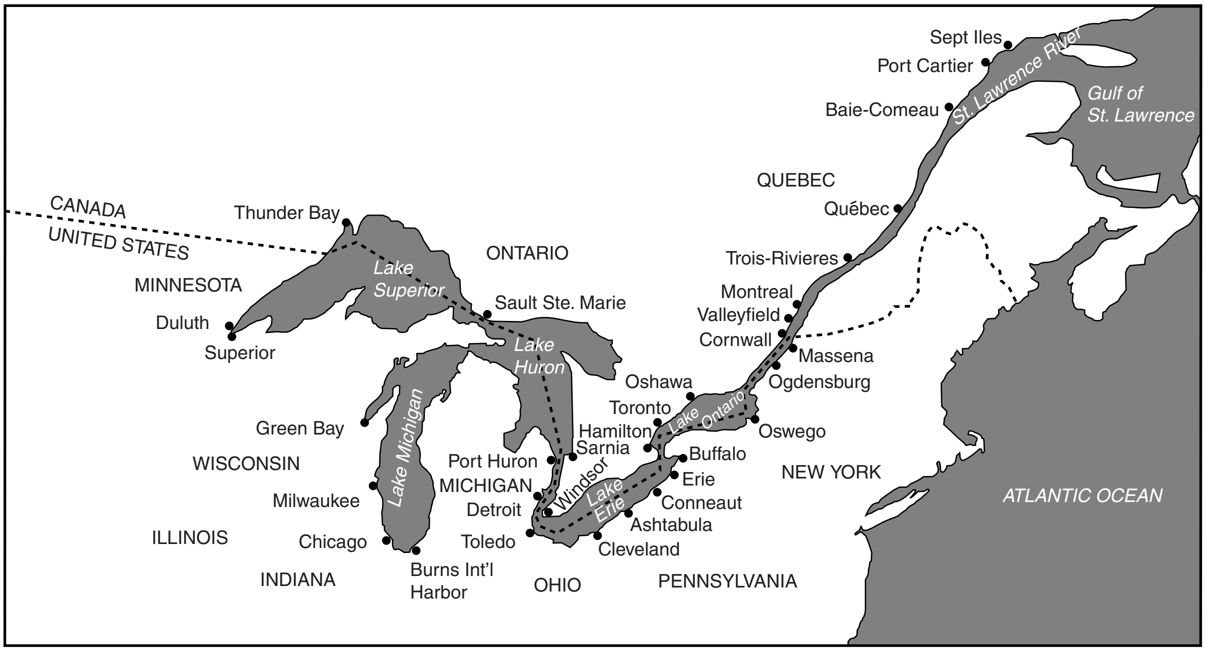
FIGURE 12-6 Saint Lawrence Seaway U.S. Locks Downtime by Cause: 1994–2004



NOTES: These data pertain only to the two U.S. locks (Snell and Eisenhower) on the Saint Lawrence Seaway between the Port of Montreal and Lake Ontario. Canada operates another five locks along this portion of the Seaway, as well as other Seaway locks.

SOURCES: 1994–2001—U.S. Department of Transportation, Saint Lawrence Seaway Development Corp. (SLSDC), *Annual Reports* (Washington, DC: Various years). Reports for years 1997–2001 available at http://www.greatlakes-seaway.com/, as of March 2005. **2002–2004**—SLSDC, personal communications, March and December 2004 and February 2005.

FIGURE 12-7 Great Lakes and Saint Lawrence River: 2005



NOTES: The U.S. locks are located between Cornwall and Massena, northeast of Lake Ontario.

SOURCE: U.S. Department of Transportation, Saint Lawrence Seaway Development Corp., personal communication, May 2005.

Intermittent Interruptions of Transportation Services

Natural disasters, accidents, labor disputes, terrorism, security breaches, and other incidents can result in major disruptions to the transportation system. Although comprehensive data on these interruptions are not available, numerous studies and other analyses have sought to evaluate the quantitative effects of individual events.

In the years leading up to the terrorist attacks of September 11, 2001, international passenger travel on 10 major carriers grew steadily (figure 12-8). From 1994 through 2000, the number of passengers increased 30 percent. As a result of the attacks and the economic downturn at that time, however, the trend changed and international travel decreased by over 10 percent from 2000 to 2003. By the end of 2004, 4 of the 10 carriers had recovered to pre-September 11th levels.

An unusually strong 2004 hurricane season in Florida caused a large number of flight delays and cancellations (figure 12-9). In August, Hurricane Charley struck the southwest coast of Florida.[1] Three more storms hit Florida in September. First, Frances hit the east coast of the state, and then Ivan crossed Florida (affecting both the east and west coasts). Finally, Hurricane Jeanne made landfall close to where Frances had only 20 days earlier [2]. Numerous airports closed their runways during these storms. Two times in September, for instance, Orlando International Airport closed for more than a day [4]. It is difficult to determine the total number of flights that were disrupted nationally as a result of weather conditions in Florida. However, cancellations in Florida increased considerably in August and September 2004 compared with those months in 2003.

Vehicle accidents are a common, yet unpredictable, cause of transportation delays. National estimates, based on model simulations, suggest that nearly 45 percent of nonrecurring delays on freeways and principal arterials are due to nonfatal crashes. Weather, another unpredictable factor, accounts for 9 percent of highway delays. Relatively fewer delays resulted from road work zones (24 percent) and vehicle breakdowns (12 percent) [1]. Although motor vehicle accidents are, by far, the most frequent type of transportation accident, other modes also experience major disruptions due to accidents. A freight train carrying hazardous materials derailed in a Baltimore tunnel in 2001 [3]. The resulting fire lasted several days and forced the city to close some highways and rail passages. Freight and passengers were delayed as trains were diverted hundreds of miles throughout the mid-Atlantic region.

The United States, because of its size and varied geography, is vulnerable to many types of natural disasters that can affect transportation. The flooding of the Mississippi River in 1993 shut down large portions of the inland waterway system, washed out rail track, damaged rail bridges, and closed an estimated 250 highway segments and bridges [5]. The following year, the Northridge earthquake had a major impact on the Los Angeles metropolitan area transportation system. Measuring 6.8 on the Richter scale, the earthquake knocked out four freeways, caused the collapse of parking structures, and ruptured numerous natural gas distribution lines [6, 7].

[1] This Category 4 storm was the strongest to make landfall in Florida since Hurricane Andrew in 2002.

Sources

1. S.M. Chin, O. Franzese, D.L. Greene, H.L. Hwang, and R. Gibson, "Temporary Losses of Highway Capacity and Impacts on Performance: Phase 2," Oak Ridge National Laboratory, 2004.
2. National Oceanic and Atmospheric Administration, National Hurricane Center, http://www.nhc.noaa.gov/.
3. National Transportation Safety Board, "Update on July 18, 2001 CSXT Derailment in Baltimore Tunnel," press release, Dec. 4, 2002, available at http://www.ntsb.gov/, as of June 2004.
4. Orlando International Airport, press releases, available at http://www.orlandoairports.net/.
5. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Transportation Statistics Annual Report 1994* (Washington, DC: 1994).
6. _____. *Transportation Statistics Annual Report 1995* (Washington, DC: 1995).
7. _____. *Journal of Transportation and Statistics: Special Issue on the Northridge Earthquake* 1:2, May 1998.

FIGURE 12-8 Passengers on Major U.S. Carriers to and from the United States: 1994–2004

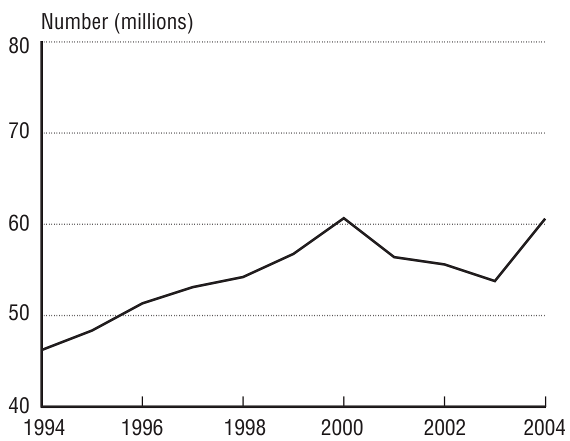
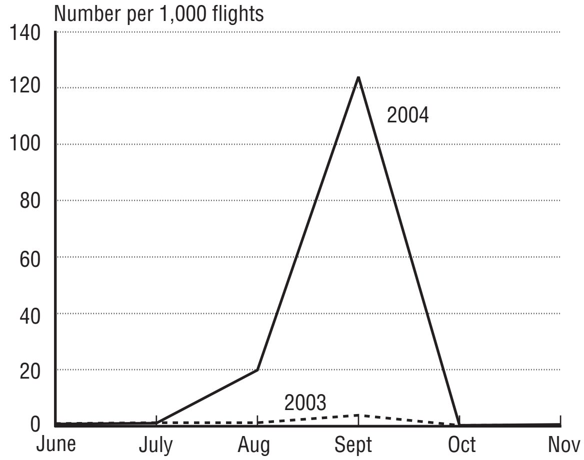


FIGURE 12-9 Florida Hurricane Season Cancelled Flights: June–November 2003 and June–November 2004



NOTES: Figure 12-8—Includes only passengers traveling to and from the United States on major airlines (commercial airlines with operating revenues greater than $1 billion annually). See table 12-8 in appendix B for details on airlines included. **Figure 12-9**—Data are limited to the hurricane season for flights into and out of Florida airports.

SOURCES: Figure 12-8—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics (BTS), T-100 International Market Passenger Data, available at http://www.bts.gov/, as of March 2005.
Figure 12-9—USDOT, RITA, BTS, Airline On-time Performance Data, available at http://www.bts.gov/, as of February 2005.

Highway Trucks by Weight

The number of trucks in the United States grew 41 percent between 1992 and 2002 and 15 percent between 1997 and 2002, according to the Vehicle Inventory and Use Survey (VIUS) conducted once every five years [1, 2]. The 85 million-truck fleet includes a variety of vehicles, ranging from large 18-wheel combination trucks used to transport freight to small pickup trucks, often used for personal travel.

Between 1992 and 2002, the number of light trucks and light-heavy trucks each grew 24 percent, while growth of heavy-heavy trucks declined 16 percent and medium trucks grew 223 percent (figure 13-1).

The growth in medium trucks was driven by increases in the number of trucks weighing between 6,001 and 10,000 lbs (figure 13-2). While the number of these trucks rose at a moderate pace between 1992 and 1997, their growth surged between 1997 and 2002, from 5.3 million trucks to 17.1 million. Trucks in this category include heavier pickups and heavier sport utility vehicles (SUVs) that have been increasingly sold in recent years.[1] These vehicles may be used for passenger travel, as well as to transport freight. By 2002, medium trucks represented 22 percent of the total number of trucks.

Light trucks, which include SUVs, minivans, vans, and pickup trucks weighing less than 6,000 pounds, represented 74 percent of the truck fleet in 2002, a smaller percentage than in 1992 (84 percent of the truck fleet). Their declining share reflects their weaker growth between 1997 and 2002 coupled with the large increase in the number of medium trucks during the same period.

Among trucks under 6,000 pounds, pickup trucks (38.0 million) barely outnumbered minivans and SUVs (36.4 million) in 2002. In 1992, there were over twice as many pickup trucks as minivans and SUVs in the under 6,000 pound category. Over the 10-year period, the number of SUVs and minivans in this category increased by 239 percent and 99 percent, respectively, much faster than the growth rate for pickup trucks (13 percent) [1, 2].

[1] According to Wards Auto.Com (February 2005), between 2000 and 2001, new truck registrations in the United States declined 1.5 percent for trucks 6,000 pounds and under and rose 5.4 percent for those between 6,001 and 10,000 pounds.

Sources

1. U.S. Department of Commerce, U.S. Census Bureau, *1997 Economic Census: Vehicle Inventory and Use Survey: United States* (Washington, DC: 1999).
2. ______. *2002 Economic Census: Vehicle Inventory and Use Survey: United States* (Washington, DC: 2004).

FIGURE 13-1 Trucks by Vehicle Weight: 1992, 1997, and 2002

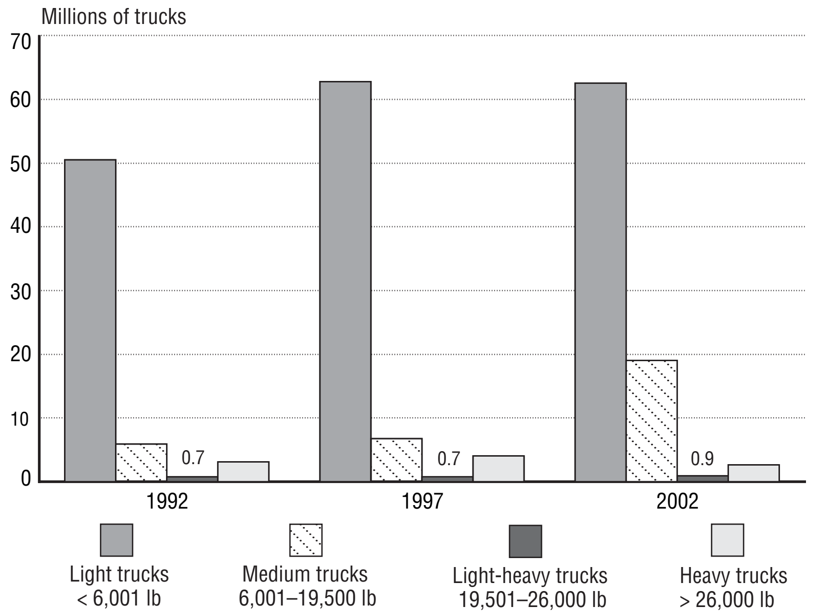
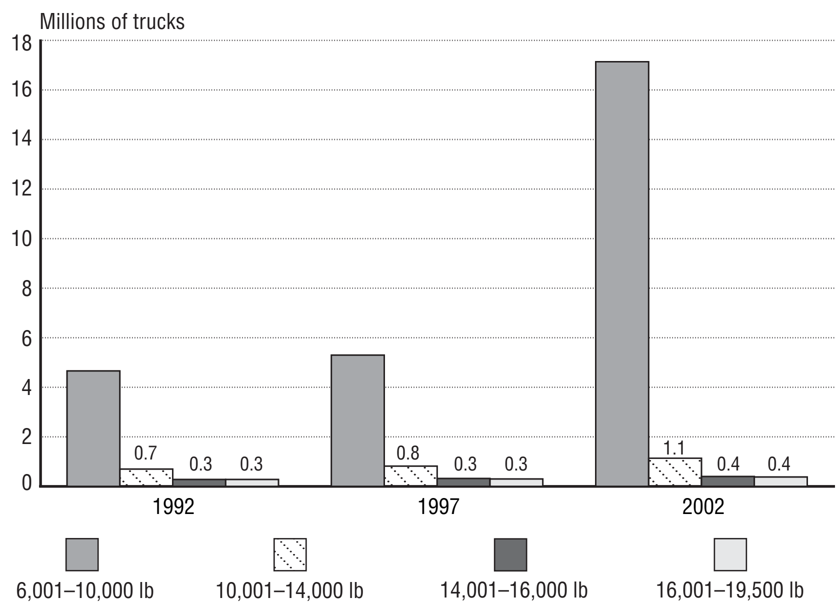


FIGURE 13-2 Medium Trucks by Vehicle Weight: 1992, 1997, and 2002



NOTES: Weight is the empty weight of the vehicle plus the average vehicle load. Excludes vehicles owned by federal, state, or local governments; ambulances; buses; motor homes; farm tractors; unpowered trailer units; and trucks reported to have been sold, junked, or wrecked prior to July 1 of the year preceding the 1992 and 1997 surveys and January 1, 2002, for the 2002 survey.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-21, available at http://www.bts.gov/, as of January 2005.

Vehicle Loadings on the Interstate Highway System

Large combination trucks[1] made up only 5 percent of traffic volume in urban areas, but accounted for 76 percent of loadings in 2003 (figure 13-3). On rural segments of the Interstate Highway System, these trucks represented 14 percent of traffic volume and 83 percent of loadings in 2003 (figure 13-4). As the heaviest category of highway vehicles, large combination trucks may cause more pavement damage, a measurement that is estimated in terms of vehicle loadings (box 13-A).

Between 1993 and 2003, large combination truck traffic volume declined from 18 percent to 14 percent on rural Interstate highways and also declined from 6 percent to 5 percent on urban Interstates. Concurrently, their share of loadings decreased on rural roads and increased on urban Interstate highways. Passenger cars, buses, and light trucks, which the Federal Highway Administration aggregates into one category, followed a different trend—representing an unchanged percentage of loadings but a growing portion (from 90 percent to 91 percent) of traffic volume in urban areas [1].

[1] Large combination trucks weigh more than 12 tons and have 5 or more axles.

BOX 13-A Measuring Vehicle Loadings

Planning agencies design roadways to have a specific lifespan based on the expected volume and weight of vehicle traffic. Traffic streams are composed of a variety of vehicles of different weights and axle configurations. Therefore, loading measurements are based on equivalent single-axle loads that are the damage to a pavement caused by a vehicle axle relative to an 18,000 pound force, which represents a standard axle. This unit may be used to calculate the cumulative damage caused to a roadway by an expected traffic stream.

Source

American Association of State Highway and Transportation Officials, *Guide for Design of Pavement Structures* (Washington, DC: 1993), p. I-10 and appendix D.

Source

1. U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004), table TC-3.

FIGURE 13-3 Loadings on Urban Interstate Highways by Vehicle Type: 2003

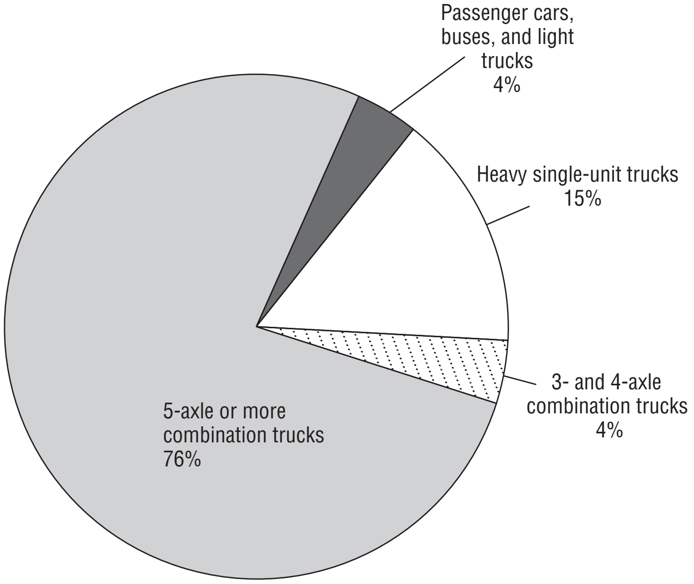
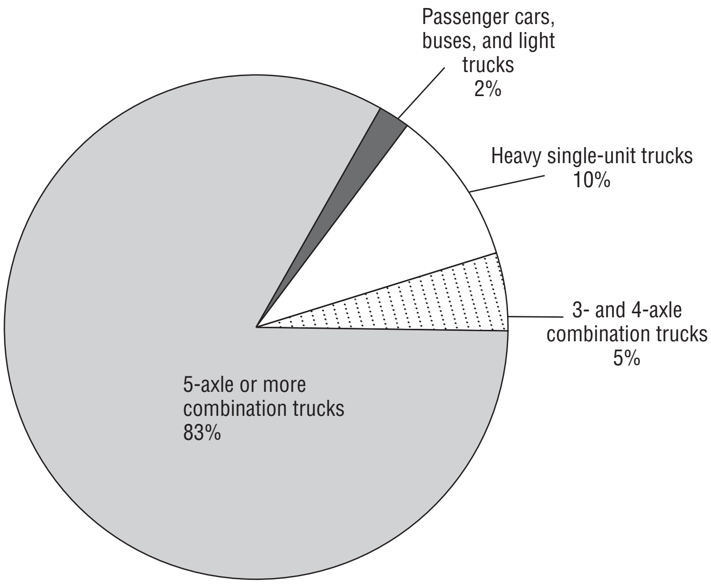


FIGURE 13-4 Loadings on Rural Interstate Highways by Vehicle Type: 2003



NOTES: Based on data from the Truck Weight Study that are collected by the states for varying time periods each year and are not adjusted to typify annual averages. Loadings are based on *equivalent single-axle loads*, a standard unit of pavement damage based on the amount of force applied to pavement by an 18,000-pound axle, which is roughly equivalent to a standard truck axle. Totals may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004), table TC-3.

Merchant Marine Vessel Capacity

The average capacity of all vessels calling at U.S. ports grew 9 percent between 1998 and 2003 to 49,557 deadweight tons (dwt)[1] per call, while the number of all vessel calls increased by only 1 percent [3]. The value of U.S. merchandise trade by maritime vessels grew from $614 billion to $811 billion during the same period [2].

The average capacity of containerships calling at U.S. ports increased 19 percent to 43,168 dwt per call between 1998[2] and 2003 (figure 13-5). Some of the largest containerships in the world are capable of carrying over 6,600 containers and have overall lengths of 1,138 feet [1].

The average capacity of gas carriers, such as liquid natural gas and liquid petroleum gas vessels, increased faster (by 26 percent from 30,000 to 38,000 dwts per call) between 1998 and 2003 than any other type of vessel calling at U.S. ports. The average capacity of combination vessels grew the least (1.4 percent) during this period. Tankers, which represent the largest average capacity vessel (72,387 dwt per call), grew 5.4 percent between 1998 and 2003.

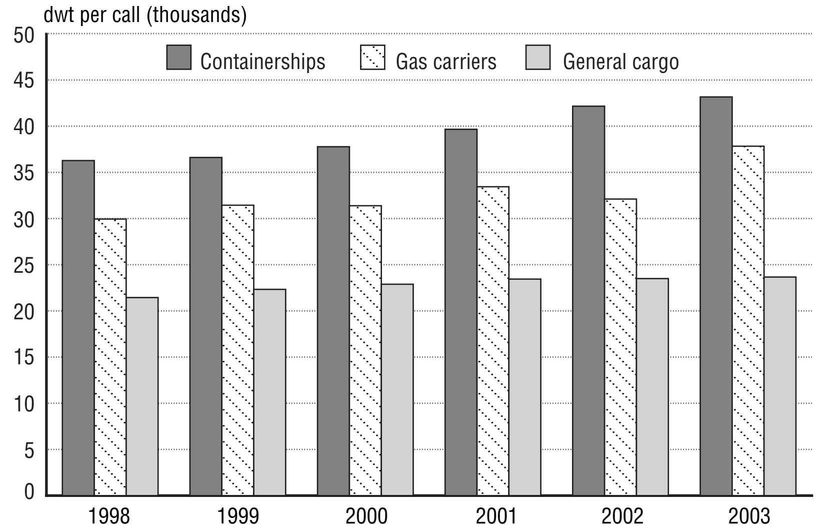
[1] Deadweight tons refers to the lifting capacity of a vessel expressed in long tons (2,240 lbs), including cargo, commodities, and crew.

[2] 1998 is the first year for which data are available.

Sources

1. Maersk-Sealand, Vessels web page, available at http://www.maersksealand.com/, as of June 2005.
2. U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, *U.S. Exports of Merchandise* and *U.S. Imports of Merchandise*, December (annual CDs).
3. U.S. Department of Transportation, Maritime Administration, Office of Statistical and Economic Analysis, *Vessel Calls at U.S. Ports 2002–2003* (Washington, DC: 2004).

FIGURE 13-5 Average Capacity of Vessels Calling at U.S. Ports by Selected Type: 1998–2003



KEY: dwt = deadweight tons.

NOTE: Calls are by oceangoing vessels of 10,000 dwt or greater at U.S. ports, excluding Great Lakes ports. 1998 is the first year for which data are available.

SOURCE: U.S. Department of Transportation, Maritime Administration, Office of Statistical and Economic Analysis, *Vessel Calls at U.S. Ports 2002–2003* (Washington, DC: 2004), table S-1.

Railcar Weights

The amount of freight carried by railroads between 1993 and 2003 increased 29 percent (in tons) and 33 percent (by carload) on railcars (figure 13-6). However, on average, the weight per loaded railcar remained fairly constant, ranging from 62 to 67 tons during the same period (figure 13-7).

The relatively steady average weight of a loaded railcar masks countervailing trends among selected freight commodities. The average weight of a carload of coal, which represented 44 percent of rail freight tonnage in 2003, was 111 tons, up from 101 tons in 1993 (figure 13-8). Farm products, food and kindred products, nonmetallic minerals, and chemicals and allied products, which together represented 30 percent of tonnage in 2003, were also shipped in heavier average carloads in 2003 than in 1993 [1, 2].

Miscellaneous mixed shipments and transportation equipment were the only categories of goods that resulted in lighter average carloads in 2003 than 1993. For instance, miscellaneous mixed shipments increased by 53 percent in terms of tonnage and by 77 percent in numbers of carloads between 1993 and 2003, resulting in tons per carload that were 13 percent lighter in 2003 [1, 2]. Miscellaneous mixed shipments are primarily intermodal freight composed of shipping containers on flatbed railcars. The containers, which are mostly used to move manufactured goods that tend to be lighter and more valuable than raw materials, may be partly transported by waterborne vessel and truck as well.

Sources

1. Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004).
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on Association of American Railroads, *Railroad Ten-Year Trends, 1990–1999* (Washington, DC: 2000).

FIGURE 13-6 U.S. Railroad Freight Carloads and Tonnage: 1993–2003

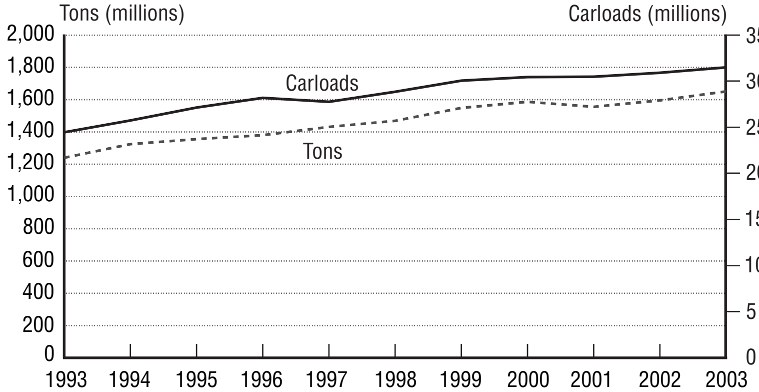


FIGURE 13-7 Average Loaded U.S. Railcar Weight: 1993–2003

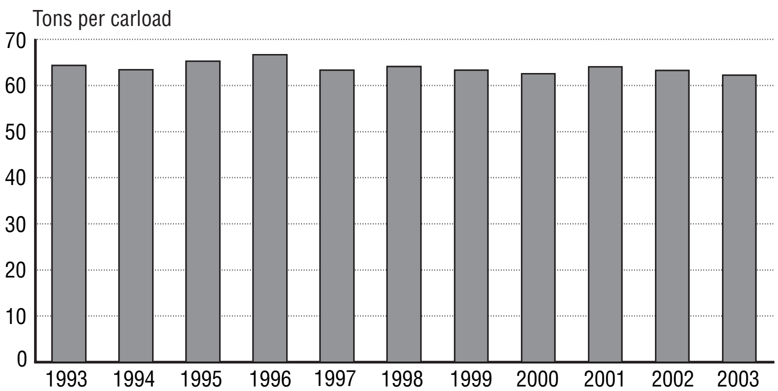
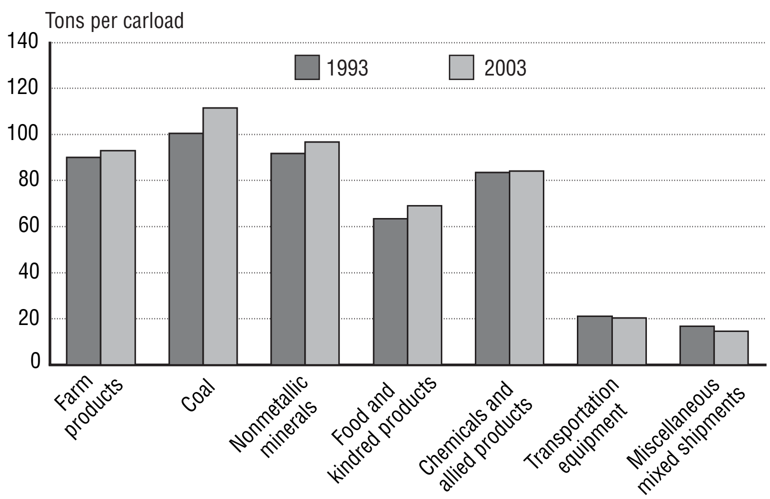


FIGURE 13-8 Average Loaded U.S. Railcar Weight for Selected Commodities: 1993 and 2003



NOTES: Figure 13-7—Average railcar weight is total tons transported divided by total carloads transported. **Figure 13-8**—Miscellaneous mixed shipments is mostly intermodal traffic. Some intermodal traffic is included in commodity-specific categories as well.

SOURCES: Figure 13-6 and 13-7—Association of American Railroads (AAR), *Railroad Facts 2004* (Washington, DC: 2004), pp. 24 and 28. **Figure 13-8: 2003**—AAR, *Railroad Facts 2004* (Washington, DC: 2004), pp. 25 and 29. **1993**—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on AAR, *Railroad Ten-Year Trends 1990–1999* (Washngton, DC: 2000).

Transportation Sector Energy Use

The transportation sector used 17 percent more energy in 2004 than it did in 1994, an annual growth rate of 1.2 percent. Transportation's share of the nation's total energy consumption also grew between 1994 and 2004, from 26 to 27 percent (figure 14-1).

Still, transportation energy use has grown more slowly than the Gross Domestic Product (GDP). As a result, the amount of transportation energy used per dollar of GDP[1] declined at an annual rate of 1.7 percent between 1994 and 2004 (figure 14-2).

Over 97 percent of all transportation energy consumed in 2003 and 2004 came from petroleum [1]. Total U.S. petroleum usage increased 16 percent between 1993 and 2003, with transportation responsible for 75 percent of that rise. In 2003, transportation consumed 66 percent of all petroleum (13.2 million barrels per day), up from 65 percent in 1993 (figure 14-3). Because over half of U.S. petroleum is imported, the United States, and especially the transportation sector, may be vulnerable to supply disruptions with fuel price fluctuations having the potential to contribute to economic instability.

[1] GDP is in chained 2000 dollars.

Source

1. U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, table 2.5, available at http://www.eia.doe.gov/mer/, as of April 2005.

FIGURE 14-1 U.S. Energy Consumption by Sector: 1994–2004

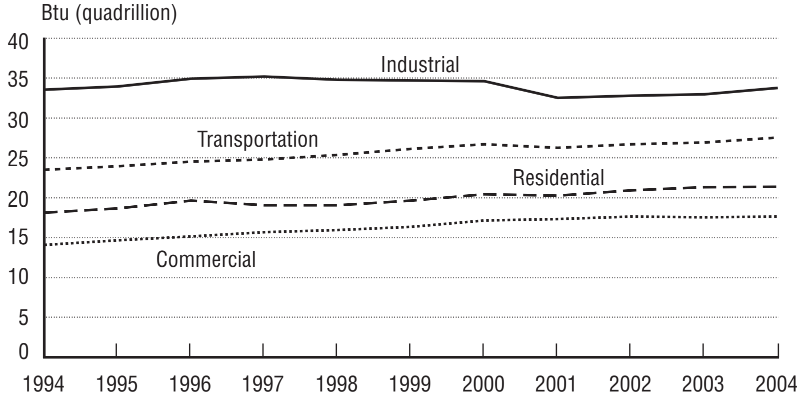


FIGURE 14-2 Change in Transportation Sector Energy Use and Gross Domestic Product: 1994–2004

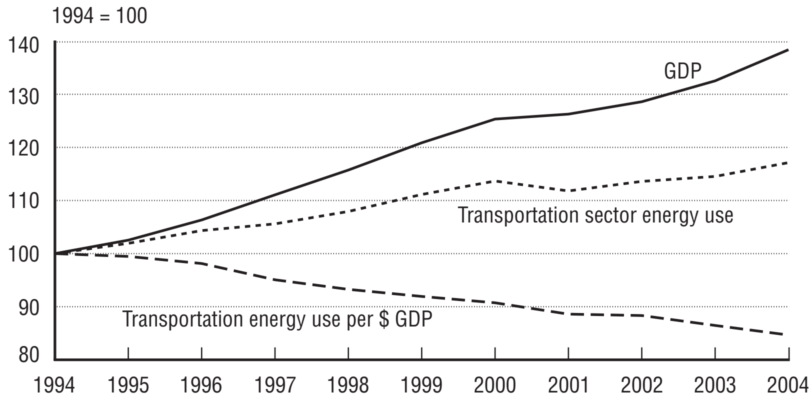
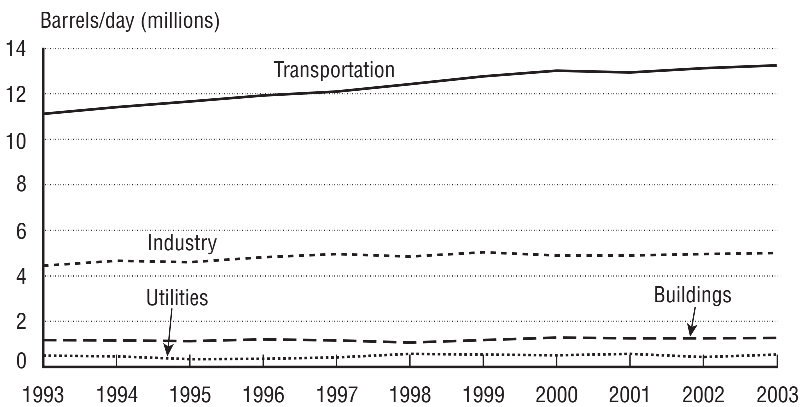


FIGURE 14-3 U.S. Petroleum Use by Sector: 1993–2003



KEY: Btu = British thermal units; GDP = Gross Domestic Product (in chained 2000 dollars).

NOTES: Figure 14-2—To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 14-2b in appendix B) by the initial year value and multiplied the result by 100. **Figure 14-3**—2003 data are estimates, except for utilities, which are preliminary.

SOURCES: Figure 14-1 and 14-2—U.S. Department of Energy (USDOE), Energy Information Administration (EIA), *Monthly Energy Review,* table 2.1, available at http://www.eia.doe.gov/mer/, as of April 2005. **GDP**—U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Account tables, available at http://www.bea.gov/, as of April 2005. **Figure 14-3**—USDOE, EIA, *Annual Energy Review 2003,* table 5.13a-d, available at http://www.eia.doe.gov/aer/, as of November 2004.

Transportation Energy Prices

Transportation fuel prices (in chained 2000 dollars[1]) fluctuated between 1994 and 2004 (figure 14-4). For instance, the average price of motor gasoline (all types of gasoline) decreased 15 percent in 1998, to $1.16 per gallon from $1.35 per gallon in 1997. Gasoline prices then jumped 25 percent, to $1.56 per gallon in 2000 from $1.25 per gallon in 1999. Prices dipped in 2001 and 2002 and rose again in 2003 and 2004 to $1.55 and $1.78, respectively. The average price in 2004 for motor gasoline ($1.78) was the highest in the previous 10 years.[2]

Other fuels, such as aviation fuels, jet fuels (kerosene) and diesel (no. 2), underwent similar price fluctuations. These fuel prices decreased slightly in 2001 and 2002 but then rose in 2003 and again in 2004. The average jet fuel (kerosene) price increased 35 percent between 2003 and 2004—the largest increase amongst all fuels in 2004, while the average motor gasoline price grew the least (15 percent).

Transportation fuel prices are correlated with the world price of crude oil, because crude oil represents a large percentage of the final price of transportation fuel. This correlation can be seen in the price trends from 1994 to 2004 for crude oil and various transportation fuels. However, average crude oil prices started to rise in 2002 (3 percent over 2001), while fuel prices were still dropping, and continued to increase the next two years (27 percent in 2004 over 2003).

While prices of transportation fuels fluctuate over time, vehicle-miles of travel (vmt) does not appear to be affected. For instance, between 1994 and 2003,[3] highway vmt per capita rose at an annual rate of 1.2 percent or 11 percent over the entire period (figure 14-5). During the same time, aircraft-miles of travel per capita for large carriers increased 3.0 percent on an annual basis or 26 percent overall (figure 14-6).

As measured by the Consumer Price Index, between 1994 and 2004, motor fuel prices increased at a higher annual rate than transportation prices (5.6 vs. 1.9 percent, respectively). The inflation rate for transportation was lower than annual inflation for all goods and services (2.5 percent) [1]. In fact, transportation-related consumer prices increased less than all other major spending categories except apparel, which decreased 1.0 percent from 1994 to 2004.

Source

1. U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index, available at http://www.bls.gov/, as of May 2005.

[1] All dollar amounts are expressed in chained 2000 dollars, unless otherwise specified. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (which are available in appendix B of this report) to chained 2000 dollars.

[2] The price per gallon (in chained 2000 dollars) for motor gasoline was $1.94, averaged over the first six months of 2005, the most recent data available as this report was being completed.

[3] At the time this report was prepared, vmt and aircraft-miles of travel data were only available through 2003, while energy price data were available through 2004.

FIGURE 14-4 Average Transportation Fuel Prices by Type: 1994–2004

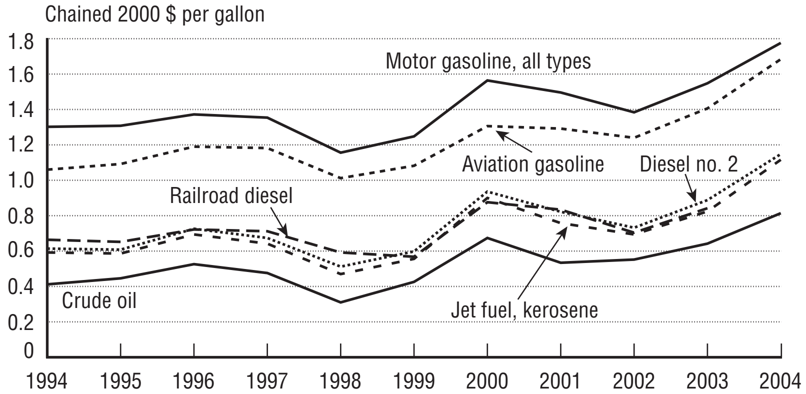


FIGURE 14-5 Average Motor Gasoline Prices and Highway Vehicle-Miles of Travel per Capita: 1994–2004

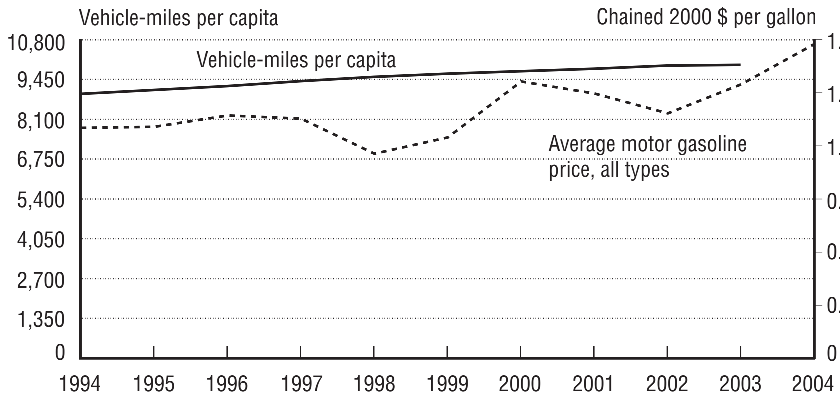
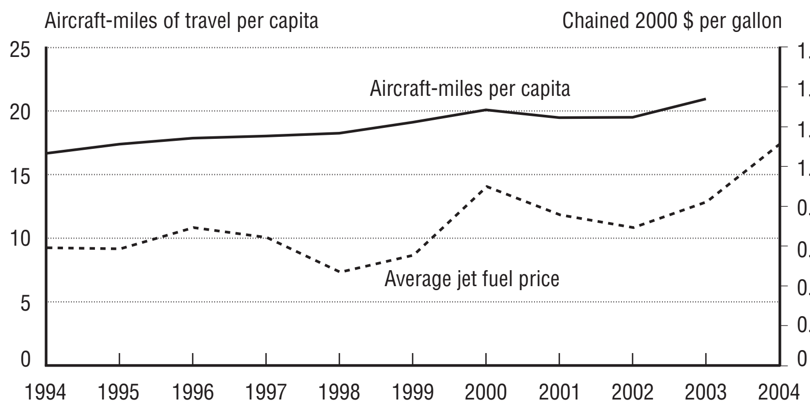


FIGURE 14-6 Average Jet Fuel Price and Air Carrier Aircraft-Miles of Travel per Capita: 1994–2004



NOTES: Railroad diesel fuel price and highway vehicle- and aircraft-miles of travel data were not available for 2004 when this report was prepared. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see tables 14-4, 14-5, and 14-6 in appendix B) to chained 2000 dollars.

SOURCES: Except railroad diesel—U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, tables 9.1 (crude oil), 9.4 (motor gasoline), and 9.7 (aviation, jet, and diesel no. 2), available at http://www.eia.doe.gov/, as of May 2005. **Railroad diesel**—Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 61. **Vehicle- and aircraft-miles of travel per capita**—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from USDOT, BTS, *National Transportation Statistics 2004,* table 1-32, available at http://www.bts.gov/, as of May 2005. **Population**—U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States,* section 1, table 2, available at http://www.census.gov/, as of May 2005.

Transportation Energy Efficiency

Passenger travel was 4.7 percent more energy efficient in 2002 than in 1992 (figure 14-7). During the same period, however, freight energy efficiency declined by 2.2 percent.[1]

Improvements in domestic commercial aviation are the primary reason for the gains in passenger travel efficiency. For instance, improved aircraft fuel economy and increased passenger loads resulted in a 36 percent increase in commercial air passenger energy efficiency between 1992 and 2002. Domestic commercial air passenger-miles of travel (pmt) also rose 36 percent during this same period while energy consumption decreased by less than 1 percent [1].

Highway passenger travel—by passenger cars, motorcycles, and light trucks[2]—represented 87 percent of all pmt and 92 percent of passenger travel energy use in 2002. Overall, highway travel was 2.5 percent more efficient in 2002 compared with 1992. This gain was due to a 2.9 percent increase in the efficiency of passenger cars and motorcycles and a 3.3 percent increase in the efficiency of light trucks. For the period 1992 to 2002, passenger car and motorcycle pmt increased 19 percent while energy use increased 15 percent; concurrently light-truck pmt increased 39 percent while energy use rose 35 percent. The increase in energy efficiency in both cases can be explained by the faster growth in pmt coupled with a slower growth in energy use. For example, on an annual basis light-truck pmt grew faster than energy consumption during this period (3.5 vs. 3.1 percent) [1].

The decline in freight energy efficiency between 1992 and 2002 resulted from a 2.0 percent annual growth rate of ton-miles paired with a 2.3 percent annual growth rate in freight energy consumption (figure 14-8). Contributing to the overall trend was a decline in the energy efficiency of pipelines (–8 percent), waterborne transportation (–9 percent), and air transportation (–7 percent). However, during the same period, rail freight energy efficiency increased by 18 percent [1].

[1] Passenger energy efficiency is measured in passenger-miles of travel per British thermal unit (Btu). Freight energy efficiency is ton-miles per Btu.

[2] Light trucks include minivans, pickup trucks, and sport utility vehicles.

Source

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from tables 14-7 and 14-8 in appendix B of this report.

FIGURE 14-7 Change in Passenger-Miles of Travel, Energy Consumption, and Energy Efficiency: 1992–2002

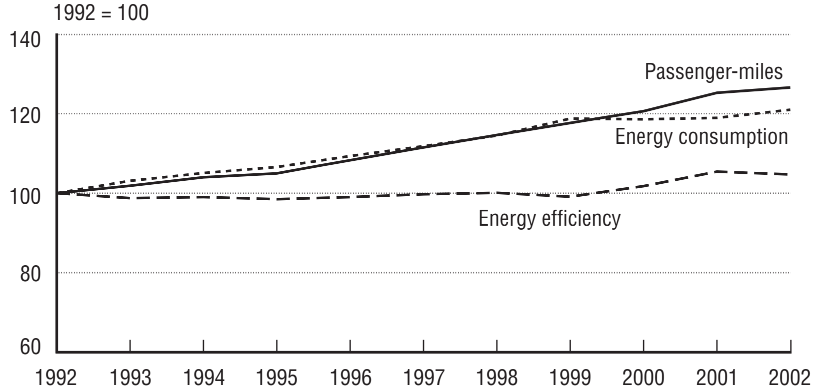
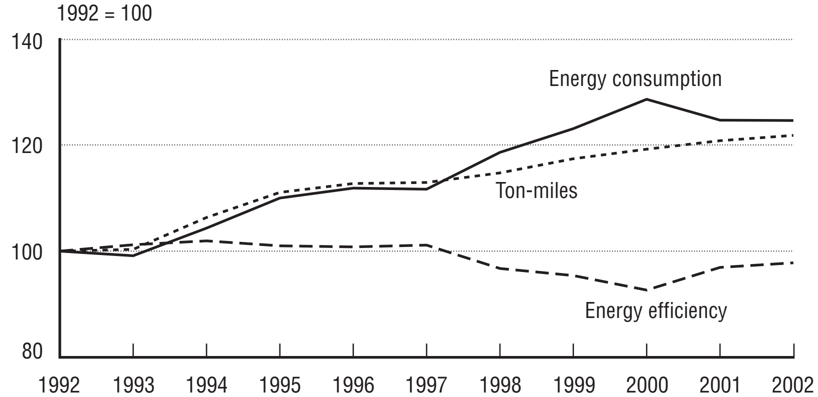


FIGURE 14-8 Change in Freight Ton-Miles, Energy Consumption, and Energy Efficiency: 1992–2002



NOTE: To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see tables 14-7 and 14-8 in appendix B) by the initial year value and multiplied the result by 100.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations based on data from the following sources. **Passenger-miles traveled and energy use (except transit)**—USDOT, BTS, *National Transportation Statistics 2004,* tables 4-6 and 4-8, available at http://www.bts.gov/, as of March 2005. **Transit energy use**—American Public Transportation Association, *Public Transportation Fact Book 2005* (Washington, DC: 2005), tables 34 and 35. **Ton-miles**—see table 1-12 in appendix B.

Key Air Emissions

Transportation vehicles, ships, aircraft, and locomotives emitted 58 percent of the nation's carbon monoxide (CO), 45 percent of nitrogen oxides (NO_X), 36 percent of volatile organic compounds (VOC), 4 percent of particulates, 8 percent of ammonia, and 5 percent of sulfur dioxide in 2002[1] [1].

With the exception of ammonia emissions, which grew 54 percent, other transportation air emissions declined from 1992 to 2002 (figure 15-1). Generally, most declined by at least 30 percent, however, NO_X emissions decreased only 8 percent between 1992 and 2000 but then fell to 18 percent by 2002.

In 2002, highway vehicles emitted almost all of transportation's share of CO, 78 percent of the NO_X, and 77 percent of all VOC (figure 15-2). Marine vessels and railroad locomotives contributed 11 and 9 percent, respectively, of transportation's NO_X emissions. Other vehicles, such as recreational boats, airport service vehicles, and road maintenance equipment, had a 22 percent share of VOC emissions.

These key air emissions affect the nation's air quality and are the most widely used indicator of transportation's impact on the environment and human health (box 15-A).

[1] Starting with its 2001 updates, the U.S. Environmental Protection Agency is no longer estimating lead emissions. In 2000, transportation emitted 13 percent of the nation's lead emissions. Aircraft emitted almost 96 percent of all transportation lead emissions. While the substance is no longer used in most fuels, it is still present in aviation fuels.

BOX 15-A Transportation Air Emissions Data

National data on air emissions are estimated by the U.S. Environmental Protection Agency (EPA). EPA's National Emissions Inventory (NEI) is updated annually and covers mobile, stationary, and area sources of pollution regulated under the Clean Air Act. These pollutants include the so-called "criteria" and hazardous air pollutants.[1] Most criteria emissions have been estimated since 1970, hazardous emissions only since 1996.

EPA's mobile source category contains "onroad" (highway) and "nonroad" (all other modes) emissions. However, its nonroad category includes nontransportation sources such as farming and construction equipment, lawn and garden equipment, and logging, industrial, and light commercial equipment. To more accurately assess transportation air emissions, the Bureau of Transportation Statistics removes the nontransportation components from EPA's criteria mobile source emissions. It is this subset that is presented here as transportation emissions.

[1] For details on transportation's contribution to hazardous air pollutants, see U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Statistics Annual Report 2000*, available at http://www.bts.gov/, as of August 2005.

Source

1. U.S. Environmental Protection Agency, Office of Air and Radiation, Air Trends, available at http://www.epa.gov/airtrends/, as of February 2005.

FIGURE 15-1 Transportation Air Pollutant Emissions by Type: 1992–2002

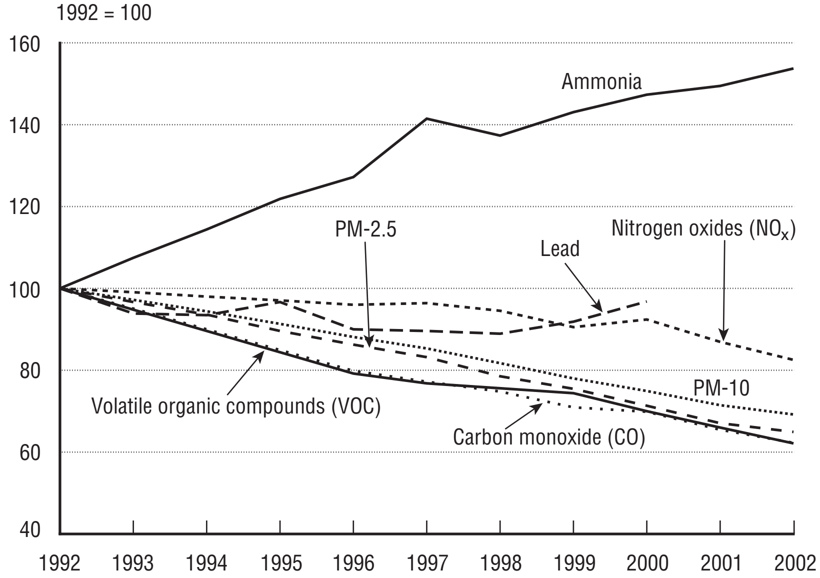
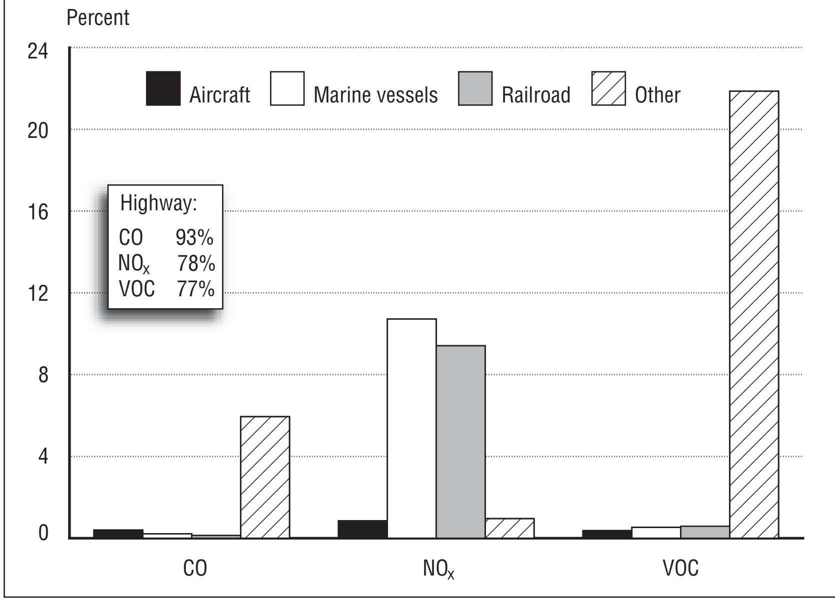


FIGURE 15-2 Selected Air Pollutants by Mode: 2002



KEY: PM-10 = particulate matter of 10 microns in diameter or smaller; PM-2.5 = particulate matter of 2.5 microns in diameter or smaller.

NOTES: EPA no longer estimates lead emissions. Modal shares in 2000 were: highway gasoline vehicles, 4.1%; aircraft, 95.9%. *Other* includes recreational boats, airport service vehicles, and road maintenance equipment. **Figure 15-1**—To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 15-1b in appendix B) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Emissions Inventory, 2002 Air Pollutant Emission Trends,* available at http://www.epa.gov/ttn/, as of March 2005.

Greenhouse Gas Emissions

The transportation sector's greenhouse gas (GHG) emissions totaled 1,864 teragrams of carbon dioxide equivalent ($TgCO_2Eq$) in 2003.[1] This represented 27 percent of total U.S. GHG emissions in 2003 (box 15-B). Transportation emissions grew 20 percent since 1993, while total U.S. emissions rose 10 percent[2] [1].

Carbon dioxide (CO_2) accounted for 85 percent of U.S. GHG emissions in 2003. Nearly all (95 percent) of these emissions are generated by the combustion of fossil fuels, with transportation responsible for 1,781 $TgCO_2Eq$ (30 percent) of CO_2 emissions [1]. Transportation CO_2 emissions grew 19 percent between 1993 and 2003 (figure 15-3). Heavy-duty truck emissions grew the most over the period (51 percent), while aircraft emissions rose the least (1.9 percent). Aircraft emissions did rise 15 percent between 1993 and 2000 but then declined 11 percent from 2000 through 2003, most likely because of the September 11, 2001, terrorist attacks and the ongoing economic downturn that suppressed air travel growth in 2001 and 2002.

Highway vehicles emitted 82 percent of all transportation CO_2 emissions in 2003, rising 23 percent between 1993 and 2003. Passenger cars and light-duty vehicles, which include pickup trucks, sport utility vehicles, and vans, generated 76 percent of highway CO_2 emissions (figure 15-4).

[1] A teragram is a trillion grams.

[2] The GHG data here cover domestic emissions only. Figure and table 15-4 include data on international bunker fuel emissions, which result from the combustion of fuel purchased domestically but used for international aviation and maritime transportation.

BOX 15-B Greenhouse Gas (GHG) Emissions Data

Both the U.S. Environmental Protection Agency (EPA) and the Energy Information Administration (EIA) estimate annual U.S. GHG emissions. EPA is responsible for producing the official inventory of U.S. emissions, as required under the United Nations Framework Convention on Climate Change. Both agencies use EIA fuel consumption data as a basis for estimating most GHG emissions, but differences in their methodologies can result in different datasets.[1] EIA usually releases its data about six months before EPA. EPA provides more detail of interest to transportation, such as emissions by mode. EIA presents emissions in million metric tons of carbon equivalent (mmtce), while EPA uses teragrams of carbon dioxide equivalent ($TgCO_2Eq$), as required under the Convention.[2]

[1] For more information, see U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Statistics Annual Report 2001* (Washington, DC: 2002), p. 239, also available at http://www.bts.gov.

[2] $TgCO_2Eq = 1 \text{ mmtce} \times (44/12)$.

Most air pollutants impact local or regional air quality. Greenhouse gases, however, have the potential to alter the earth's climate on a regional and global scale.

Source

1. U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2003*, tables 2-14 and ES2, available at http://www.epa.gov/, as of April 2005.

FIGURE 15-3 Change in Carbon Dioxide Emissions by Selected Mode: 1993–2003

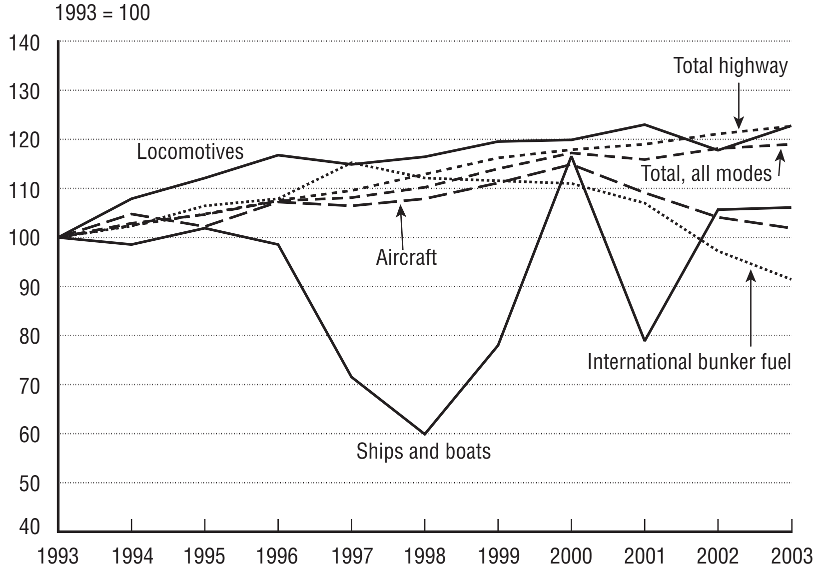
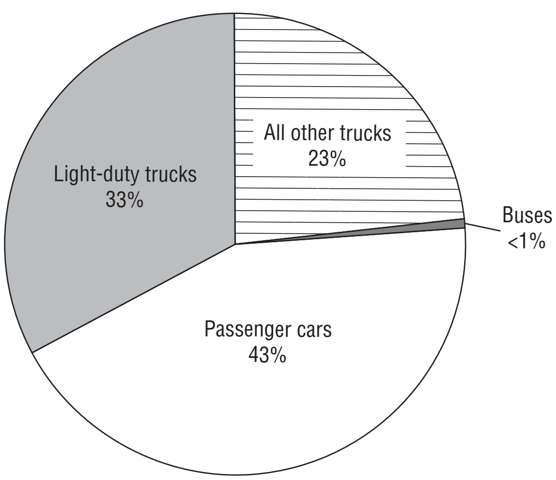


FIGURE 15-4 Carbon Dioxide Emissions by Type of Highway Vehicle: 2003



NOTE: *Highway* includes passenger cars, buses, light-duty trucks, and other trucks. *Total, all modes* does not include international bunker fuels. *International bunker fuel* emissions result from the combustion of fuels purchased in the United States but used for international aviation and maritime transportation. Thus, *aircraft* and *ships and boats* data, which are included in U.S. total emissions, involve only domestic activities of these modes as do all other data shown. *Aircraft* emissions consist of emissions from all jet fuel (less bunker fuels) and aviation gas consumption. Alternative-fuel vehicle emissions are allocated to the specific vehicle types in which they were classified (i.e., passenger cars, light-duty trucks, and other trucks and buses).

The large annual variations in ships and boats data may result from methodological problems related to the domestic/international partition of maritime fuels. Economic factors may also contribute.

SOURCE: U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2003* (Washington, DC: April 2005), table 2-17.

Oil Spills into U.S. Waters

Transportation-related sources account for most oil reported spilled into U.S. waters each year[1] (box 15-C). The volume of each spill varies significantly from incident to incident: one catastrophic incident can spill millions of gallons into the environment. Consequently, the total volume of reported oil spills can fluctuate greatly from year to year (figure 15-5). For instance, transportation's share of the total volume of oil spilled between 1991 and 2001 varied from a high of 97 percent in 1996 to a low of 77 percent in 1992.

Maritime incidents are the source of most reported oil spills, particularly on a volume basis. On average, 1.8 million gallons of various types of oil were spilled each year by all transportation and nontransportation sources between 1991 and 2001. Of this, 78 percent of oil spilled came from incidents involving maritime vessels and facilities, 10 percent from pipeline incidents, and 1.5 percent from all other transportation modes (figure 15-6). Oil cargo accounted for 58 percent of the total volume spilled in 2000 [1].

Failures in transportation systems (vessels, pipelines, highway vehicles, and railroad equipment) or errors made by operators can result in spillage of crude oil, refined petroleum products, and other materials and cause serious damage to the environment. The ultimate impact of each spill depends on the location and volume of the spill, weather conditions, and the natural resources affected. While data exist on oil spilled into U.S. waters, there is less information available on the resulting consequences to the environment. In addition, little information exists on the quantity of oil entering the water from improper disposal of used motor oil or other nonreported sources.

Box 15-C Aggregating Oil Spill Data

Until late 2001, the U.S. Coast Guard (USCG) summarized reported oil spill data in its *Pollution Incidents In and Around U.S. Waters, A Spill Release Compendium: 1969–2001*. USCG aggregated the source data into five categories: marine vessels, pipelines, facilities, other, and unknown. For the previous two editions of this report, the Bureau of Transportation Statistics (BTS) reviewed USCG's detailed source data and classified each transportation-related reported oil spill incident by transportation mode. In December 2001, USCG changed the database used to produce the spill compendium, and many of its tables were altered. The new database system, Marine Information for Safety and Law Enforcement (MISLE), is intended to collect data more efficiently. MISLE does not explicitly identify nonmarine spill sources, including aircraft, highway, rail, and pipeline. USCG is working on possible methods for extracting nonmarine-related sources but no tools are currently available. As a result of these issues, BTS was unable to update oil spills data for this report.

Source

1. American Petroleum Institute, *Oil Spills in U.S. Navigable Waters: 1991–2000* (Washington, DC: Feb. 11, 2003).

[1] When an oil spill occurs in U.S. waters, the responsible party is required to report the spill to the U.S. Coast Guard. The Coast Guard collects data on the number, location, and source of spills, volume and type of oil spilled, and the type of operation that caused the spill.

FIGURE 15-5 Oil Spills Reported to the U.S. Coast Guard by Source: 1991–2001

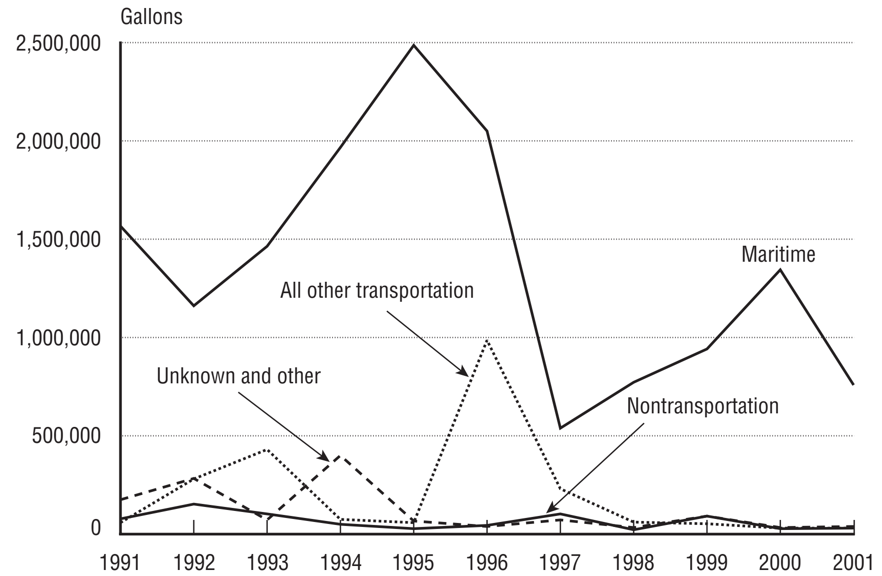
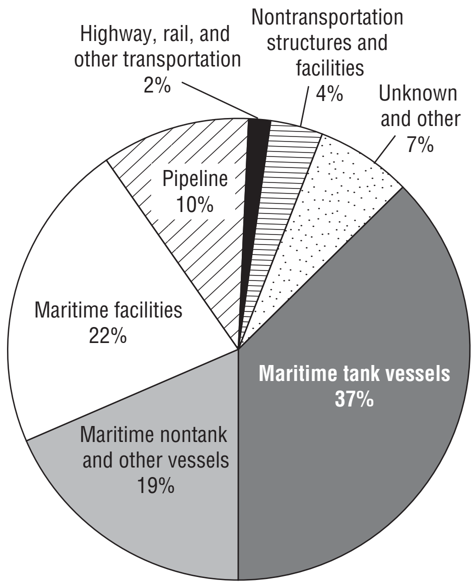


FIGURE 15-6 Total Oil Spills by Volume and Source: 1991–2001



NOTE: Figure 15-6–Percentages may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics calculations, using U.S. Department of Homeland Security, U.S. Coast Guard, *Pollution Incidents In and Around U.S. Waters,* available at http://www.uscg.mil/, as of October 2003.

Hazardous Materials Incidents

Transportation firms reported more than 14,740 hazardous materials incidents in 2004, a decrease of 8 percent since 1994[1] (figure 15-7). The number of reported incidents rose 10 percent between 1997 and 1998 and then another 14 percent in 1999, most likely because of an expansion of reporting requirements (box 15-D). The incidents in 2004 resulted in 13 deaths and 289 injuries, compared with annual averages of 22 deaths and 345 injuries between 1994 and 2004.

Highway vehicles transported 53 percent of the tons of hazardous materials shipped in 2002 [2]. In most years between 1994 and 2004, highway incidents caused most of the reported hazardous materials injuries and fatalities (figure 15-8). Exceptions occur in years in which a single incident of another mode results in high numbers of fatalities or injuries. For instance, 110 people were killed when an aircraft crashed in 1996 because of ignited oxygen leaking from improperly stored oxygen generators [1]. Of the 926 injuries attributed to rail incidents in 1996, chlorine released from one train derailment caused 787 injuries in Alberton, Montana [3]. With the exception of similar spikes, injuries generally declined between 1994 and 2004 (figure 15-9).

Environmental contamination can occur as the result of hazardous materials incidents, but data are not routinely collected on the extent of the damage. Their environmental impacts will depend on the concentration and type of material spilled, the location and volume of the spill, and exposure rates.

[1] A reported incident is a report of any unintentional release of hazardous materials while in transportation (including loading, unloading, and temporary storage). It excludes pipeline and bulk shipments by water, which are reported separately.

Box 15-D Hazardous Materials Reporting

The U.S. Department of Transportation's Hazardous Materials Information System (HMIS) is the primary source of national data on hazardous materials transportation safety. Hazardous materials, as defined in regulations, include nine classes of gases and liquids and other substances.[1] However, the vast majority of the hazardous materials shipped within the United States each year (82 percent in 2002) are flammable and combustible liquids, primarily petroleum products. Incident reporting requirements were extended to intrastate motor carriers on Oct. 1, 1998, which may partly explain the subsequent increased volume of reports. Beginning in April 1993, there was a sharp improvement in reporting of incidents by small package carriers.

Source

U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce, U.S. Census Bureau, *2002 Commodity Flow Survey, Hazardous Materials* (Washington, DC: December 2004), table 2a.

[1] The nine classes are: explosives; gases; flammable liquid; flammable solid; oxidizer, organic; poison (toxic); radioactive; corrosive; and miscellaneous hazardous material. Some classes are further divided into subclasses.

Sources

1. National Transportation Safety Board, NTSB Report AAR-97/06, Docket No. DCA96MA054.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce, U.S. Census Bureau, *2002 Commodity Flow Survey, Hazardous Materials* (Washington, DC: December 2004), table 1a.
3. U.S. Department of Transportation, Research and Special Programs Administration, personal communication, May 2003.

FIGURE 15-7 Hazardous Materials Incidents by Selected Mode: 1994–2004

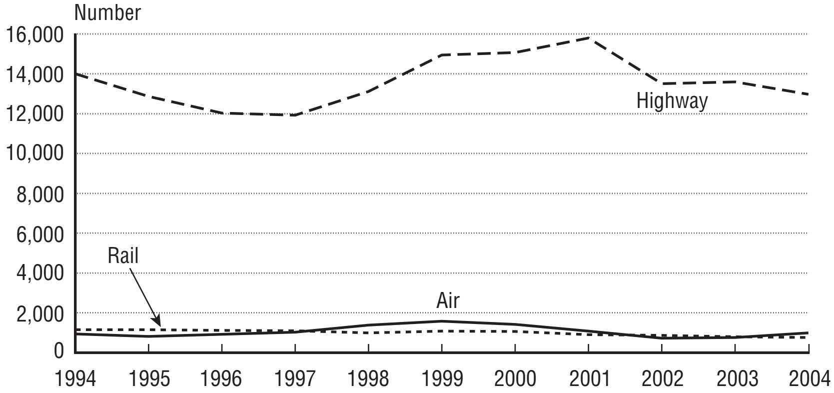


FIGURE 15-8 Hazardous Materials Fatalities by Selected Mode: 1994–2004

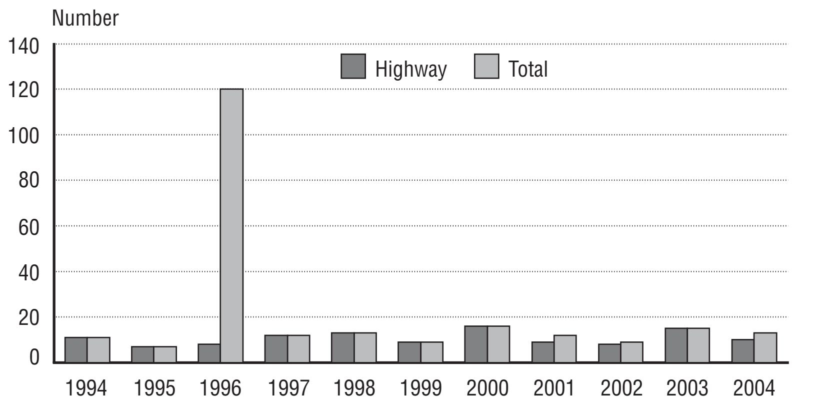
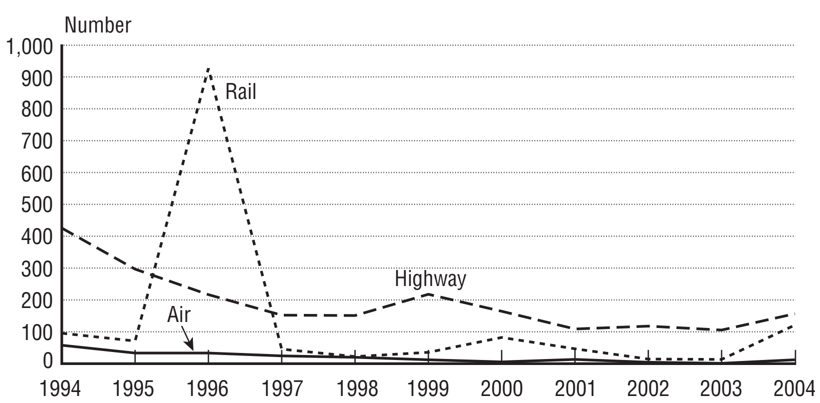


FIGURE 15-9 Hazardous Materials Injuries by Selected Mode: 1994–2004



NOTES: Data for modes not included in these figures are in tables 15-7, 15-8, and 15-9 in appendix B. **Figure 15-8**—The 1996 spike in total fatalities is the result primarily of an airline crash that killed 110 people. **Figure 15-9**—The 1996 spike in rail injuries was due mostly to a train derailment in which 787 people were injured by the release of chlorine gas.

SOURCES: 1994—U.S. Department of Transportation (USDOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Hazardous Materials Information System database, available at http://hazmat.dot.gov/pubs/, as of April 2005. **1995–2004**—USDOT, PHMSA, Hazardous Materials Information System, 10-Year Hazardous Materials Data, available at http://hazmat.dot.gov/pubs/, as of May 2005.

Chapter 3

State of Transportation Statistics

State of Transportation Statistics

INTRODUCTION

The U.S. Congress has placed a number of important mandates on the Bureau of Transportation Statistics (BTS)—now part of the Research and Innovative Technology Administration (RITA)—of the U.S. Department of Transportation.[1] Among them is a directive to compile, analyze, and publish a comprehensive set of transportation statistics, including information on a specific list of topics included in legislation.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which originally established the Bureau, included a list of 11 topics. In the Transportation Equity Act for the 21st Century of 1998 (TEA-21), Congress added a 12th topic to the list.[2] Congress instructed RITA/BTS to include information on these topics in this annual report for the President and Congress. Chapter 2 of this and previous editions of the annual report compiles and analyzes a selection of data on each of these 12 topics. Other RITA/BTS publications (e.g., *National Transportation Statistics* and its associated volume of state transportation statistics) provide additional data on these topics assembled from multiple sources.

Surface transportation legislation passed by Congress in 2005—the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users[3] (SAFETEA-LU)—amended the list of data topics. While it added only 1 new item, the law altered 10 of the preexisting 12 topics (table 3-1). The new and revised topics reflect changing ideas in Congress about the appropriate extent of transportation statistics. These changes are, thus, the subject of this year's discussion of the state of transportation statistics, the theme of this chapter.

---

[1] On November 30, 2004, the President signed Public Law 108-426, the Norman Y. Mineta Research and Special Programs Improvement Act, creating the Research and Innovative Technology Administration and placing the Bureau of Transportation Statistics under this new administration. Among other things, the RITA Administrator is to carryout powers and duties prescribed by the Secretary of Transportation for "comprehensive statistics, research, analysis, and reporting." Prior to becoming part of the new modal administration, the Bureau functioned as a separate Department of Transportation operating administration.

[2] 49 U.S. Code 111(c)(1).

[3] Public Law 109-59

TABLE 3-1 Listed Data Items in RITA/BTS Authorizating Legislation[1]

	Prior legislation		New authorization
A	Productivity in various parts of the transportation sector	**A**	Productivity in various parts of the transportation sector
B	Traffic flows	**B**	Traffic flows for all modes of transportation
	No corresponding item in prior legislation	**C**	Other elements of the Intermodal Transportation Database established under subsection (e)
C	Travel times	**D**	Travel times and measures of congestion
D	Vehicle weights	**E**	Vehicle weights and other vehicle characteristics
E	Variables influencing traveling behavior, including choice of transportation mode	**F**	Demographic, economic, and other variables influencing traveling behavior, including choice of transportation mode, and goods movement
F	Travel costs of intracity commuting and intercity trips	**G**	Transportation costs for passenger travel and goods movement
G	Availability of mass transit and the number of passengers served by each mass transit authority	**H**	Availability and use of mass transit (including number of passengers served by each mass transit authority) and other forms of for-hire passenger travel
H	Frequency of vehicle and transportation facility repairs and other interruptions of transportation service	**I**	Frequency of vehicle and transportation facility repairs and other interruptions of transportation service
I	Accidents	**J**	Safety and security for travelers, vehicles, and transportation systems
J	Collateral damage to the human and natural environment	**K**	Consequences of transportation for the human and natural environment
K	Condition of the transportation system	**L**	Extent, connectivity, and condition of the transportation system, building on the National Transportation Atlas Database developed under subsection (g)
L	Transportation-related variables that influence global competitiveness	**M**	Transportation-related variables that influence the domestic economy and global competitiveness

[1] 49 U.S. Code 111(c)

SUMMARY OF AMENDED TOPICS

Compared with the previous list, the 13 data topics in SAFETEA-LU place additional emphasis on goods movement, intermodalism, connectivity, and security data. In addition, they require more modal, infrastructure, and vehicle coverage.

Goods movement is added to several topics that previously focused only on passenger travel or had only implied goods movement. Intermodalism and connectivity are new on the topics list for information reporting to Congress by RITA/BTS through reference to the mandated Intermodal Transportation Data Base. Connectivity is also a component added to another amended topic. The original list, which was created 14 years ago, made no mention of security data. As an issue of major concern today, the legislation proposes including security data within the broad context of travelers, vehicles, and the transportation system. Improved modal coverage is explicitly added or, in other cases, is implied, as is infrastructure data. Several amended topics ask for more types of vehicle data (e.g., characteristics and extent).

Not surprisingly, overlaps exist among the 13 topics. Accordingly, in the following pages RITA/BTS has grouped the topics under five main categories:

- movement of people, goods, and vehicles;
- system status;
- variables and factors affecting travel and goods movement;
- safety and security; and
- unintended consequences.

Examples of many of the datasets discussed below can be found in chapter 2 of this report. The focus of that chapter is on the previously mandated 12 data topics. However, some of the new topics, such as goods movement and modal, infrastructure, and vehicle coverage, are included, as they have been in previous editions of the *Transportation Statistics Annual Report*.

Movement of People, Goods, and Vehicles

Passenger travel and freight movement are the basic currency of transportation. Information about the flow of people, goods, and vehicles on the transportation system is key for evaluating current system capacities and planning future infrastructure needs, and also is needed to understand transportation energy usage, safety risks, and other aspects of transportation. While most of the data topics in table 3-1 pertain in some way to movement of goods and people on the transportation system, those discussed in this section—traffic flows for all modes of transportation and availability and use of mass transit and other for-hire passenger modes—address the subject most directly.

Photo credit: Dorinda Edmondson

Traffic Flows [B].[4] Generally measured by the origins and destinations of passenger and freight movements, traffic volume, and the routes taken, these data are especially important for planning purposes at local, state, and regional levels and are used in policy analyses at all levels of government. While aggregate data on amounts of traffic by specific modes are generally available, less information is available on how the data translate to flows on networks or on connections between modes. Traffic data are often used as input for models that simulate flows.

For freight transportation, the Commodity Flow Survey (CFS), conducted by RITA/BTS and the U.S. Census Bureau on a five-year cycle, provides the most comprehensive national source of multimodal freight flow data. This survey of shippers includes tons, value, and ton-miles of shipments for covered industry sectors. All sectors are not surveyed nor are most imports. Also, the sample size of the most recent survey in 2002 was smaller than prior surveys in 1992 and 1997, making it less useful in terms of commodity detail and geographic coverage than earlier surveys. Other mode-specific data sources can be used to fill some but not all missing pieces in the CFS. RITA/BTS and the Federal High-

[4] The capital letter here and at the end of the subtitles that follow refers to the data topic in the legislation (see table 3-1).

way Administration (FHWA) have developed an extended dataset to provide a more complete national picture of freight flows than is currently available from this survey [5]. Over the longer term, survey modifications (e.g., increasing the sample size of the 2007 version) could enhance coverage. Working groups from RITA/BTS and the Census Bureau are jointly developing design improvements for the 2007 CFS.

Insufficient geographic detail on freight flows at the metropolitan and corridor level is a key limitation in current data. Such data can provide insight into transportation demand, relationships between freight movement and business patterns, and flow of freight through major corridors. The CFS was not intended to provide detailed local-level data. Currently, there is a lack of detailed data for many metropolitan areas, especially for trucking, which accounts for the majority of freight shipments in the United States on both a value and tonnage basis.

Conducting a national survey of carriers would be one option for collecting more detailed trucking data and other mode-specific information. An initial survey might begin with trucking and then possibly be expanded to include other modes. RITA/BTS is evaluating options for a survey of a selected group of for-hire trucking carriers to obtain detailed information on freight movement characteristics. The goal of such a survey would be to capture specific types of carrier information that is unavailable from the CFS shipper-based survey (e.g., whether shipments are less-than-truckload or truckload, origin and destination locations, and intermodal characteristics of shipments). This type of survey would need to be carried out in partnership with carriers and provide carriers with assurance that data would not identify individual firms.

To capture passenger travel flows, the National Household Travel Survey (NHTS), last conducted jointly by RITA/BTS and FHWA in 2001/2002, covers local and long-distance travel, encompasses all modes of transportation, and also offers considerable demographic detail about travelers. However, the sample size of the 2001/2002 survey is insufficient for identifying traveler origins and destinations and geography. Hence, the NHTS, while useful for policy analysis and modeling, has been less useful for planning at the state and local level. However, nine jurisdictions—four states, part of Kentucky, and four urban areas—contributed funds to the survey in order to obtain greater detail on travel patterns in these areas. Other states use NHTS daily trip data as default values for their travel demand models.

In most areas, passenger flow data at the metropolitan level are limited. The Decennial Census and American Community Survey provide specific state-, county-, and city-level journey-to-work data distributed to planners by RITA/BTS, FHWA, and the Federal Transit Administration (FTA) through the Census Transportation Planning Package. Other than journeys to and from work, detailed information about other trips varies.

No annual data are available for travel flows by bicycle or pedestrians, although NHTS does supply data on trips and typical weekly behavior for both. RITA/BTS and the National Highway

Photo credit: Chip Moore

Traffic Safety Administration collaborated on a one-time study in 2004 of pedestrian and bicyclist attitudes and behavior in which respondents were asked about frequency of walking and bicycling and conditions [6]. Recreational boating may need a different measure than that provided by the NHTS for trip counts and distance traveled. One option would be to measure the amount of time people spend boating, for instance. The Federal Aviation Administration's annual survey on general aviation focuses on aircraft characteristics and hours flown, but does not include origins and destinations or distances flown.

Most travel, whether local or long distance, occurs in cars and other personal highway vehicles. FHWA and state departments of transportation estimate vehicle movements through the Highway Performance Monitoring System, and these estimates can be used to assign flow data to specific routes.

The flow of people and goods across U.S. borders is a subject of great importance, especially given the security concerns that have arisen since September 11, 2001. RITA/BTS obtains data from Customs and Border Protection of the U.S. Department of Homeland Security that covers the number of people, vehicles, trains, and containers crossing into the United States from Canada and Mexico through more than 100 U.S. land gateways. The data are compiled and verified and then disseminated on the RITA/BTS website.

RITA/BTS also releases data on U.S. imports from and exports to Canada and Mexico by transportation mode. Monthly releases of the surface trade data show the shipment value, breakdowns by mode, and the state of origin or destination. In 2004, RITA/BTS initiated the collection and compilation of similar data for air and water.

Availability and use of for-hire passenger modes [H]. While previous legislation asked RITA/BTS to compile, analyze, and publish statistics on the availability and use of mass transit, SAFETEA-LU places additional emphasis on "other forms of for-hire travel." Other for-hire travel modes include intercity train; intercity scheduled and charter bus; local taxis; and air transportation, including commercial, air taxi, and charter operations.

FTA collects data from large transit agencies that receive federal funding; others report voluntarily. These agencies account for 95 percent of U.S. transit ridership. The American Public Transportation Association also collects data

Photo credit: Marsha Fenn


Photo credit: Marsha Fenn

from its members and makes the data available publicly. Less information is available on rural public transportation. FTA commissioned a survey of rural providers in 2000, but this survey has not been repeated.

For other for-hire passenger travel, data on enplanements by airport and air carrier are available from RITA/BTS, and intercity train boardings are available from Amtrak. These data can be accessed by the public. The Federal Motor Carrier Safety Administration has been assigned the responsibility to collect data from Class I bus operators on the numbers of their passengers, including whether the passengers are intercity, charter or special, or local; but these data are not listed by facility location.

In terms of availability of for-hire passenger service, no comprehensive national statistics exist that track trends in routes and schedules across for-hire modes. However, RITA/BTS evaluated scheduled service operations for over 200 city pairs covering air carriers, intercity train, and intercity bus operations in 2003 and is updating that study with the release expected in 2005 [2]. Another RITA/BTS study evaluates the proximity of rural Americans to for-hire intercity transportation services. First conducted in 1999, the study has been updated periodically when conditions change, with the most recent update in June 2005 [4].

System Status

Information on system status relates to transportation infrastructure—its physical characteristics in terms of extent, connectivity, and condition, and its economic status in terms of capital investment—and its availability for use as reflected in travel times, congestion, and service interruptions. It also pertains to the physical characteristics of the vehicles and other conveyances that use the infrastructure.

System extent, connectivity, and condition [L]. An enormous amount of information exists about the extent and location of transportation facilities, the number and nature of connections within and between modes, and the physical condition of system components. Putting such information together so it is meaningful for decisionmaking has much promise as an aid for identifying priorities among transportation investments, planning, and policy setting. Offering 250 summary tables aggregated at the national level on a wide variety of topics that characterize the transportation system, RITA/BTS's *National Transportation Statistics* report compiles data that cover all modes and all aspects of the transportation system from a variety of sources. A companion volume presents over 100 state-level tables for the 50 states and the District of Columbia [3].

Recent decades have seen great expansion in the capability of geographic information systems to display transportation data in meaningful ways for decisionmaking. RITA/BTS's *National Transportation Atlas Database* (NTAD) enables display of transportation information in its geographic context (box 3-A). Comprised of geographic databases of transportation facilities, networks, and associated infrastructure, the atlas can display relevant data at national, regional, state, and local levels. It includes spatial information for specific modes, intermodal terminals, and related attribute information. The

BOX 3-A National Transportation Atlas Database[1]

RITA/BTS's authorizing legislation calls on the agency to develop and maintain geospatial databases that depict:

- transportation networks;
- flows of people, goods, vehicles, and craft over the networks; and
- social, economic, and environmental conditions that affect or are affected by the networks.

These databases are meant to support intermodal network analysis.

[1] SAFETEA-LU, Section 111(g)

data, obtained from multiple sources, include the National Highway Planning Network, a national rail network, public-use airports and runways, and Amtrak stations. In addition, the NTAD includes state, county, congressional district, and metropolitan statistical area boundary files to provide a geographic reference for transportation features.

Geospatial information on transportation infrastructure can be stored and used for development and maintenance planning. For instance, the National Bridge Inventory maintained by FHWA contains information on structurally deficient bridges. Information describing the location and bridge conditions can be displayed cartographically and analyzed. Geographically accurate maps can be produced using a variety of data tables or layers placed one on top of the other to show geographic relationships.

Travel times and congestion [D]. Tracking changes in how long it takes to travel from one point to another is one way to measure transportation system performance, and change over time is one measure of congestion. Travel times can be affected by the density of traffic on a transportation network, the number of modal and intermodal connections, and service availability and reliability. Individual carriers often collect data on travel times associated with their operations, although the extent to which such information is routinely summarized and made publicly available varies by mode. Surveys can ask customers about their perceptions of transportation systems and to identify delays they have experienced—an approach taken in RITA/BTS's Omnibus Survey, which periodically polls households on a range of transportation questions.

In the case of air passenger travel, a particular problem is to evaluate "door-to-door" movements. Thus, travelers are not only concerned about flight time and delay, but also about how long it takes to get to and from airports. Scheduled versus actual travel times is another dimension. For instance, frequency of service, nonstop versus having to make connections, cancellations, and diversions all may need to be taken into consideration to get a full accounting of travel times.

Photo credit: Marsha Fenn

National-level travel time data are most extensive and detailed for air passenger travel. Each month, RITA/BTS issues data on the on-time performance of large U.S. air carriers. Since 2003, cause-of-delay data have also been available. On-time arrival and departure data also can be displayed by airport. Additionally, RITA/BTS has developed an Air Travel Time Index, which measures average flight times of domestic non-stop flights (the difference between scheduled times and actual elapsed times) while controlling for different flight characteristics.

For freight transportation, some of the information needed to evaluate travel times is proprietary, which complicates public analysis. Sometimes, however, it is possible to use data in such a way that individual carriers are not identified. This can benefit both the industry (which gains information useful in benchmarking their operations against the industry average) and the public (which gains trend information). RITA/BTS has calculated quarterly estimates of average overall line-haul speeds for the rail freight industry, making it possible to compare overall national line-haul speeds over time.

The best way to estimate congestion remains a subject of debate. More than likely, a range of estimates and methods will be needed to provide an accurate picture. Partnerships between industry, trade associations, and different levels of government may offer promise as a way to gather information needed for measurement without compromising the confidentiality of proprietary data.

Measuring highway congestion is of continuing interest. An FHWA report [1] in 2004 summarized the data challenges ahead, noting that continuous streams of data are not available in some regions, data cover only a portion of the transportation network, erroneous data or gaps in data are common, and lack of consistent standards for data across regions hinder meaningful comparison. Meanwhile, an index of highway congestion for metropolitan areas is reported annually by the Texas Transportation Institute. Delays in surface border crossings from Canada and Mexico are captured by Customs and Border Protection of the Department of Homeland Security.

Photo credit: Elliott Linder

Interest in port congestion is growing at the national level. However, there are no standard congestion measures for ports. Individual ports use their own methods to determine congestion. Some measure the number of vessels in port at a given time, the amount of time a vessel has to wait to be unloaded, throughput (in terms of the number of TEUs—20-foot equivalent units—in a given hour or day), or truck idling time.

Repairs and other interruptions of service [I]. The time in which vehicles and facilities are unavailable for use because of repairs and other interruptions of service is another aspect of system status and could be a basic performance measure for the transportation system. However, nationwide data are not currently available to properly characterize the frequency of repairs for vehicles and infrastructure for most modes. Local and state transportation authorities routinely provide information to the public about the location and duration of scheduled maintenance operations and other sources of travel interruptions. FHWA has a website that displays contemporaneous reporting from these and other sources for all 50 states.

A comprehensive national database on interruptions caused by weather, work stoppages, security alerts, and other service outages is not available. However, FHWA and others produce composite information on traffic delays for some metropolitan areas that can be summarized on a monthly basis. Data on some specific interruptions have been compiled, such as the halt in air traffic on September 11, 2001, and the effects of a labor dispute that shut down West Coast ports in fall 2002.[5]

Public availability of data on vehicle repairs is mixed. For instance, data pertaining to the repair of most trucks in operation are not public information but are proprietary. (RITA/BTS has used data on trucks pulled out of service for repairs at highway inspection stations as a surrogate measure.) In the case of passenger cars and other household vehicles, consumer advocacy groups and research organizations compile some reliability and repair information on specific models. But these data have not been aggregated in any way to satisfy this data topic.

Vehicle weights and other characteristics [E]. Vehicle weight data are useful for infrastructure planning, safety analysis, estimation of energy usage, evaluation of environmental trends in transportation, and other matters. While the term "vehicle" may imply highway vehicles, data for other modes are also relevant. Proposed legislation adds the phrase "and other vehicle characteristics" to weight. The term "other characteristics" is not defined, but could include size, fuel usage and efficiency, age, condition, ownership, and number available in service and in reserve fleets. Additional vehicle features, such as accessibility for disabled persons, safety equipment, and emissions, noise generation, and other environmental characteristics, are also relevant. Not all characteristics are suitable for application across all modes. In the case of maritime vessels, for example, deadweight tonnage and draft are more appropriate than weight, because these measurements determine whether vessels can access or will impact infrastructure such as channels and ports.

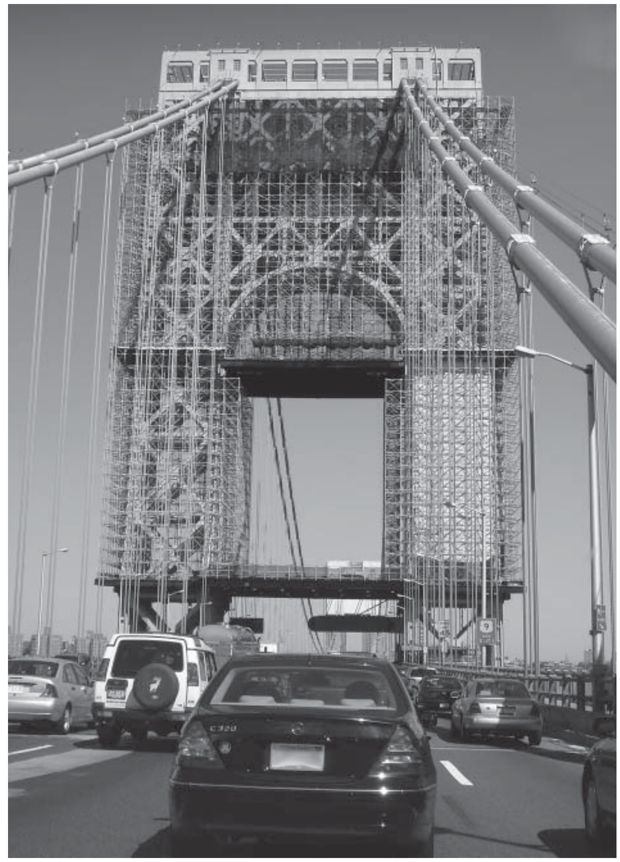


Photo credit: Marsha Fenn

The most detailed survey of highway vehicles—the Census Bureau's Vehicle Inventory and Use survey—is conducted every five years and covers light (including sport utility vehicles and minivans), medium, and heavy trucks. Data include the number of vehicles by weight category.

Elements of the Intermodal Transportation Data Base [C]. Congress, in previous legislation, required RITA/BTS to establish and maintain a transportation database for all modes of transportation (box 3-B). SAFETEA-LU added elements of this database to the list of topics that

[5] As this report was being finished, data were being collected on the impacts on transportation of Hurricanes Katrina and Rita, which hit the Gulf Coast regions in September 2005.

BOX 3-B Intermodal Transportation Data Base[1]

RITA/BTS's authorizing legislation calls on the BTS Director, in consultation with the Under Secretary for Policy, the Assistant Secretaries, and the heads of the operating administrations of the Department of Transportation, to establish and maintain a transportation database for all modes of transportation.

The database is to be suitable for analyses carried out by the federal government, the states, and metropolitan planning organizations. The content is to include:

- information on the volumes and patterns of movement of goods, including local, interregional, and international movement, by all modes of transportation and intermodal combinations, and by relevant classification;
- information on the volumes and patterns of movement of people, including local, interregional, and international movements, by all modes of transportation (including bicycle and pedestrian modes) and intermodal combinations, and by relevant classification;
- information on the location and connectivity of transportation facilities and services; and
- a national accounting of expenditures and capital stocks on each mode of transportation and intermodal combination.

[1] 49 U.S. Code 111(e)

RITA/BTS reports on to Congress. Doing so may require RITA/BTS to newly compile, analyze, and/or publish data on transportation intermodalism and connectivity and provide a national accounting of transportation expenditures and capital stocks. Other elements of the database, such as movement of goods and passengers by all modes of transportation, are included in other components of the data topics list.

Intermodalism and connectivity are about linkages between modes resulting in efficient flows of transportation. Examples include moving goods from incoming vessels through ports via rail or truck and moving people between cities via surface transportation modes in combination with air travel. To initiate development of data in these areas, RITA/BTS has considered ways to use the data gathered for the scheduled intercity transportation studies to evaluate the intermodal connectivity of the passenger transportation network [2,4].

The system status of both infrastructure and vehicles is reflected in the economic concept of capital stock, which is an economic measure of capacity. In transportation terms, it combines the capabilities of modes, components, and owners into a single measure of capacity, expressed in dollars. The measure takes both the quantity of each component (as reflected in initial investment) and its condition (as reflected in depreciation and retirements) into account.

A comprehensive set of modal capital stock data would be useful to policymakers and others in evaluating the current investment in transportation infrastructure and rolling stock and levels of investment needed to accommodate anticipated future traffic. While the Bureau of Economic Analysis in the U.S. Department of Commerce compiles data on private sector transportation capital stock, its data do not capture all public sector transportation capital stock. RITA/BTS is developing values for publicly owned transportation capital stocks, including airports, waterways, and transit systems. RITA/BTS also publishes a biennial report—*Government Transportation Financial Statistics*—that presents a compilation of data on government transportation revenues and expenditures for all modes of transportation.

Variables Affecting Travel and Goods Movement

Overlap exists among variables that influence travel and goods movement, the domestic economy and U.S. global competitiveness, productivity in the transportation sector, and other data topics (e.g., transportation cost is a variable for both passengers and goods movement).

Variables influencing traveling behavior [F]. A host of demographic, economic, and other variables influence passenger traveling behavior, including access to transportation, transportation costs, employment status and location, income, location of housing and services, and other factors such as family status, age, and disabilities. In the broadest sense, goods movement is influenced by the economy and population and its geographic distribution, including the location of goods producers, suppliers, and customers in relation to each other. Goods movement is also driven by trends in technology and industrial organization, such as just-in-time delivery, logistics organization, and e-commerce.

One way to shed light on the variables influencing travel behavior and choices is through surveys. The previously mentioned National Household Travel Survey provides much information on the demographic and economic characteristics of household travelers in relation to their transportation choices. Surveys also can be useful for goods movement, although much of the data needed to evaluate firm choices are proprietary.

Variables influencing the domestic economy and global competitiveness [M]. A great many transportation variables influence the performance of the domestic economy and U.S. global competitiveness including:

- *Relative prices of transportation goods and services*. This important and direct measure of competitiveness takes into account the quality of the products and services. Relative prices show whether domestic industries or domestically produced goods and services are less expensive than their foreign counterparts.

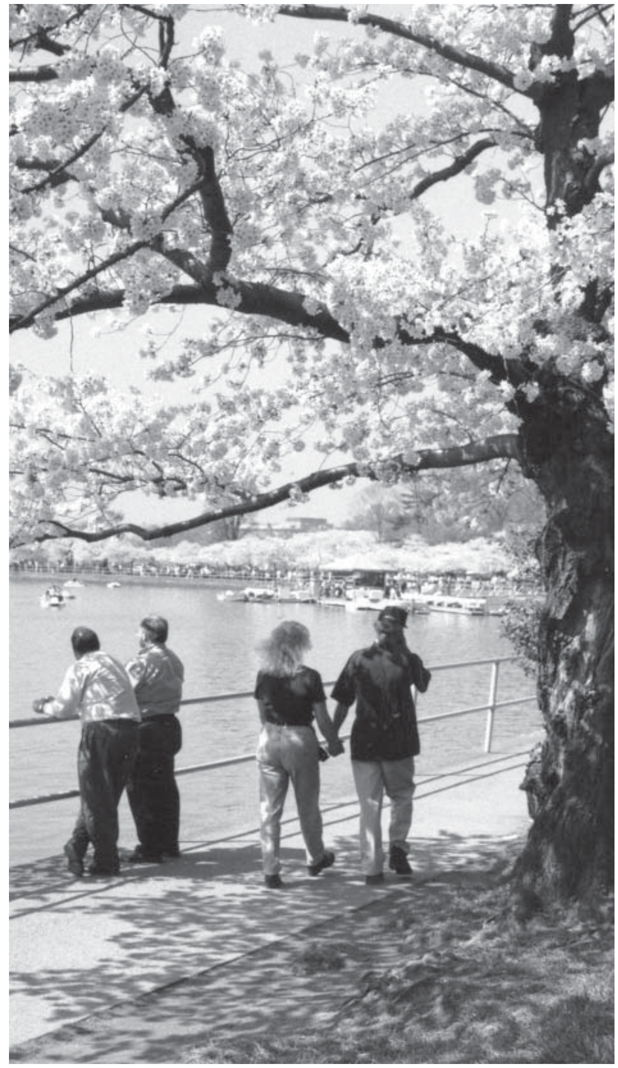


Photo credit: Chip Moore

- *Quality and reliability of transportation goods and services*. These factors affect demand for transportation goods and services but are difficult to quantitatively measure. Possible measures might include passenger flight delays and cancellations, freight shipment delays and cancellations, after-sales services of transportation goods, and so forth.

Photo credit: Getty Images

- *Relative cost of transportation inputs.* This includes, for example, unit labor cost, unit capital cost, and unit total input cost.
- *Relative productivity.* This covers labor, capital, and multifactor productivity for overall transportation and by mode of transportation. (See separate discussion of productivity factors.)
- *Transportation infrastructure.* This is a necessary and essential input for the provision of transportation services and can be measured by transportation investment, transportation capital stock, transportation capacity (e.g., capacity per vehicle-mile, per gross domestic product, per capita, and so on), accessibility of transportation infrastructure (network density), and the quality and reliability of transportation infrastructure.
- *U.S. international trade in transportation-related goods and services.* This includes their shares of U.S. trade in the global market and trade balances (exports minus imports).
- *Employment.* This measure captures transportation employment in for-hire and private industries. For-hire data is collected by the Census Bureau and is classified by North American Industry Classification System (NAICS) categories. Private transportation employment is harder to quantify, because it involves extracting the number of transportation-related workers from nontransportation-related industries.

Considerable data exist for many of these topics. In the case of global competitiveness, for example, RITA/BTS compiles data on the relative prices of U.S. transportation goods and services versus selected major trading partners and on U.S. international trade in transportation-related goods and services and the associated U.S. trade balance. RITA/BTS has also conducted a study on the capacity of U.S. highway infrastructure relative to other G-7 countries. Still, data gaps exist (box 3-C).

Several data issues that pertain to transportation and the economy are discussed in other parts of this chapter. Data on private and government investment in transportation infrastructure and equipment and on transportation capital stock are covered under System Status above. Productivity measures are covered in the next paragraph.

Transportation sector productivity [A]. In general, productivity measures describe the relationship between the quantity of output produced and the inputs (labor and capital) used, and the data are helpful for economic and public policy analysis and private sector planning. They should enable comparisons across transportation modes, between transportation and other sectors of the domestic economy, and of U.S. productivity with that of other countries.

Data limitations exist among the three types of productivity measures: labor productivity, capital productivity, and multifactor productivity. Productivity data have been affected by the transition of U.S. government statistical agencies to a different way of classifying sectors of the U.S. economy, going from the Standard Industrial Classification (SIC) system to the NAICS. Currently, NAICS-based productivity estimates cover only some of the transportation sectors, while SIC-based data for some sectors were pro-

BOX 3-C Data Needs for Transportation Variables that Influence the Domestic Economy and Global Competitiveness

- Detailed data on relative prices of transportation services by mode, time series data on relative prices for transportation-related goods and services, separate data on relative prices of transportation-related goods, and for-hire transportation services
- Data on the quality and reliability of transportation goods and services
- Comparable data on the cost of transportation inputs between the United States and other countries
- Comparable productivity measures with similar productivity measures for other countries
- Comparable transportation infrastructure indicators, particularly those of transportation investment and transportation capital stock, with similar indicators of other countries
- Data on the shares of U.S. exports of transportation goods and services in the global market
- Data on U.S. trade in transportation-related goods and services in real dollars

duced in the past but are no longer generated (table 3-2). RITA/BTS is developing multifactor productivity measures for other modes (e.g., trucking, pipeline, and water). All of these data cover the for-hire component of the transportation sector. Data on the in-house component of the transportation sector are not available, thus it is not possible to report on the productivity of the transportation sector as a whole.

Costs of passenger travel and goods movement [G]. The proprietary nature of data on the costs of goods movement means that little such information is publicly available. However, producer price indexes prepared by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor allow tracking of changes over time in prices charged for many passenger and freight transportation sectors. Producer prices reflect charges to anyone, including consumers, when the producing firm also serves as the retailer and may not always reflect actual prices paid by end users.

In general, data on the average costs of passenger travel are available by mode, but detailed data are missing. However, modal data are not necessarily compatible, making comparisons

Table 3-2 Status of Transportation Sector Productivity Data

Data type	Source	Availability
Productivity data for the entire transportation sector, both for-hire and in-house components and for all modes		Not available
North American Industry Classification System (NAICS)-based labor productivity	Bureau of Labor Statistics (BLS)	Available for air transportation, line-haul railroads, general freight trucking (long-distance); none for water transportation or transit
Standard Industrial Classification (SIC)-based labor productivity	BLS	Available for local trucking, bus carriers, and petroleum pipelines for 1947–2000; BLS not planning on producing data beyond 2000
NAICS-based multifactor productivity	BLS	Available for air transportation for 1972–2001
SIC-based multifactor productivity	BLS	Available for railroads for 1972–1999
Multifactor productivity data for other modes	BTS	Trucking data under development

between modes difficult. For passenger travel costs as a whole, the BLS annual survey on average household spending captures data that include private vehicle expenditures and spending on transportation fares such as airlines, transit, taxis, trains, and buses.

RITA/BTS has developed an Air Travel Price Index to measure the change over time in the actual prices paid by air travelers. The index can be used to compare airfares in the most recent quarter available with any quarter since the 1995 base year. The index reflects fares paid by travelers, not published fares. It is computed using data from the RITA/BTS Passenger Origin and Destination (O&D) Survey, a 10 percent sample of all airline tickets for U.S. carriers, excluding charter air travel. By using the actual fares from the O&D survey data, the index accounts for consumers' tendency to substitute less expensive air travel services for more expensive ones when relative prices change.

Safety and Security of Transporation [J]

The legislation expands this topic from the previous request for information on "accidents" to cover security and, explicitly, the safety and security of vehicles and infrastructure, as well as people. Accident, injury, and fatality data are available by mode, although problems exist with exposure rates for some forms of transportation (e.g., walking/bicycling, general aviation, and recreational boating).

However, security data once readily available are not anymore, especially data that relate to terrorism.[6] In some cases, the data are still generated but not released to the public. In other cases, the data are no longer collected because priorities have changed in the agencies that once made

relevant data available. While the U.S. Department of State's *Patterns of Global Terrorism* annual document is still made available, it does not dissaggregate transportation data. The U.S. Department of Transportation's annual *Worldwide Terrorist and Violent Criminal Attacks Against Transportation* document has not been produced since 1998, and the Federal Aviation Administration is no longer producing its *Criminal Acts Against Civil Aviation* report. Some of the latter data can be culled from private databases available online, however.

As the proposed legislative change makes clear, differences among vehicles have implications for safety data. Changes in consumer preferences for vehicles, such as the rapid increase in sales of sport utility vehicles and other light trucks over the last 15 years, has made crashes more likely between these larger vehicles and smaller passenger cars and also has raised issues about the vehicles themselves. Data on crashes involving more than one mode of transportation, such as passenger cars or bicycles with trains at grade crossings, remains an important topic. In addition, safety incidents involving freight and passenger modes, which often share the same facility or road, also present data challenges.

Transportation system safety data issues present other challenges. Safety statistics continue to be difficult to compare across modes because of

[6] See *Transportation Statistics Annual Report 2001*, pp. 107–135 (Chapter 5, Security). This is the most recent, comprehensive compilation of publicly available transportation security data.

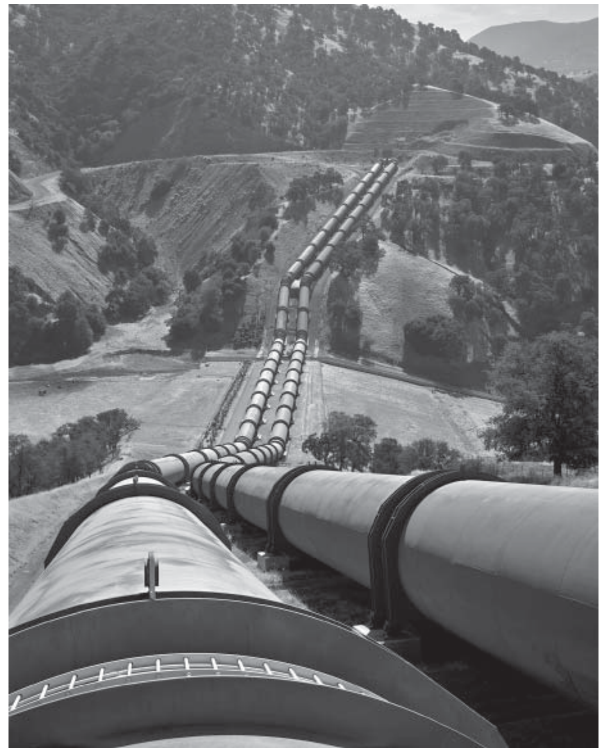
different reporting criteria and inconsistent definitions. There is also lack of agreement about the scope of coverage: should a systemwide perspective encompass deaths and injuries arising from, say, repair of vehicles in a facility dedicated to this purpose, or should reporting be limited to incidents involving a moving vehicle?

Consequences of Transportation [K]

Other federal agencies and departments have much of the responsibility for collecting data used in assessing the consequences of transportation for the human and natural environment. The U.S. Environmental Protection Agency (EPA) produces data on national estimates of air pollutant emissions from transportation vehicles and air quality across the nation (although these data are not necessarily specific to transportation or any other source). EPA also generates data on the disposal rates of some transportation equipment (e.g., batteries and tires) and tracks problems related to the underground storage of petroleum.

Energy does not explicitly appear in Congress' list of data topics. Energy data related to transportation, however, is a relevant component of both security and this data topic. Energy and fossil fuel usage, for instance, are a key factor in evaluating the air pollution impacts of transportation. These data are collected or estimated by the Energy Information Agency (EIA) of the U.S. Department of Energy. Both EPA and EIA annually estimate transportation's greenhouse gas emissions, which may contribute to global climate change. While both agencies use EIA survey data on energy consumption as a basis for their estimates, their coverage and methodologies differ, resulting in different datasets.

The U.S. Coast Guard, which moved from the Department of Transportation (DOT) to the Department of Homeland Security, has been the source of national data on oil spills, another



important indicator of transportation's environmental consequences. However, new homeland security priorities for the Coast Guard have caused these environmental data to become less timely and robust. EPA collects information on other damages to the nation's water, but the data are not necessarily specific to transportation. Data on hazardous materials incidents are collected by DOT's Pipeline and Hazardous Materials Safety Administration but, again, the data do not directly measure environmental consequences.

CONCLUSIONS

The need for transportation information is constantly evolving. Each year, RITA/BTS has evaluated transportation data in response to the congressional mandate that the *Transportation Statistics Annual Report* provide recommendations for improving transportation statistical information. Over the years, other reports by

RITA/BTS, such as *Transportation Statistics Beyond ISTEA: Critical Gaps and Strategic Responses* (1998) and *Bicycle and Pedestrian Data: Sources, Needs, and Gaps* (2000),[7] and by others, such as the Transportation Research Board's *Information Needs to Support State and Local Transportation Decision Making into the 21st Century* (1997) and its reviews of the CFS (2003) and NHTS (2002), have supplemented this information.

In addition to expanding the scope of data issues in 2005, the U.S. Congress has mandated that the Secretary of the U.S. Department of Transportation enter into an agreement with the National Research Council to assess national transportation information needs.[8] This comprehensive assessment is expected to take two years to complete and provide the nation with information on data needed to improve transportation decisionmaking at all levels of government and on new data-collection methods that would improve the standardization, accuracy, and utility of transportation data and statistics. Congress has also asked for an estimate of the cost of implementing any recommendations.

Given the expansion of data issues the U.S. Congress has asked RITA/BTS to collect, compile, analyze, and publish and the new study requirement, it is evident that the need for relevant, timely, high-quality transportation information for decisionmaking remains.

[7] Documents available at http://www.bts.gov/.

[8] 49 U.S. Code, Section 111(d)

REFERENCES

1. U.S. Department of Transportation, Federal Highway Administration. 2004. *Traffic Congestion and Reliability: Linking Solutions to Problems*. Available at http://www.ops.fhwa.dot.gov/congestion_report/, as of September 2005.
2. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics. 2003. *Many Intercity Travelers Face Longer Travel Schedules*, Issue Brief. Available at http://www.bts.gov/.
3. ______. 2004. *State Transportation Statistics*. Washington, DC. Also available at http://www.bts.gov.
4. ______. 2005. *Scheduled Intercity Transportation: Rural Service Areas in the United States*. Available at http://www.bts. gov/.
5. ______. 2005. *Freight in America*. Washington, DC.
6. U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, and USDOT, National Highway Traffic Safety Administration. 2002. *National Survey of Pedestrian and Bicyclist Attitudes & Behaviors*. Washington, DC.

Appendices

Appendix A: List of Acronyms and Glossary

AAR	Association of American Railroads
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ATPI	Air Travel Price Index
ATTI	Air Travel Time Index
ATTVI	Air Travel Time Variability Index
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
BTS	Bureau of Transportation Statistics
Btu	British thermal unit
CBP	U.S. Customs and Border Protection
CFS	Commodity Flow Survey
CO	carbon monoxide
CO_2	carbon dioxide
CPI	Consumer Price Index
CPSC	Consumer Product Safety Commission
DHS	U.S. Department of Homeland Security
DOC	U.S. Department of Commerce
DOE	U.S. Department of Energy
DOL	U.S. Department of Labor
DOT	U.S. Department of Transportation
dwt	deadweight tons
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	fiscal year
GDP	Gross Domestic Product
GHG	greenhouse gas
GIS	geographic information systems
GVWR	gross vehicle weight rating
HMIS	Hazardous Materials Information System

ISTEA	Intermodal Surface Transportation Efficiency Act
ITS	intelligent transportation system
MARAD	Maritime Administration
MFP	multifactor productivity
MISLE	Marine Information and Safety Law Enforcement
mmtc	million metric tons of carbon
mpg	miles per gallon
mph	miles per hour
MPO	metropolitan planning organization
MSA	metropolitan statistical area
NAICS	North American Industry Classification System
NEI	National Emissions Inventory
NEISS	National Electronic Injury Surveillance System
NHTS	National Household Travel Survey
NHTSA	National Highway Traffic Safety Administration
NO_X	nitrogen oxides
NPIAS	National Plan of Integrated Airport Systems
NTAD	National Transportation Atlas Database
NTD	National Transit Database
NTS	*National Transportation Statistics* report
NTSB	National Transportation Safety Board
O&D	origin and destination
OECD	Organization for Economic Cooperation and Development
OOS	out of service
OPEC	Organization of Petroleum Exporting Countries
PM-2.5	particulate matter of 2.5 microns in diameter or smaller
PM-10	particulate matter of 10 microns in diameter or smaller
pmt	passenger-miles of travel
quads	quadrillion
RITA	Research and Innovative Technology Administration
rpm	revenue passenger-mile
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users
SCTG	Standard Classification of Transported Goods
SE	standard error
SIC	Standard Industrial Classification
STOL	short take-off and landing
SUV	sport utility vehicle
TEA-21	Transportation Equity Act for the 21st Century
TEU	20-foot equivalent container unit
$TgCO_2Eq$	teragrams of carbon dioxide equivalent
TSAR	*Transportation Statistics Annual Report*
TSI	Transportation Services Index

TTI	Texas Transportation Institute
TTI	Travel Time Index
USCG	U.S. Coast Guard
VIUS	Vehicle Inventory and Use Survey
vmt	vehicle-miles of travel
VOC	volatile organic compounds

Glossary

14 CFR 121 (air): *Code of Federal Regulations*, Title 14, part 121. Prescribes rules governing the operation of domestic, flag, and supplemental air carriers and commercial operators of large aircraft.

14 CFR 135 (air): *Code of Federal Regulations*, Title 14, part 135. Prescribes rules governing the operations of commuter air carriers (scheduled) and on-demand air taxi (unscheduled).

ACCIDENT (aircraft): As defined by the National Transportation Safety Board, an occurrence incidental to flight in which, as a result of the operation of an aircraft, any person (occupant or nonoccupant) receives fatal or serious injury or any aircraft receives substantial damage.

ACCIDENT (automobile): See Crash (highway).

ACCIDENT (gas): 1) An event that involves the release of gas from a pipeline or of liquefied natural gas (LNG) or other gas from an LNG facility resulting in personal injury necessitating in-patient hospitalization or a death; or estimated property damage of $50,000 or more to the operator or others, or both, including the value of the gas that escaped during the accident; 2) an event that results in an emergency shutdown of an LNG facility; or 3) an event that is significant in the judgment of the operator even though it did not meet the criteria of (1) or (2).

ACCIDENT (hazardous liquid or gas): Release of hazardous liquid or carbon dioxide while being transported, resulting in any of the following: 1) an explosion or fire not intentionally set by the operator; 2) loss of 50 or more barrels of hazardous liquid or carbon dioxide; 3) release to the atmosphere of more than 5 barrels a day of highly volatile liquids; 4) death of any person; 5) bodily harm resulting in one or more of the following—a) the loss of consciousness, b) the necessity of carrying a person from the scene, c) the necessity for medical treatment, d) disability that prevents the discharge of normal duties; and 6) estimated damage to the property of the operators and/or others exceeding $50,000.

ACCIDENT (highway-rail grade-crossing): An impact between on-track railroad equipment and an automobile, bus, truck, motorcycle, bicycle, farm vehicle, or pedestrian or other highway user at a designated crossing site. Sidewalks, pathways, shoulders, and ditches associated with the crossing are considered to be part of the crossing site.

ACCIDENT (rail): A collision, derailment, fire, explosion, act of God, or other event involving operation of railroad on-track equipment (standing or moving) that results in railroad damage exceeding an established dollar threshold.

ACCIDENT (recreational boating): An occurrence involving a vessel or its equipment that results in 1) a death; 2) an injury that requires medical treatment beyond first aid; 3) damage to a vessel and other property, totaling more than $500 or resulting in the complete loss of a vessel; or 4) the disappearance of the vessel under circumstances that indicate death or injury. Federal regulations (33 CFR 173–4) require the operator of any vessel that is numbered or used for recreational purposes to submit an accident report.

ACCIDENT (transit): An incident involving a moving vehicle, including another vehicle, an object, or person (except suicides), or a derailment/left roadway.

AIR CARRIER: The commercial system of air transportation comprising large certificated air carriers, small certificated air carriers, commuter air carriers, on-demand air taxis, supplemental air carriers, and air travel clubs.

AIR TAXI: An aircraft operator who conducts operations for hire or compensation in accordance with 14 CFR 135 (for safety purposes) or FAR Part 135 (for economic regulations or reporting purposes) in an aircraft with 30 or fewer passenger seats and a payload capacity of 7,500 pounds or less. An air taxi operates on an on-demand basis and does not meet the flight schedule qualifications of a commuter air carrier (see below).

AIRPORT: A landing area regularly used by aircraft for receiving or discharging passengers or cargo.

ALTERNATIVE FUELS: The Energy Policy Act of 1992 defines alternative fuels as methanol, denatured ethanol, and other alcohol; mixtures containing 85 percent or more (but not less than 70 percent as determined by the Secretary of Energy by rule to provide for requirements relating to cold start, safety, or vehicle functions) by volume of methanol, denatured ethanol, and other alcohols with gasoline or other fuels. Includes compressed natural gas, liquid petroleum gas, hydrogen, coal-derived liquid fuels, fuels other than alcohols derived from biological materials, electricity, or any other fuel the Secretary of Energy determines by rule is substantially not petroleum and would yield substantial energy security and environmental benefits.

AMTRAK: Operated by the National Railroad Passenger Corporation, this rail system was created by the Rail Passenger Service Act of 1970 (Public Law 91-518, 84 Stat. 1327) and given the responsibility for the operation of intercity, as distinct from suburban, passenger trains between points designated by the Secretary of Transportation.

ARTERIAL HIGHWAY: A major highway used primarily for through traffic.

ASPHALT: A dark brown to black cement-like material containing bitumen as the predominant constituent. The definition includes crude asphalt and finished products such as cements, fluxes, the asphalt content of emulsions, and petroleum distillates blended with asphalt to make cutback asphalt. Asphalt is obtained by petroleum processing.

AVAILABLE SEAT-MILES (air carrier): The aircraft-miles flown in each interairport hop multiplied by the number of seats available on that hop for revenue passenger service.

AVERAGE HAUL: The average distance, in miles, one ton is carried. It is computed by dividing ton-miles by tons of freight originated.

AVERAGE PASSENGER TRIP LENGTH (bus/rail): Calculated by dividing revenue passenger-miles by the number of revenue passengers.

AVIATION GASOLINE (general aviation): All special grades of gasoline used in aviation reciprocating engines, as specified by American Society of Testing Materials Specification D910 and Military Specification MIL-G5572. Includes refinery products within the gasoline range marketed as or blended to constitute aviation gasoline.

BARREL (oil): A unit of volume equal to 42 U.S. gallons.

BRITISH THERMAL UNIT (Btu): The quantity of heat needed to raise the temperature of 1 pound (approximately 1 pint) of water by 1 °F at or near 39.2 °F.

BULK CARRIER (water): A ship with specialized holds for carrying dry or liquid commodities, such as oil, grain, ore, and coal, in unpackaged bulk form. Bulk carriers may be designed to carry a single bulk product (crude oil tanker) or accommodate several bulk product types (ore/

bulk/oil carrier) on the same voyage or on a subsequent voyage after holds are cleaned.

BUS: Large motor vehicle used to carry more than 10 passengers, including school buses, intercity buses, and transit buses.

CAR-MILE (rail): The movement of a railroad car a distance of one mile. An empty or loaded car-mile refers to a mile run by a freight car with or without a load. In the case of intermodal movements, the designation of empty or loaded refers to whether the trailers or containers are moved with or without a waybill.

CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY (air carrier): A certificate issued by the U.S. Department of Transportation to an air carrier under Section 401 of the Federal Aviation Act authorizing the carrier to engage in air transportation.

CERTIFICATED AIR CARRIER: An air carrier holding a Certificate of Public Convenience and Necessity issued by the U.S. Department of Transportation to conduct scheduled services interstate. These carriers may also conduct nonscheduled or charter operations. Certificated air carriers operate large aircraft (30 seats or more or a maximum load of 7,500 pounds or more) in accordance with FAR Part 121. See also Large Certificated Air Carrier.

CERTIFICATED AIRPORTS: Airports that service air carrier operations with aircraft seating more than 30 passengers.

CHAINED DOLLARS: A measure used to express real prices, defined as prices that are adjusted to remove the effect of changes in the purchasing power of the dollar. Real prices usually reflect buying power relative to a reference year. The "chained-dollar" measure is based on the average weights of goods and services in successive pairs of years. It is "chained" because the second year in each pair, with its weights, becomes the first year of the next pair. Prior to 1996, real prices were expressed in constant dollars, a weighted measure of goods and services in a single year. See also Constant Dollars and Current Dollars.

CLASS I RAILROAD: A carrier that has an annual operating revenue of $250 million or more after applying the railroad revenue deflator formula, which is based on the Railroad Freight Price Index developed by the U.S. Department of Labor, Bureau of Labor Statistics. The formula is the current year's revenues multiplied by the 1991 average index or current year's average index.

COASTWISE TRAFFIC (water): Domestic traffic receiving a carriage over the ocean or the Gulf of Mexico (e.g., between New Orleans and Baltimore, New York and Puerto Rico, San Francisco and Hawaii, Alaska and Hawaii). Traffic between Great Lakes ports and seacoast ports, when having a carriage over the ocean, is also considered coastwise.

COLLECTOR (highway): In rural areas, routes that serve intracounty rather than statewide travel. In urban areas, streets that provide direct access to neighborhoods and arterials.

COMBINATION TRUCK: A power unit (truck tractor) and one or more trailing units (a semitrailer or trailer).

COMMERCIAL BUS: Any bus used to carry passengers at rates specified in tariffs; charges may be computed per passenger (as in regular route service) or per vehicle (as in charter service).

COMMERCIAL SERVICE AIRPORT: Airport receiving scheduled passenger service and having 2,500 or more enplaned passengers per year.

COMMUTER AIR CARRIER: Different definitions are used for safety purposes and for economic regulations and reporting. For safety analysis, commuter carriers are defined as air carriers operating under 14 CFR 135 that carry passengers for hire or compensation on at least five round trips per week on at least one route between two or more points according to published flight schedules, which specify the times, days of the week, and points of service. On March 20, 1997, the size of the aircraft subject to 14 CFR 135 was reduced from 30 to fewer than 10 passenger seats. (Larger aircraft are subject to the more stringent regulations of 14 CFR 121.) Helicopters carrying passengers or cargo for hire, however, are regulated under CFR 135 whatever their size. Although, in practice, most commuter air carriers operate aircraft that are regulated for safety purposes under 14 CFR 135 and most aircraft that are regulated under 14 CFR 135 are operated by commuter air carriers, this is not necessarily the case.

For economic regulations and reporting requirements, commuter air carriers are those carriers that operate aircraft of 60 or fewer seats or a maximum payload capacity of 18,000 pounds or less. These carriers hold a certificate issued under section 298C of the Federal Aviation Act of 1958, as amended.

COMMUTER RAIL (transit): Urban passenger train service for short-distance travel between a central city and adjacent suburb. Does not include rapid rail transit or light rail service.

CONSTANT DOLLARS: Dollar value adjusted for changes in the average price level by dividing a current dollar amount by a price index. See also Chained Dollars and Current Dollars.

CRASH (highway): An event that produces injury and/or property damage, involves a motor vehicle in transport, and occurs on a trafficway or while the vehicle is still in motion after running off the trafficway.

CRUDE OIL: A mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface-separating facilities.

CURRENT DOLLARS: Dollar value of a good or service in terms of prices current at the time the good or service is sold. See also Chained Dollars and Constant Dollars.

DEADWEIGHT TONNAGE (water): The carrying capacity of a vessel in long tons (2,240 pounds). It is the difference between the number of tons of water a vessel displaces “light” and the number of tons it displaces when submerged to the “load line.”

DEMAND-RESPONSE VEHICLE (transit): A nonfixed-route, nonfixed-schedule vehicle that operates in response to calls from passengers or their agents to the transit operator or dispatcher.

DIESEL FUEL: A complex mixture of hydrocarbons with a boiling range between approximately 350 and 650 °F. Diesel fuel is composed primarily of paraffins and naphthenic compounds that auto-ignite from the heat of compression in a diesel engine. Diesel is used primarily by heavy-duty road vehicles, construction equipment, locomotives, and by marine and stationary engines.

DOMESTIC FREIGHT (water): All waterborne commercial movement between points in the United States, Puerto Rico, and the Virgin Islands, excluding traffic with the Panama Canal Zone. Cargo moved for the military in commercial vessels is reported as ordinary commercial cargo; military cargo moved in military vessels is omitted.

DOMESTIC OPERATIONS (air carrier): All air carrier operations having destinations within the 50 United States, the District of Columbia, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands.

DOMESTIC PASSENGER (water): Any person traveling on a public conveyance by water between points in the United States, Puerto Rico, and the Virgin Islands.

DRY CARGO BARGES (water): Large flat-bottomed, nonself-propelled vessels used to transport dry-bulk materials such as coal and ore.

ENERGY EFFICIENCY: The ratio of energy inputs to outputs from a process, for example, miles traveled per gallon of fuel (mpg).

ENPLANED PASSENGERS (air carrier): See Revenue Passenger Enplanements.

FATAL CRASH (highway): A police-reported crash involving a motor vehicle in transport on a trafficway in which at least 1 person dies within 30 days of the crash as a result of that crash.

FATAL INJURY (air): Any injury that results in death within 30 days of the accident.

FATALITY: For purposes of statistical reporting on transportation safety, a fatality is considered a death due to injuries in a transportation crash, accident, or incident that occurs within 30 days of that occurrence.

FATALITY (rail): 1) Death of any person from an injury within 30 days of the accident or incident (may include nontrain accidents or incidents); or 2) death of a railroad employee from an occupational illness within 365 days after the occupational illness was diagnosed by a physician.

FATALITY (recreational boating): All deaths (other than deaths by natural causes) and missing persons resulting from an occurrence that involves a vessel or its equipment.

FATALITY (transit): A transit-caused death confirmed within 30 days of a transit incident. Incidents include collisions, derailments, personal casualties, and fires associated with transit agency revenue vehicles, transit facilities on transit property, service vehicles, maintenance areas, and rights-of-way.

FATALITY (water): All deaths and missing persons resulting from a vessel casualty.

FERRYBOAT (transit): Vessels that carry passengers and/or vehicles over a body of water. Generally steam or diesel-powered, ferryboats may also be hovercraft, hydrofoil, and other high-speed vessels. The vessel is limited in its use to the carriage of deck passengers or vehicles or both, operates on a short run on a frequent schedule between two points over the most direct water routes other than in ocean or coastwise service, and is offered as a public service of a type normally attributed to a bridge or tunnel.

FOSSIL FUELS: Any naturally occurring organic fuel formed in the Earth's crust, such as petroleum, coal, and natural gas.

FREIGHT REVENUE (rail): Revenue from the transportation of freight and from the exercise of transit, stopoff, diversion, and reconsignment privileges as provided for in tariffs.

FREIGHTERS (water): General cargo carriers, full containerships, partial containerships, roll-on/rolloff ships, and barge carriers.

GAS TRANSMISSION PIPELINES: Pipelines installed for the purpose of transmitting gas from a source or sources of supply to one or more distribution centers, or to one or more large volume customers; or a pipeline installed to interconnect sources of supply. Typically, transmission lines differ from gas mains in that they operate at higher pressures and the distance between connections is greater.

GASOLINE: A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives, that have been blended to produce a fuel suitable for use in spark ignition engines. Motor gasoline includes both leaded or unleaded grades of finished motor gasoline, blending components, and gasohol. Leaded gasoline is no longer used in highway motor vehicles in the United States.

GENERAL AVIATION: 1) All civil aviation operations other than scheduled air services and nonscheduled air transport operations for taxis, commuter air carriers, and air travel clubs that do not hold Certificates of Public Convenience and Necessity. 2) All civil aviation activity except that of air carriers certificated in accordance with Federal Aviation Regulations, Parts 121, 123, 127, and 135. The types of aircraft used in general aviation range from corporate multiengine jet aircraft piloted by professional crews to amateur-built single-engine piston-driven acrobatic planes to balloons and dirigibles.

GENERAL ESTIMATES SYSTEM (highway): A data-collection system that uses a nationally representative probability sample selected from all police-reported highway crashes. It began operation in 1988.

GROSS DOMESTIC PRODUCT (U.S.): The total output of goods and services produced by labor and property located in the United States, valued at market prices. As long as the labor and property are located in the United States, the suppliers (workers and owners) may be either U.S. residents or residents of foreign countries.

GROSS VEHICLE WEIGHT RATING (truck): The maximum rated capacity of a vehicle, including the weight of the base vehicle, all added equipment, driver and passengers, and all cargo.

HAZARDOUS MATERIAL: Any toxic substance or explosive, corrosive, combustible, poisonous, or radioactive material that poses a risk to the public's health, safety, or property, particularly when transported in commerce.

HEAVY RAIL (transit): An electric railway with the capacity to transport a heavy volume of passenger traffic and characterized by exclusive rights-of-way, multicar trains, high speed, rapid acceleration, sophisticated signaling, and high-platform loading. Also known as "subway," "elevated (railway)," or "metropolitan railway (metro)."

HIGHWAY-RAIL GRADE CROSSING (rail): A location where one or more railroad tracks are crossed by a public highway, road, street, or a private roadway at grade, including sidewalks and pathways at or associated with the crossing.

HIGHWAY TRUST FUND: A grant-in-aid type fund administered by the U.S. Department of Transportation, Federal Highway Administration. Most funds for highway improvements are apportioned to states according to formulas that give weight to population, area, and mileage.

HIGHWAY-USER TAX: A charge levied on persons or organizations based on their use of public roads. Funds collected are usually applied toward highway construction, reconstruction, and maintenance.

INCIDENT (hazardous materials): Any unintentional release of hazardous material while in transit or storage.

INCIDENT (train): Any event involving the movement of a train or railcars on track equipment that results in a death, a reportable injury, or illness, but in which railroad property damage does not exceed the reporting threshold.

INCIDENT (transit): Collisions, derailments, personal casualties, fires, and property damage in excess of $1,000 associated with transit agency revenue vehicles; all other facilities on the transit property; and service vehicles, maintenance areas, and rights-of-way.

INJURY (air): See Serious Injury (air carrier/general aviation).

INJURY (gas): Described in U.S. Department of Transportation Forms 7100.1 or 7100.2 as an injury requiring "in-patient hospitalization" (admission and confinement in a hospital beyond treatment administered in an emergency room or out-patient clinic in which confinement does not occur).

INJURY (hazardous liquid pipeline): An injury resulting from a hazardous liquid pipeline accident that results in one or more of the following: 1) loss of consciousness, 2) a need to be carried from the scene, 3) a need for medical treatment, and/or 4) a disability that prevents the discharge of normal duties or the pursuit of normal duties beyond the day of the accident.

INJURY (highway): Police-reported highway injuries are classified as follows:

Incapacitating Injury: Any injury, other than a fatal injury, that prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred. Includes severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness at or when taken from the accident scene, and inability to leave the accident scene without assistance. Exclusions include momentary unconsciousness.

Nonincapacitating Evident Injury: Any injury, other than a fatal injury or an incapacitating injury, evident to observers at the scene of the accident. Includes lumps on head, abrasions, bruises, minor lacerations, and others. Excludes limping.

Possible Injury: Any injury reported or claimed that is not evident. Includes, among others, momentary unconsciousness, claim of injuries not obvious, limping, complaint of pain, nausea, and hysteria.

INJURY (highway-rail grade crossing): 1) An injury to one or more persons other than railroad employees that requires medical treatment; 2) an injury to one or more employees that requires medical treatment or that results in restriction of work or motion for one or more days, or one or more lost work days, transfer to another job, termination of employment, or loss of consciousness; 3) any occupational illness affecting one or more railroad employees that is diagnosed by a physician.

INJURY (rail): 1) Injury to any person other than a railroad employee that requires medical treatment, or 2) injury to a railroad employee that requires medical treatment or results in restriction of work or motion for one or more workdays, one or more lost workdays, termination of employment, transfer to another job, loss of consciousness, or any occupational illness of a railroad employee diagnosed by a physician.

INJURY (recreational boating): Injury requiring medical treatment beyond first aid as a result of an occurrence that involves a vessel or its equipment.

INJURY (transit): Any physical damage or harm to a person requiring medical treatment or any physical damage or harm to a person reported at the time and place of occurrence. For employees, an injury includes incidents resulting in time lost from duty or any definition consistent with a transit agency's current employee injury reporting practice.

INJURY (water): All personal injuries resulting from a vessel casualty that require medical treatment beyond first aid.

INLAND AND COASTAL CHANNELS: Includes the Atlantic Coast Waterways, the Atlantic Intracoastal Waterway, the New York State

Barge Canal System, the Gulf Coast Waterways, the Gulf Intracoastal Waterway, the Mississippi River System (including the Illinois Waterway), the Pacific Coast Waterways, the Great Lakes, and all other channels (waterways) of the United States, exclusive of Alaska, that are usable for commercial navigation.

INTERCITY CLASS I BUS: As defined by the Bureau of Transportation Statistics, an interstate motor carrier of passengers with an average annual gross revenue of at least $1 million.

INTERCITY TRUCK: A truck that carries freight beyond local areas and commercial zones.

INTERNAL TRAFFIC (water): Vessel movements (origin and destination) that take place solely on inland waterways located within the boundaries of the contiguous 48 states or within the state of Alaska. Internal traffic also applies to carriage on both inland waterways and the water on the Great Lakes; carriage between offshore areas and inland waterways; and carriage occurring within the Delaware Bay, Chesapeake Bay, Puget Sound, and the San Francisco Bay, which are considered internal bodies of water rather than arms of the ocean.

INTERSTATE HIGHWAY: Limited access, divided highway of at least four lanes designated by the Federal Highway Administration as part of the Interstate System.

JET FUEL: Includes kerosene-type jet fuel (used primarily for commercial turbojet and turboprop aircraft engines) and naphtha-type jet fuel (used primarily for military turbojet and turboprop aircraft engines).

LAKEWISE OR GREAT LAKES TRAFFIC: Waterborne traffic between U.S. ports on the Great Lakes system. The Great Lakes system is treated as a separate waterways system rather than as a part of the inland system.

LARGE CERTIFICATED AIR CARRIER: An air carrier holding a certificate issued under section 401 of the Federal Aviation Act of 1958, as amended, that: 1) operates aircraft designed to have a maximum passenger capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds, or 2) conducts operations where one or both terminals of a flight stage are outside the 50 states of the United States, the District of Columbia, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands. Large certificated air carriers are grouped by annual operating revenues: 1) majors (more than $1 billion in annual operating revenues), 2) nationals (between $100 million and $1 billion in annual operating revenues), 3) large regionals (between $20 million and $99,999,999 in annual operating revenues), and 4) medium regionals (less than $20 million in annual operating revenues).

LARGE REGIONALS (air): Air carrier groups with annual operating revenues between $20 million and $99,999,999.

LARGE TRUCK: Trucks over 10,000 pounds gross vehicle weight rating, including single-unit trucks and truck tractors.

LIGHT-DUTY VEHICLE: A vehicle category that combines light automobiles and trucks.

LIGHT RAIL: A streetcar-type vehicle operated on city streets, semi-exclusive rights-of-way, or exclusive rights-of-way. Service may be provided by step-entry vehicles or by level boarding.

LIGHT TRUCK: Trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and sport utility vehicles.

LOCOMOTIVE: Railroad vehicle equipped with flanged wheels for use on railroad tracks, powered directly by electricity, steam, or fossil fuel, and used to move other railroad rolling equipment.

MAJORS (air): Air carrier groups with annual operating revenues exceeding $1 billion.

MEDIUM REGIONALS (air): Air carrier groups with annual operating revenues less than $20 million.

MERCHANDISE TRADE EXPORTS: Merchandise transported out of the United States to foreign countries whether such merchandise is exported from within the U.S. Customs Service territory, from a U.S. Customs bonded warehouse, or from a U.S. Foreign Trade Zone. (Foreign Trade Zones are areas, operated as public utilities, under the control of U.S. Customs with facilities for handling, storing, manipulating, manufacturing, and exhibiting goods.)

MERCHANDISE TRADE IMPORTS: Commodities of foreign origin entering the United States, as well as goods of domestic origin returned to the United States with no change in condition or after having been processed and/or assembled in other countries. Puerto Rico is a Customs district within the U.S. Customs territory, and its trade with foreign countries is included in U.S. import statistics. U.S. import statistics also include merchandise trade between the U.S. Virgin Islands and foreign countries even though the Islands are not officially a part of the U.S. Customs territory.

METHYL-TERTIARY-BUTYL-ETHER (MTBE): A colorless, flammable, liquid oxygenated hydrocarbon that contains 18.15 percent oxygen. It is a fuel oxygenate produced by reacting methanol with isobutylene.

MINOR ARTERIALS (highway): Roads linking cities and larger towns in rural areas. In urban areas, roads that link but do not penetrate neighborhoods within a community.

MOTORBUS (transit): A rubber-tired, self-propelled, manually steered bus with a fuel supply onboard the vehicle. Motorbus types include intercity, school, and transit.

MOTORCYCLE: A two- or three-wheeled motor vehicle designed to transport one or two people, including motor scooters, minibikes, and mopeds.

NATIONALS (air): Air carrier groups with annual operating revenues between $100 million and $1 billion.

NATURAL GAS: A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in porous geologic formations beneath the Earth's surface, often in association with petroleum. The principal constituent is methane.

NONOCCUPANT (Automobile): Any person who is not an occupant of a motor vehicle in transport (e.g., bystanders, pedestrians, pedalcyclists, or an occupant of a parked motor vehicle).

NONSCHEDULED SERVICE (air): Revenue flights not operated as regular scheduled service, such as charter flights, and all nonrevenue flights incident to such flights.

NONSELF-PROPELLED VESSEL (water): A vessel without the means for self-propulsion. Includes dry cargo barges and tanker barges.

NONTRAIN INCIDENT: An event that results in a reportable casualty, but does not involve the movement of ontrack equipment and does not cause reportable damage above the threshold established for train accidents.

NONTRESPASSERS (rail): A person lawfully on any part of railroad property used in railroad operations or a person adjacent to railroad premises when injured as the result of railroad operations.

NONVESSEL-CASUALTY-RELATED DEATH (water): A death that occurs onboard a commercial vessel but not as a result of a vessel casualty, such as a collision, fire, or explosion.

OCCUPANT (highway): Any person in or on a motor vehicle in transport. Includes the driver, passengers, and persons riding on the exterior of a motor vehicle (e.g., a skateboard rider holding onto a moving vehicle). Excludes occupants of parked cars unless they are double parked or motionless on the roadway.

OCCUPATIONAL FATALITY: Death resulting from a job-related injury.

OPERATING EXPENSES (air): Expenses incurred in the performance of air transportation, based on overall operating revenues and expenses. Does not include nonoperating income and expenses, nonrecurring items, or income taxes.

OPERATING EXPENSES (rail): Expenses of furnishing transportation services, including maintenance and depreciation of the plant used in the service.

OPERATING EXPENSES (transit): The total of all expenses associated with operation of an individual mode by a given operator. Includes distributions of "joint expenses" to individual modes and excludes "reconciling items," such as interest expenses and depreciation. Should not be confused with "vehicle operating expenses."

OPERATING EXPENSES (truck): Includes expenditures for equipment maintenance, supervision, wages, fuel, equipment rental, terminal operations, insurance, safety, and administrative and general functions.

OPERATING REVENUES (air): Revenues from the performance of air transportation and related incidental services. Includes 1) transportation revenues from the carriage of all classes of traffic in scheduled and nonscheduled services, and 2) nontransportation revenues consisting of federal subsidies (where applicable) and services related to air transportation.

OTHER FREEWAYS AND EXPRESSWAYS (highway): All urban principal arterials with limited access but not part of the Interstate system.

OTHER PRINCIPAL ARTERIALS (highway): Major streets or highways, many of multi-lane or freeway design, serving high-volume traffic corridor movements that connect major generators of travel.

OTHER RAIL REVENUE: Includes revenues from miscellaneous operations (i.e., dining- and bar-car services), income from the lease of road and equipment, miscellaneous rental income, income from nonoperating property, profit from separately operated properties, dividend income, interest income, income from sinking and other reserve funds, release or premium on funded debt, contributions from other companies, and other miscellaneous income.

OTHER REVENUE VEHICLES (transit): Other revenue-generating modes of transit service, such as cable cars, personal rapid transit systems, monorail vehicles, inclined and railway cars, not covered otherwise.

OTHER 2-AXLE 4-TIRE VEHICLES (truck): Includes vans, pickup trucks, and sport utility vehicles.

PASSENGER CAR: A motor vehicle designed primarily for carrying passengers on ordinary roads, includes convertibles, sedans, and stations wagons.

PASSENGER-MILE: 1) Air: One passenger transported 1 mile; passenger-miles for 1 interairport flight are calculated by multiplying aircraft-miles flown by the number of passengers carried on the flight. The total passenger-miles for all flights is the sum of passenger-miles for all interairport flights. 2) Auto: One passenger traveling 1 mile; e.g., 1 car transporting 2 passengers 4 miles results in 8 passenger-miles. 3) Transit: The total number of miles traveled by transit passengers; e.g., 1 bus transporting 5 passengers 3 miles results in 15 passenger-miles.

PASSENGER REVENUE: 1) Rail: Revenue from the sale of tickets. 2) Air: Revenues from the transport of passengers by air. 3) Transit: Fares, transfer, zone, and park-and-ride parking charges paid by transit passengers. Prior to 1984, fare revenues collected by contractors operating transit services were not included.

PASSENGER VESSELS (water): A vessel designed for the commercial transport of passengers.

PEDALCYCLIST: A person on a vehicle that is powered solely by pedals.

PEDESTRIAN: Any person not in or on a motor vehicle or other vehicle. Excludes people in buildings or sitting at a sidewalk cafe. The National Highway Traffic Safety Administration also uses an "other pedestrian" category to refer to pedestrians using conveyances and people in buildings. Examples of pedestrian conveyances include skateboards, nonmotorized wheelchairs, rollerskates, sleds, and transport devices used as equipment.

PERSON-MILES: An estimate of the aggregate distances traveled by all persons on a given trip based on the estimated transportation-network-miles traveled on that trip.

PERSON TRIP: A trip taken by an individual. For example, if three persons from the same household travel together, the trip is counted as one household trip and three person trips.

PERSONAL CASUALTY (transit): 1) An incident in which a person is hurt while getting on or off a transit vehicle (e.g., falls or door incidents), but not as a result of a collision, derailment/left roadway, or fire. 2) An incident in which a person is hurt while using a lift to get on or off a transit vehicle, but not as a result of a collision, derailment/left roadway, or fire. 3) An incident in which a person is injured on a transit vehicle, but not as a result of a collision, derailment/left roadway, or fire. 4) An incident in which a person is hurt while using a transit facility. This includes anyone on transit property (e.g., patrons, transit employees, trespassers), but does not include incidents resulting from illness or criminal activity.

PETROLEUM (oil): A generic term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oils, petroleum products, natural gas plant liquids, and non-hydrocarbon compounds blended into finished petroleum products.

PROPERTY DAMAGE (transit): The dollar amount required to repair or replace transit property (including stations, right-of-way, bus stops, and maintenance facilities) damaged during an incident.

PUBLIC ROAD: Any road under the jurisdiction of and maintained by a public authority (federal, state, county, town or township, local government, or instrumentality thereof) and open to public travel.

RAPID RAIL TRANSIT: Transit service using railcars driven by electricity usually drawn from a third rail, configured for passenger traffic, and usually operated on exclusive rights-of-way. It generally uses longer trains and has longer station spacing than light rail.

REVENUE: Remuneration received by carriers for transportation activities.

REVENUE PASSENGER: 1) Air: Person receiving air transportation from an air carrier for which remuneration is received by the carrier. Air carrier employees or others, except ministers of religion, elderly individuals, and handicapped individuals, receiving reduced rate charges (less than the applicable tariff) are considered nonrevenue passengers. Infants, for whom a token fare is charged, are not counted as passengers. 2) Transit: Single-vehicle transit rides by initial-board (first-ride) transit passengers only. Excludes all transfer rides and all nonrevenue rides. 3) Rail: Number of one-way trips made by persons holding tickets.

REVENUE PASSENGER ENPLANEMENTS (air): The total number of passengers boarding aircraft. Includes both originating and connecting passengers.

REVENUE PASSENGER LOAD FACTOR (air): Revenue passenger-miles as a percentage of available seat-miles in revenue passenger services. The term is used to represent the proportion of aircraft seating capacity that is actually sold and utilized.

REVENUE PASSENGER-MILE: One revenue passenger transported one mile.

REVENUE PASSENGER TON-MILE (air): One ton of revenue passenger weight (including all baggage) transported one mile. The passenger weight standard for both domestic and international operations is 200 pounds.

REVENUE TON-MILE: One short ton of freight transported one mile.

REVENUE VEHICLE-MILES (transit): One vehicle (bus, trolley bus, or streetcar) traveling one mile, while revenue passengers are on board, generates one revenue vehicle-mile. Revenue vehicle-miles reported represent the total mileage traveled by vehicles in scheduled or unscheduled revenue-producing services.

ROLL ON/ROLL OFF VESSEL (water): Ships that are designed to carry wheeled containers or other wheeled cargo and use the roll on/roll off method for loading and unloading.

RURAL HIGHWAY: Any highway, road, or street that is not an urban highway.

RURAL MILEAGE (highway): Roads outside city, municipal district, or urban boundaries.

SCHEDULED SERVICE (air): Transport service operated on published flight schedules.

SCHOOL BUS: A passenger motor vehicle that is designed or used to carry more than 10 passengers, in addition to the driver, and, as determined by the Secretary of Transportation, is likely to be significantly used for the purpose of transporting pre-primary, primary, or secondary school students between home and school.

SCHOOL BUS-RELATED CRASH: Any crash in which a vehicle, regardless of body design and used as a school bus, is directly or indirectly involved, such as a crash involving school children alighting from a vehicle.

SELF-PROPELLED VESSEL: A vessel that has its own means of propulsion. Includes tankers, containerships, dry bulk cargo ships, and general cargo vessels.

SERIOUS INJURY (air carrier/general aviation): An injury that requires hospitalization for more than 48 hours, commencing within 7 days from the date when the injury was received; results in a bone fracture (except simple fractures of fingers, toes, or nose); involves lacerations that cause severe hemorrhages, or nerve, muscle, or tendon damage; involves injury to any internal organ; or involves second- or third-degree burns or any burns affecting more than 5 percent of the body surface.

SMALL CERTIFICATED AIR CARRIER: An air carrier holding a certificate issued under section 401 of the Federal Aviation Act of 1958, as amended, that operates aircraft designed to have a maximum seating capacity of 60 seats or fewer or a maximum payload of 18,000 pounds or less.

STATE AND LOCAL HIGHWAY EXPENDITURES: Disbursements for capital outlays, maintenance and traffic surfaces, administration and research, highway law enforcement and safety, and interest on debt.

SUPPLEMENTAL AIR CARRIER: An air carrier authorized to perform passenger and cargo charter services.

TANKER: An oceangoing ship designed to haul liquid bulk cargo in world trade.

TON-MILE (truck): The movement of one ton of cargo the distance of one mile. Ton-miles are calculated by multiplying the weight in tons of each shipment transported by the miles hauled.

TON-MILE (water): The movement of one ton of cargo the distance of one statute mile. Domestic ton-miles are calculated by multiplying tons moved by the number of statute miles moved on the water (e.g., 50 short tons moving 200 miles on a waterway would yield 10,000 ton-miles for that waterway). Ton-miles are not computed for ports. For coastwise traffic, the shortest route that safe navigation permits between the port of origin and destination is used to calculate ton-miles.

TRAIN LINE MILEAGE: The aggregate length of all line-haul railroads. It does not include the mileage of yard tracks or sidings, nor does it reflect the fact that a mile of railroad may include two or more parallel tracks. Jointly-used track is counted only once.

TRAIN-MILE: The movement of a train, which can consist of many cars, the distance of one mile. A train-mile differs from a vehicle-mile, which is the movement of one car (vehicle) the distance of one mile. A 10-car (vehicle) train traveling 1 mile is measured as 1 train-mile and 10 vehicle-miles. Caution should be used when comparing train-miles to vehicle-miles.

TRANSIT VEHICLE: Includes light, heavy, and commuter rail; motorbus; trolley bus; van pools; automated guideway; and demand responsive vehicles.

TRANSSHIPMENTS: Shipments that enter or exit the United States by way of a U.S. Customs port on the northern or southern border, but whose origin or destination is a country other than Canada or Mexico.

TRESPASSER (rail): Any person whose presence on railroad property used in railroad operations is prohibited, forbidden, or unlawful.

TROLLEY BUS: Rubber-tired electric transit vehicle, manually steered and propelled by a motor drawing current, normally through overhead wires, from a central power source.

TRUST FUNDS: Accounts that are designated by law to carry out specific purposes and programs. Trust Funds are usually financed with earmarked tax collections.

TUG BOAT: A powered vessel designed for towing or pushing ships, dumb barges, pushed-towed barges, and rafts, but not for the carriage of goods.

U.S.-FLAG CARRIER OR AMERICAN FLAG CARRIER (air): One of a class of air carriers holding a Certificate of Public Convenience and Necessity, issued by the U.S. Department of Transportation and approved by the President, authorizing scheduled operations over specified routes between the United States (and/or its territories) and one or more foreign countries.

UNLEADED GASOLINE: See Gasoline.

UNLINKED PASSENGER TRIPS (transit): The number of passengers boarding public transportation vehicles. A passenger is counted each time he/she boards a vehicle even if the boarding is part of the same journey from origin to destination.

URBAN HIGHWAY: Any road or street within the boundaries of an urban area. An urban area is an area including and adjacent to a municipality or urban place with a population of 5,000 or more. The boundaries of urban areas are fixed by state highway departments, subject to the approval of the Federal Highway Administration, for purposes of the Federal-Aid Highway Program.

VANPOOL (transit): Public-sponsored commuter service operating under prearranged schedules for previously formed groups of riders in 8- to 18-seat vehicles. Drivers are also commuters who receive little or no compensation besides the free ride.

VEHICLE MAINTENANCE (transit): All activities associated with revenue and nonrevenue (service) vehicle maintenance, including administration, inspection and maintenance, and servicing (e.g., cleaning and fueling) vehicles. In addition, it includes repairs due to vandalism or to revenue vehicle accidents.

VEHICLE-MILES (highway): Miles of travel by all types of motor vehicles as determined by the states on the basis of actual traffic counts and established estimating procedures.

VEHICLE-MILES (transit): The total number of miles traveled by transit vehicles. Commuter rail, heavy rail, and light rail report individual car-miles, rather than train-miles for vehicle-miles.

VEHICLE OPERATIONS (transit): All activities associated with transportation administration, including the control of revenue vehicle movements, scheduling, ticketing and fare collection, system security, and revenue vehicle operation.

VESSEL CASUALTY (water): An occurrence involving commercial vessels that results in 1) actual physical damage to property in excess of $25,000; 2) material damage affecting the seaworthiness or efficiency of a vessel; 3) stranding or grounding; 4) loss of life; or 5) injury causing any person to remain incapacitated for a period in excess of 72 hours, except injury to harbor workers not resulting in death and not resulting from vessel casualty or vessel equipment casualty.

VESSEL-CASUALTY-RELATED DEATH (water): Fatality that occurs as a result of an incident that involves a vessel or its equipment, such as a collision, fire, or explosion. Includes drowning deaths.

WATERBORNE TRANSPORTATION: Transport of freight and/or people by commercial vessels under U.S. Coast Guard jurisdiction.

Appendix B: Tables

TABLE 1-1 Passenger-Miles of Travel by Mode: 1992 and 2002
Millions

	1992	2002	1992–2002 % change	2002 % of total
Air carrier	354,764	482,310	36.0	9.7
General aviation	10,800	U	U	U
Passenger car	2,208,226	2,620,389	18.7	52.8
Light truck	1,201,667	1,674,792	39.4	33.7
Motorcycle	11,946	12,131	1.5	0.2
Bus	122,496	145,124	18.5	2.9
Transit, excluding bus	19,905	26,483	33.0	0.5
Amtrak	6,091	5,468	–10.2	0.1
Total (excluding general aviation)	**3,925,095**	**4,966,697**	**26.5**	**100.0**

KEY: U = data are unavailable.

NOTES: *Transit* includes travel by heavy rail, commuter rail, light rail, ferry boat, demand response, and other nonbus modes. *Bus* comprises all travel by bus including intercity, transit, and school bus. *General aviation* data are not included in the 1992 and 2002 totals nor in the calculations for percentage share and percentage change as general aviation 2002 data were not available at the time this report was prepared. The data presented here may not be consistent with other sources, particularly data that are revised on an irregular or frequent basis.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-37, available at http://www.bts.gov/, as of January 2005.

TABLE 1-2a Change in Passenger-Miles of Travel by Selected Mode: 1992–2002
1992 = 100

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Air	100	102	109	114	123	127	131	138	145	137	136
Passenger car	100	100	102	104	106	108	112	113	115	116	119
Light truck	100	104	106	105	108	113	115	119	122	140	139
Bus	100	106	111	111	114	118	121	133	131	122	118
Transit	100	98	98	99	103	105	110	114	118	122	120
Amtrak	100	102	97	91	83	85	87	88	90	91	90

NOTES: *Passenger car* does not include motorcycle data. *Transit* includes travel by motor bus, heavy rail, commuter rail, light rail, ferry boat, trolley bus, demand response, and other transit vehicles. *Bus* comprises all travel by bus including intercity, transit, and school bus. This results in some double counting of bus passenger-miles of travel (pmt). For consistency, *air* pmt includes air carrier aviation only, as general aviation pmt 2002 data were not available at the time this report was prepared.

To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 1-2b) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 1-2b.

TABLE 1-2b Passenger-Miles of Travel by Selected Mode: 1992–2002
Millions

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Air	354,764	362,230	388,399	403,888	434,652	450,612	463,262	488,357	516,129	486,506	482,310
Passenger car	2,208,226	2,213,281	2,249,742	2,286,887	2,337,068	2,389,065	2,463,828	2,494,870	2,544,457	2,556,481	2,620,389
Light truck	1,201,667	1,252,860	1,269,292	1,256,146	1,298,299	1,352,675	1,380,557	1,432,625	1,467,664	1,678,853	1,674,792
Bus	122,496	129,852	135,871	136,104	139,136	145,060	148,558	162,445	160,919	150,042	145,124
Transit	40,241	39,384	39,585	39,808	41,378	42,339	44,128	45,857	47,666	49,070	48,324
Amtrak	6,091	6,199	5,921	5,545	5,050	5,166	5,304	5,330	5,498	5,559	5,468

NOTES: *Passenger car* does not include motorcycle data. *Transit* includes travel by motor bus, heavy rail, commuter rail, light rail, ferry boat, trolley bus, demand response, and other transit vehicles. *Bus* comprises all travel by bus including intercity, transit, and school bus. This results in some double counting of bus passenger-miles of travel (pmt). For consistency, *air* pmt includes air carrier aviation only, as general aviation pmt 2002 data were not available at the time this report was prepared. The data presented here may not be consistent with other sources, particularly data that are revised on an irregular or frequent basis.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-37, available at http://www.bts.gov/, as of January 2005.

TABLE 1-3a Change in Passenger-Miles of Travel (pmt), U.S. Population, and Gross Domestic Product (GDP): 1992–2002
1992 = 100

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GDP	100	103	107	109	114	119	124	129	134	135	137
U.S. resident population	100	101	103	104	105	106	108	109	110	111	112
GDP per capita	100	101	104	105	108	112	115	119	122	121	122
Total pmt	100	102	104	105	108	111	115	118	121	125	127

NOTES: *Total pmt* excludes motorcycle pmt and results in some double counting of bus pmt. To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 1-3b) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 1-3b.

TABLE 1-3b Total Passenger-Miles of Travel (pmt), U.S. Population, and Gross Domestic Product (GDP): 1992–2002

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GDP (billions of chained 2000 $)	7,337	7,533	7,836	8,032	8,329	8,704	9,067	9,470	9,817	9,891	10,075
U.S. resident population (thousands)	256,894	260,255	263,436	266,557	269,667	272,912	276,115	279,295	282,388	285,321	288,205
GDP per capita	28,559	28,944	29,743	30,131	30,886	31,891	32,837	33,908	34,764	34,665	34,957
Total pmt (millions)	3,933,485	4,003,806	4,088,811	4,128,378	4,255,583	4,384,917	4,505,637	4,629,484	4,742,333	4,926,511	4,976,406

NOTES: *Total pmt* excludes motorcycle pmt and results in some double counting of bus pmt.

SOURCES: GDP—Based on chained 2000 dollar data from U.S. Department of Commerce (USDOC), Bureau of Economic Analysis, National Income and Product Accounts, summary GDP table, available at http://www.bea.doc.gov/, as of December 2004. **Population—**USDOC, U.S. Census Bureau, *Statistical Abstract of the United States*, section 1, table 2, available at http://www.census.gov/, as of May 2005. **Pmt—**U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-37, available at http://www.bts.gov/, as of January 2005.

TABLE 1-4 Passenger Crossings into the United States by Personal Vehicles from Mexico and Canada: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mexico	U	169,152,429	171,522,486	214,354,991	226,012,670	241,522,310	239,794,552	209,105,846	199,020,692	193,697,482	190,936,607
Canada	U	96,806,745	101,070,734	92,646,989	88,283,187	89,369,195	90,046,948	74,971,105	68,986,616	62,136,536	64,848,466
Total	U	**265,959,174**	**272,593,220**	**307,001,980**	**314,295,857**	**330,891,505**	**329,841,500**	**284,076,951**	**268,007,308**	**255,834,018**	**255,785,073**

KEY: U = data are unavailable.

NOTES: 1995 is the first year for which data are available for both Canada and Mexico. *Passengers in personal vehicles* (privately owned vehicles) include persons arriving by private automobile, pickup truck, motorcycle, recreational vehicle, taxi, ambulance, hearse, tractor, snow-mobile, and other motorized private ground vehicles.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

TABLE 1-5 Pedestrian Crossings into the United States from Mexico and Canada: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mexico	34,947,744	32,835,972	34,109,364	43,911,311	44,461,554	48,213,234	47,089,642	51,501,321	50,278,281	48,663,773	48,084,235
Canada	676,095	697,963	607,987	549,875	598,469	587,830	585,191	749,805	1,081,679	937,477	826,017
Total	**35,623,839**	**33,533,935**	**34,717,351**	**44,461,186**	**45,060,023**	**48,801,064**	**47,674,833**	**52,251,126**	**51,359,960**	**49,601,250**	**48,910,252**

NOTE: *Pedestrian crossings* include persons arriving on foot or by certain conveyances (e.g., bicycles, mopeds, or wheel chairs) requiring U.S. Customs processing.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

TABLE 1-6 Passenger Crossings into the United States by Bus from Mexico and Canada: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mexico	1,291,563	1,571,320	1,943,697	2,772,666	3,638,812	3,358,118	3,465,916	3,366,795	3,926,154	3,747,337	3,388,517
Canada	4,393,950	3,530,042	3,870,081	4,124,253	3,969,672	4,367,472	4,872,943	4,456,436	4,212,863	3,779,970	3,890,380
Total	**5,685,513**	**5,101,362**	**5,813,778**	**6,896,919**	**7,608,484**	**7,725,590**	**8,338,859**	**7,823,231**	**8,139,017**	**7,527,307**	**7,278,897**

NOTE: *Passengers in buses* includes both driver(s) and passengers arriving by bus and requiring U.S. Customs processing.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

TABLE 1-7 Passenger Crossings into the United States by Train from Mexico and Canada: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mexico	4,545	13,222	11,285	11,504	12,691	16,169	18,254	18,895	15,108	12,101	12,664
Canada	278,130	226,796	213,596	249,106	245,933	249,172	269,502	253,652	255,134	234,796	223,477
Total	**282,675**	**240,018**	**224,881**	**260,610**	**258,624**	**265,341**	**287,756**	**272,547**	**270,242**	**246,897**	**236,141**

NOTE: *Passengers in trains* includes both passengers and crew arriving by train and requiring U.S. Customs processing.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

TABLE 1-8 Top 50 Amtrak Stations by Number of Boardings: Fiscal Year 2004

Station	Boardings
New York, NY	4,367,553
Washington, DC	1,888,459
Philadelphia, PA	1,844,887
Chicago, IL	1,179,955
Newark, NJ	684,050
Los Angeles, CA	644,845
Trenton, NJ	499,399
Boston, MA	488,912
Baltimore, MD	455,059
Princeton Junction, NJ	449,608
Sacramento, CA	443,827
San Diego, CA	398,720
Wilmington, DE	372,104
Albany-Rensselaer, NY	323,160
New Haven, CT	309,268
Seattle, WA	299,466
BWI Airport, MD	296,756
Providence, RI	239,209
Emeryville, CA	237,766
Irvine, CA	236,090
Portland, OR	235,479
Milwaukee, WI	221,624
Solana Beach, CA	195,482
Fullerton, CA	188,714
Metropark, NJ	178,972
Bakersfield, CA	176,745
Route 128, MA	172,075
Harrisburg, PA	159,340
Oceanside, CA	158,772
Davis, CA	157,289

TABLE 1-8 Top 50 Amtrak Stations by Number of Boardings: Fiscal Year 2004 *(continued)*

Station	Boardings
Lancaster, PA	152,431
Boston Back Bay, MA	148,033
Stamford, CT	145,360
Anaheim, CA	144,466
Martinez, CA	144,087
Oakland, CA	139,714
San Juan Capistrano, CA	128,812
Fresno, CA	124,362
Santa Barbara, CA	122,911
Richmond (Staples Mill), VA	117,441
New Carrollton, MD	110,791
Boston-North, MA	109,550
Lorton, VA (Auto Train)	102,106
Richmond, CA	95,921
Sanford, FL (Auto Train)	95,377
Rhinecliff, NY	86,466
Stockton (San Joaquin St.), CA	86,052
Santa Ana, CA	83,653
Orlando, FL	80,745
New Orleans, LA	80,097
Total	**19,801,960**

NOTE: For purposes of this report, Amtrak's Northeast Corridor service stations are: New York, Washington, Philadelphia, Newark (NJ), Trenton, Boston-South Station, Baltimore, Princeton Jct, Wilmington, New Haven, BWI Airport, Providence, Metropark, Route 128, Lancaster, Boston Back Bay, Stamford, and New Carrollton.

SOURCE: Amtrak, personal communication, Nov. 12, 2004.

TABLE 1-9a Change in Domestic Freight Ton-Miles by Mode: 1992–2002
1992 = 100

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Air	100	105	109	116	125	126	129	132	144	121	123
Truck	100	104	111	116	119	125	128	132	134	137	140
Railroad	100	103	111	120	125	127	132	137	141	146	146
Water	100	92	95	94	89	83	79	77	75	73	71
Oil and natural gas pipeline	100	101	102	105	107	107	107	107	104	102	104
All modes	**100**	**101**	**105**	**110**	**111**	**112**	**113**	**115**	**116**	**116**	**118**

NOTE: To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 1-9b) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 1-9b.

TABLE 1-9b Domestic Freight Ton-Miles by Mode: 1992–2002
Billions

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Air	11.0	11.5	12.0	12.7	13.8	13.9	14.1	14.5	15.8	13.3	13.6
Truck	896.4	935.6	995.7	1,041.7	1,071.0	1,119.2	1,148.7	1,186.0	1,203.1	1,223.6	1,255.4
Railroad	1,098.4	1,135.0	1,221.1	1,317.0	1,377.1	1,391.1	1,448.4	1,503.7	1,546.3	1,599.3	1,605.5
Water	856.7	789.7	814.9	807.7	764.7	707.4	672.8	655.9	645.8	621.7	612.1
Oil and natural gas pipeline	844.0	855.7	860.4	882.0	905.0	904.4	902.4	899.4	874.2	858.8	879.2
Total	**3,706.4**	**3,727.5**	**3,904.2**	**4,061.1**	**4,131.5**	**4,136.0**	**4,186.4**	**4,259.3**	**4,285.2**	**4,316.7**	**4,365.8**

NOTE: Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from various sources as follows: **Air—**USDOT, BTS, *Air Carrier Traffic Statistics Monthly* (Washington, DC:1990–2002 issues), p. 2, line 3, Freight, Express, and Mail Revenue Ton-Miles; and USDOT, Federal Aviation Administration supplementary statistics. **Truck—**USDOT, BTS, *Transportation Statistics Annual Report 2000* (Washington, DC: 2001), p. 124, table 2; U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, *U.S. Waterborne Container Traffic by Port*; USDOT, BTS, Border Crossing/Entry Data, U.S.-Canada, tables 1a, b, and c; U.S.-Mexico, table 1; USDOT, Federal Highway Administration, *Highway Statistics 2002* (Washington, DC: 2003), table VM-1.
Rail—Surface Transportation Board, Carload Waybill Sample, 1990–2002; Transport Canada, *Transportation in Canada*, *Addendum* (Ottawa, Ontario: 1990–2002 issues), table A6-10; Association of American Railroads, *Railroad Facts* (Washington, DC: 1991–2002 issues), p. 36. **Water—**U.S. Army Corps of Engineers, *Waterborne Commerce of the United States* (Washington, DC: 2002), part V, section 1, table 1-4, Total Waterborne Commerce. **Oil pipeline—**Association of Oil Pipelines, *Shifts in Petroleum Transportation* (Washington, DC: 2002), table 1. **Natural gas pipeline—**U.S. Department of Energy (DOE), Energy Information Administration (EIA), *Annual Energy Review 2002* (Washington, DC: 2003), table 6.5; and DOE, EIA, *International Energy Annual 2001* (Washington, DC: 2003), table C-1.

TABLE 1-10 Domestic Freight Ton-Miles by Mode: 2002

	Ton-miles (billions)	Percent
Air	13.6	0.3
Truck	1,255.4	28.8
Railroad	1,605.5	36.8
Water	612.1	14.0
Oil and natural gas pipeline	879.2	20.1
Total	**4,365.8**	**100.0**

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from various sources as follows: **Air**—USDOT, BTS, *Air Carrier Traffic Statistics Monthly* (Washington, DC: 1990–2002 issues), p. 2, line 3, Freight, Express, and Mail Revenue Ton-Miles; and USDOT, Federal Aviation Administration supplementary statistics. **Truck**—USDOT, BTS, *Transportation Statistics Annual Report 2000* (Washington, DC: 2001), p. 124, table 2; U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, U.S. Waterborne Container Traffic by Port; USDOT, BTS, Border Crossing/Entry Data, U.S.-Canada, tables 1a, b, and c; U.S.-Mexico, table 1; USDOT, Federal Highway Administration, *Highway Statistics 2002* (Washington, DC: 2003), table VM-1.
Rail—Surface Transportation Board, Carload Waybill Sample, 1990–2002; Transport Canada, *Transportation in Canada, Addendum* (Ottawa, Ontario: 1990–2002 issues), table A6-10; Association of American Railroads, *Railroad Facts* (Washington, DC: 1991–2002 issues), p. 36. **Water**—U.S. Army Corps of Engineers, *Waterborne Commerce of the United States* (Washington, DC: 2002), part V, section 1, table 1-4, Total Waterborne Commerce. **Oil pipeline**—Association of Oil Pipelines, *Shifts in Petroleum Transportation* (Washington, DC: 2002), table 1.
Natural gas pipeline—U.S. Department of Energy (DOE), Energy Information Administration (EIA), *Annual Energy Review 2002* (Washington, DC: 2003), table 6.5; and DOE, EIA, *International Energy Annual 2001* (Washington, DC: 2003), table C-1.

TABLE 1-11 Commercial Freight Activity for All Modes by Weight: 1993, 1997, and 2002
Millions of tons

	1993	1997	2002
Truck	7,275	8,836	9,197
Rail	1,580	1,612	1,895
Water	2,128	2,281	2,345
Air (includes truck and air)	7	10	10
Oil pipeline	1,595	1,448	1,656
Multimodal combinations	231	227	213
Other and unknown modes	541	440	499
Total	**13,357**	**14,854**	**15,815**
Commodity Flow Survey	9,688	11,090	11,573
Percentage of total	72.5	74.7	73.2
Supplemental estimates	3,669	3,764	4,242
Percentage of total	27.5	25.3	26.8

NOTES: 2002 data are preliminary. Although final 2002 Commodity Flow Survey data were available when this report was prepared, final 2002 supplemental data were still forthcoming. Thus, all 2002 data could not be updated for this report. *Multimodal* includes the traditional intermodal combination of truck and rail plus truck and water; rail and water; parcel, postal, and courier service; and other multiple modes for the same shipment. Preliminary supplemental estimates cover logging, farm-based truck shipments, truck imports from Canada and Mexico, rail imports from Canada and Mexico, air cargo imports and exports, water imports and exports, and pipeline crude and petroleum products shipments. These estimates exclude other supplemental categories of goods movement for which no reasonable basis for an estimate currently exists, including government shipments; the service, retail, and construction sectors; transportation service providers; household goods movers; and municipal solid waste providers.

SOURCES: Commodity Flow Survey data—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce, U.S. Census Bureau, *Commodity Flow Survey* (Washington, DC: 2003).
Supplemental estimates—USDOT, BTS, *Freight Shipments in America* (April 2004), available at http://www.bts.gov/, as of May 2005.

TABLE 1-12 Commercial Freight Activity for All Modes by Ton-Miles: 1993, 1997, and 2002
Billions

	1993	1997	2002
Truck	931	1,109	1,449
Rail	965	1,066	1,254
Water	883	813	733
Air (includes truck and air)	9	15	15
Oil pipeline	593	617	753
Multimodal combinations	166	212	226
Other and unknown modes	93	73	77
Total	**3,639**	**3,904**	**4,506**
Commodity Flow Survey	2,421	2,661	3,204
Percentage of total	66.5	68.2	71.1
Supplemental estimates	1,218	1,243	1,301
Percentage of total	33.5	31.8	28.9

NOTES: 2002 data are preliminary. Although final 2002 Commodity Flow Survey data were available when this report was prepared, final 2002 supplemental data were still forthcoming. Thus, all 2002 data could not be updated for this report. *Multimodal* includes the traditional intermodal combination of truck and rail plus truck and water; rail and water; parcel, postal, and courier service; and other multiple modes for the same shipment. Preliminary supplemental estimates cover logging, farm-based truck shipments, truck imports from Canada and Mexico, rail imports from Canada and Mexico, air cargo imports and exports, water imports and exports, and pipeline crude and petroleum products shipments. These estimates exclude other supplemental categories of goods movement for which no reasonable basis for an estimate currently exists, including government shipments; the service, retail, and construction sectors; transportation service providers; household goods movers; and municipal solid waste providers.

SOURCES: Commodity Flow Survey data—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce, U.S. Census Bureau, *Commodity Flow Survey* (Washington, DC: 2003).
Supplemental estimates—USDOT, BTS, *Freight Shipments in America* (April 2004), available at http://www.bts.gov/, as of May 2005.

TABLE 1-13 Commercial Freight Activity for All Modes by Shipment Value: 1993, 1997, and 2002

	Billions of chained 2000 dollars			Billions of current dollars		
	1993	**1997**	**2002**	**1993**	**1997**	**2002**
Truck	4,684	5,271	6,660	4,672	5,336	6,672
Rail	278	366	388	278	371	388
Water	620	753	867	618	762	869
Air (includes truck and air)	395	654	777	394	662	778
Oil pipeline	312	229	285	311	231	285
Multimodal combinations	665	935	1,111	663	947	1,112
Other and unknown modes	243	310	373	242	313	373
Total	**7,197**	**8,518**	**10,460**	**7,178**	**8,622**	**10,478**
Commodity Flow Survey	5,862	6,860	8,468	5,846	6,944	8,483
Percentage of total	81.4	80.5	81.0	81.4	80.5	81.0
Supplemental estimates	1,335	1,658	1,992	1,332	1,678	1,995
Percentage of total	18.6	19.5	19.0	18.6	19.5	19.0

NOTES: 2002 data are preliminary. Although final 2002 Commodity Flow Survey data were available when this report was prepared, final 2002 supplemental data were still forthcoming. Thus, all 2002 data could not be updated for this report. *Multimodal* includes the traditional intermodal combination of truck and rail plus truck and water; rail and water; parcel, postal, and courier service; and other multiple modes for the same shipment. Preliminary supplemental estimates cover logging, farm-based truck shipments, truck imports from Canada and Mexico, rail imports from Canada and Mexico, air cargo imports and exports, water imports and exports, and pipeline crude and petroleum products shipments. These estimates exclude other supplemental categories of goods movement for which no reasonable basis for an estimate currently exists, including government shipments; the service, retail, and construction sectors; transportation service providers; household goods movers; and municipal solid waste providers.

SOURCES: Commodity Flow Survey data—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce, U.S. Census Bureau, *Commodity Flow Survey* (Washington, DC: 2003). **Supplemental estimates—**USDOT, BTS, *Freight Shipments in America* (April 2004), available at http://www.bts.gov/, as of May 2005.

TABLE 1-14 All Waterborne Freight Shipments: 2002
Tons (thousands)

State	Inbound	Outbound
Texas	280,798	107,526
Louisiana	238,647	206,867
California	133,145	44,846
Florida	92,025	27,890
Pennsylvania	75,013	19,907
Ohio	71,807	33,066
New Jersey	70,237	35,525
New York	54,040	19,499
Indiana	52,643	14,346
Washington	47,494	40,707
Tennessee	34,640	7,805
Alabama	34,304	18,846
Kentucky	33,394	53,314
Maryland	29,313	13,996
Michigan	28,916	29,365
Maine	28,361	605
Mississippi	28,232	18,642
Massachusetts	23,051	1,537
Puerto Rico	20,784	2,374
Virgin Islands	20,276	17,827
Delaware	20,246	15,166
Illinois	19,528	91,141
West Virginia	18,491	51,171
South Carolina	17,797	5,961
Virginia	15,376	28,076
Connecticut	15,061	1,172
Georgia	13,610	9,292
Hawaii	11,985	1,472
Oregon	11,724	16,140
Wisconsin	8,898	33,495
Rhode Island	7,710	716
Minnesota	7,440	37,888
North Carolina	6,529	1,528
Missouri	6,388	15,615
Arkansas	5,177	5,162
Iowa	4,038	12,041
New Hampshire	4,029	79
Alaska	3,701	59,975
Oklahoma	2,138	2,293
Kansas	1,502	34
District of Columbia	557	0
Guam	230	15
Nebraska	124	95
Pacific Island	79	300
Idaho	45	675
Vermont	0	0
United States, total	**1,657,655**	**1,107,064**

NOTE: Data include foreign imports and exports but exclude intrastate shipments.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Army Corp of Engineers, Waterborne Commerce Statistics Center, *CY 2002 Waterborne Tonnage by State,* available at http://www.iwr.usace.mil/, as of April 2005.

TABLE 1-15a Inbound Truck Freight Shipments: 2002

State	Tons (thousands)	SE
California	782,431	97,804
Texas	594,235	41,596
Illinois	485,408	83,976
Florida	382,706	46,690
Ohio	367,477	20,211
Georgia	297,640	36,610
Pennsylvania	287,946	20,732
Indiana	277,490	42,733
Michigan	259,325	18,153
North Carolina	234,097	22,005
New York	231,705	21,549
Virginia	225,657	13,539
New Jersey	206,175	21,442
Tennessee	198,474	21,832
Minnesota	195,219	72,621
Missouri	169,686	20,023
Wisconsin	168,705	17,039
Kentucky	166,233	12,966
Washington	163,656	56,625
Alabama	153,085	17,911
Maryland	149,546	45,761
Kansas	149,349	30,766
Iowa	147,336	15,323
Oregon	131,118	27,141
Louisiana	131,068	20,578
South Carolina	119,583	13,752
Colorado	105,506	14,349
Oklahoma	104,278	14,912
Arkansas	93,013	10,603
Arizona	90,221	15,428
Nebraska	86,122	10,507
Massachusetts	83,080	8,059
Mississippi	66,019	4,885
Utah	58,581	9,607
West Virginia	55,571	6,113

TABLE 1-15a Inbound Truck Freight Shipments: 2002 *(continued)*

State	Tons (thousands)	SE
Connecticut	53,392	8,062
Nevada	45,906	5,325
North Dakota	36,231	4,819
Wyoming	35,003	9,276
South Dakota	32,751	4,585
New Hampshire	30,564	7,305
New Mexico	29,792	5,839
Idaho	27,151	3,204
Delaware	26,529	4,298
Montana	23,626	2,741
Maine	22,561	2,256
Vermont	15,575	2,663
Alaska	14,742	3,936
Rhode Island	14,355	1,723
Hawaii	11,494	965
District of Columbia	5,424	819
National total	**7,842,836**	**203,914**

KEY: SE = standard error.

NOTES: Because the data in this table are based on information from a survey, they are subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states. Because of these data uncertainties, the national total data (tons) are not the sum of state data on the table but rather the published national total (see source below). Information on measures of sampling variability for the data used in the table is available at http://www.bts.gov/.

SOURCES: Except as noted—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce (USDOC), U.S. Census Bureau (CB), *2002 Commodity Flow Survey,* CD-ROM (Washington, DC: 2005). **National total (tons) and SE—**USDOT, BTS and USDOC, CB, *2002 Commodity Flow Survey*, table 1a, available at http://www.bts.gov/, as of September 2005.

TABLE 1-15b Outbound Truck Freight Shipments: 2002

State	Tons (thousands)	SE
California	767,680	95,192
Texas	584,922	52,058
Illinois	497,573	86,578
Ohio	387,982	24,831
Florida	361,197	45,872
Georgia	301,838	38,032
Pennsylvania	295,816	23,074
Indiana	291,532	41,689
Michigan	245,249	20,356
North Carolina	241,308	23,648
New York	225,444	21,643
Tennessee	223,648	25,272
Virginia	216,324	10,816
Minnesota	199,281	71,143
Missouri	189,434	25,384
New Jersey	180,400	13,350
Wisconsin	169,843	19,192
Iowa	163,776	19,162
Kentucky	159,849	9,911
Kansas	159,838	29,890
Washington	159,578	58,725
Maryland	157,023	42,553
Alabama	152,285	16,904
Oregon	132,229	26,975
Louisiana	130,369	22,423
South Carolina	125,103	14,512
Colorado	106,093	20,158
Oklahoma	97,147	13,795
Arkansas	93,587	11,792
Nebraska	79,225	7,685
Arizona	79,060	17,472
Utah	72,361	12,663
Massachusetts	70,702	8,060
Mississippi	68,359	5,332
West Virginia	57,618	7,145

TABLE 1-15b Outbound Truck Freight Shipments: 2002 *(continued)*

State	Tons (thousands)	SE
Connecticut	47,291	8,560
Nevada	37,957	7,705
North Dakota	37,627	5,230
South Dakota	37,034	3,703
Wyoming	30,721	3,471
New Hampshire	30,651	7,234
Idaho	26,666	3,413
Maine	26,660	3,919
Montana	22,292	2,943
Delaware	21,383	3,528
New Mexico	20,272	2,939
Rhode Island	18,836	2,731
Vermont	14,624	2,530
Alaska	14,266	3,966
Hawaii	11,494	965
District of Columbia	1,388	634
National total	**7,842,836**	**203,914**

KEY: SE = standard error.

NOTES: Because the data in this table are based on information from a survey, they are subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states. Because of these data uncertainties, the national total data (tons) are not the sum of state data on the table but rather the published national total (see source below). Information on measures of sampling variability for the data used in the table is available at http://www.bts.gov/.

SOURCES: Except as noted—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce (USDOC), U.S. Census Bureau (CB), *2002 Commodity Flow Survey,* CD-ROM (Washington, DC: 2005). **National total (tons) and SE—**USDOT, BTS and USDOC, CB, *2002 Commodity Flow Survey*, table 1a, available at http://www.bts.gov/, as of September 2005.

TABLE 1-16 All Rail Freight Shipments: 2002
Tons (thousands)

State	Inbound Shipments	Outbound Shipments
Texas	195,311	112,756
Illinois	179,651	116,462
Ohio	97,619	62,925
Florida	96,123	65,127
California	87,490	54,718
Georgia	80,214	36,259
Missouri	79,572	18,224
Wisconsin	78,487	18,612
Indiana	64,263	53,174
Pennsylvania	61,913	61,729
Virginia	60,491	48,137
Minnesota	58,720	69,156
North Carolina	58,348	13,399
Michigan	51,391	36,416
Alabama	50,422	43,208
Iowa	38,110	43,270
Kentucky	37,973	103,604
West Virginia	37,221	119,227
Washington	36,362	21,799
Tennessee	35,753	19,570
Oklahoma	34,345	21,510
South Carolina	34,316	15,162
Louisiana	30,373	38,240
Colorado	28,795	37,327
Arkansas	28,706	20,517
Kansas	27,694	21,960
Arizona	26,169	5,167
Maryland	24,652	7,741
New York	23,604	10,357
Oregon	23,514	15,346
New Jersey	22,586	10,843
Nebraska	19,446	23,068
Mississippi	18,646	13,959
Wyoming	16,312	379,977
Utah	13,798	23,253

TABLE 1-16 All Rail Freight Shipments: 2002 *(continued)*
Tons (thousands)

State	Inbound Shipments	Outbound Shipments
Idaho	10,025	10,519
Massachusetts	9,819	2,599
North Dakota	9,611	21,638
Nevada	7,930	2,789
Alaska	7,451	7,451
Delaware	5,174	1,263
Montana	4,256	37,179
Maine	3,381	4,037
South Dakota	3,335	7,891
New Mexico	3,327	15,672
Connecticut	2,187	1,896
New Hampshire	1,609	762
Vermont	1,434	764
Rhode Island	674	209
District of Columbia	9	126
Hawaii	0	0
United States, total	**1,928,612**	**1,876,993**

NOTES: The original source of these data is the Rail Waybill Sample. Because the data are drawn from a survey, they are subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from Association of American Railroads, *Railroads and States: 2002* (Washington, DC: 2004).

TABLE 1-17a Inbound Air Freight Shipments: 2002

State	Tons (thousands)	SE
California	820	265
New York	263	82
Texas	204	57
Washington	194	70
Illinois	184	33
Michigan	114	27
New Jersey	105	16
Pennsylvania	100	21
Ohio	96	26
Georgia	69	17
Hawaii	69	21
Kentucky	66	17
Alaska	46	9
Minnesota	45	19
Missouri	45	21
Maryland	39	16
Colorado	34	8
Virginia	30	5
Arizona	29	7
North Carolina	29	5
Oregon	21	5
Nevada	20	4
District of Columbia	18	5
Indiana	17	3
Louisiana	15	5
Wisconsin	15	3
Mississippi	13	6
Oklahoma	13	3
Kansas	12	6
Utah	12	5
New Hampshire	11	3
Arkansas	7	2
Iowa	7	1
Montana	4	1
Nebraska	4	1

TABLE 1-17a Inbound Air Freight Shipments: 2002 *(continued)*

State	Tons (thousands)	SE
Delaware	3	1
Idaho	3	0
Wyoming	3	1
Maine	2	0
Rhode Island	2	0
Alabama	S	S
Connecticut	S	S
Florida	S	S
Massachusetts	S	S
New Mexico	S	S
North Dakota	S	S
South Carolina	S	S
South Dakota	S	S
Tennessee	S	S
Vermont	S	S
West Virginia	S	S
National total	**3,760**	**436**

KEY: SE = standard error; S = data not included because of high sampling variability or poor response quality.

NOTES: Because the data in this table are based on information from a survey, they are subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states. Because of these data uncertainties, the national total data (tons) are not the sum of state data on the table but rather the published national total (see source below). Information on measures of sampling variability for the data used in the table is available at http://www.bts.gov/.

SOURCES: Except as noted—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce (USDOC), U.S. Census Bureau (CB), *2002 Commodity Flow Survey,* CD-ROM (Washington, DC: 2005). **National total (tons) and SE—**USDOT, BTS and USDOC, CB, *2002 Commodity Flow Survey,* table 1a, available at http://www.bts.gov/, as of September 2005.

TABLE 1-17b Outbound Air Freight Shipments: 2002

State	Tons (thousands)	SE
California	636	263
Florida	238	91
Washington	205	76
Texas	146	35
Arizona	140	69
Ohio	124	36
Illinois	110	20
Michigan	109	36
North Carolina	77	21
Georgia	76	32
Pennsylvania	69	19
Missouri	65	19
Minnesota	58	10
Wisconsin	55	23
Colorado	43	17
Alaska	42	8
Massachusetts	38	12
Virginia	38	5
Arkansas	34	13
Montana	34	16
South Carolina	28	9
Kansas	23	8
Kentucky	23	5
Maine	21	10
Maryland	20	9
Nevada	19	8
Hawaii	13	4
Idaho	11	4
Connecticut	10	4
South Dakota	10	4
New Hampshire	9	2
Rhode Island	8	3
Nebraska	6	2
Louisiana	5	1
Vermont	3	1
Delaware	2	1
New Mexico	2	1
West Virginia	1	0
Alabama	S	S
District of Columbia	S	S
Indiana	S	S
Iowa	S	S
Mississippi	S	S
New Jersey	S	S
New York	S	S
North Dakota	S	S
Oklahoma	S	S
Oregon	S	S
Tennessee	S	S
Utah	S	S
Wyoming	S	S
National total	**3,760**	**436**

KEY: SE = standard error; S = data not included because of high sampling variability or poor response quality.

NOTES: Because the state data in this table are based on information from a survey, they are subject to sampling errors that could affect the estimates of shipment size and the relative positions of the states. Because of these data uncertainties, the national total data (tons) are not the sum of state data on the table but rather the published national total (see source below). Information on measures of sampling variability for the data used in the table is available at http://www.bts.gov/.

SOURCES: Except as noted—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS) and U.S. Department of Commerce (USDOC), U.S. Census Bureau (CB), *2002 Commodity Flow Survey,* CD-ROM (Washington, DC: 2005). **National total (tons) and SE—**USDOT, BTS and USDOC, CB, *2002 Commodity Flow Survey,* table 1a, available at http://www.bts.gov/, as of September 2005.

TABLE 1-18 Incoming Truck Crossings to United States from Mexico and Canada: 1994–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mexico	2,763,120	2,860,625	3,254,084	3,689,665	3,946,543	4,358,121	4,525,579	4,304,959	4,426,593	4,238,045	4,503,688
Canada	4,956,174	5,135,010	5,431,096	5,826,974	6,270,934	6,817,447	7,048,128	6,776,909	6,915,973	6,728,228	6,901,820
Total	**7,719,294**	**7,995,635**	**8,685,180**	**9,516,639**	**10,217,477**	**11,175,568**	**11,573,707**	**11,081,868**	**11,342,566**	**10,966,273**	**11,405,508**

NOTE: Data do not include privately owned pickup trucks.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

TABLE 1-19 Incoming Full Rail Containers to the United States from Mexico and Canada: 1996–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mexico	U	U	142,236	156,064	175,490	226,014	266,235	266,572	269,550	266,469	305,748
Canada	U	U	329,983	464,081	903,584	1,150,936	1,215,439	1,331,382	1,386,143	1,402,388	1,484,634
Total	**U**	**U**	**472,219**	**620,145**	**1,079,074**	**1,376,950**	**1,481,674**	**1,597,954**	**1,655,693**	**1,668,857**	**1,790,382**

KEY: N = data are unavailable.

NOTE: Rail container crossings (full and empty)—A container is any conveyance entering the United States used for commercial purposes, full or empty. Data here apply only to the number of full rail containers arriving at a surface port and include containers moving as in-bond shipments.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM*, May 2005.

TABLE 1-20 Incoming Train Crossings to the United States from Mexico and Canada: 1994–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mexico	8,726	9,432	7,509	7,678	5,681	6,019	7,108	7,469	7,757	7,774	7,844
Canada	32,897	31,021	31,457	32,863	35,435	32,930	33,447	33,577	32,822	34,137	33,267
Total	**41,623**	**40,453**	**38,966**	**40,541**	**41,116**	**38,949**	**40,555**	**41,046**	**40,579**	**41,911**	**41,111**

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, using data from U.S. Department of Homeland Security, U.S. Customs and Border Protection, Office of Management Reporting, *Data Warehouse CD-ROM,* May 2005.

TABLE 1-21a Change in Highway Vehicle-Miles of Travel by Vehicle Type: 1993–2003
1993 = 100

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Highway, total	**100**	**103**	**106**	**108**	**112**	**115**	**117**	**120**	**122**	**124**	**126**
Passenger vehicles	100	102	105	108	111	114	116	119	121	124	125
Passenger cars	100	102	105	107	109	113	114	116	118	121	121
Light trucks	100	103	106	109	114	116	121	124	126	130	134
Buses	100	105	105	107	112	114	125	124	116	112	108
Motorcycles	100	103	99	100	102	104	107	106	97	96	96
Freight vehicles	100	106	111	114	120	123	127	129	131	134	135
Trucks, single-unit, 2-axle, 6-tire or more	100	108	110	113	118	120	124	124	128	134	137
Trucks, combination	100	106	112	115	121	124	128	131	132	135	134

NOTES: *Light trucks* include sport utility vehicles, minivans, and pickup trucks. To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 1-21b) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 1-21b.

TABLE 1-21b Highway Vehicle-Miles of Travel by Vehicle Type: 1993–2003
Millions of miles

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Highway, total	**2,296,378**	**2,357,588**	**2,422,696**	**2,485,848**	**2,561,695**	**2,631,522**	**2,691,056**	**2,746,925**	**2,797,287**	**2,855,508**	**2,890,893**
Passenger vehicles	2,136,490	2,187,372	2,244,540	2,302,877	2,370,218	2,435,142	2,488,368	2,541,405	2,588,255	2,640,905	2,675,009
Passenger cars	1,374,709	1,406,089	1,438,294	1,469,854	1,502,556	1,549,577	1,569,100	1,600,287	1,628,332	1,658,474	1,660,828
Light trucks	745,750	764,634	790,029	816,540	850,739	868,275	901,022	923,059	943,207	966,034	998,004
Buses	6,125	6,409	6,420	6,563	6,842	7,007	7,662	7,590	7,077	6,845	6,638
Motorcycles	9,906	10,240	9,797	9,920	10,081	10,283	10,584	10,469	9,639	9,552	9,539
Freight vehicles	159,888	170,216	178,156	182,971	191,477	196,380	202,688	205,520	209,032	214,603	215,884
Trucks, single-unit, 2-axle, 6-tire or more	56,772	61,284	62,705	64,072	66,893	68,021	70,304	70,500	72,448	75,866	77,562
Trucks,	103,116	108,932	115,451	118,899	124,584	128,359	132,384	135,020	136,584	138,737	138,322

NOTES: *Light trucks* include sport utility vehicles, minivans, and pickup trucks. Data may not be consistent with other sources, particularly data that are revised on an irregular or frequent basis.

SOURCES: **1993–1994—**U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), *Highway Statistics Summary to 1995* (Washington, DC: 1997), table VM-201A. **1995–2003—**USDOT, FHWA, *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

TABLE 1-22a/1-23a Change in Nonhighway Vehicle-Miles of Travel: 1993–2003
1993 = 100

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Rail, total train-miles	100	108	111	113	115	115	119	122	122	122	126
Class I freight, train-miles	100	109	113	116	117	117	121	124	123	123	127
Intercity/Amtrak, train-miles	100	97	91	86	91	94	97	100	103	107	106
Air carrier, large certificated, domestic, all services	100	105	111	116	118	121	128	136	133	135	146
Rail transit											
Light rail	100	123	125	136	149	158	176	191	196	220	232
Heavy rail	100	102	103	104	107	108	111	114	116	119	121
Commuter rail	100	103	106	108	112	116	119	121	124	127	128

NOTES: See Glossary for definitions of transit rail service types. To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 1-22b/1-23b) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 1-22b/1-23b.

TABLE 1-22b/1-23b Nonhighway Vehicle-Miles of Travel: 1993–2003
Millions of miles

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Rail, total train-miles	440	475	490	499	507	508	524	539	536	537	553
Class I freight, train-miles	405	441	458	469	475	475	490	504	500	500	516
Intercity/Amtrak, train-miles	35	34	32	30	32	33	34	35	36	38	37
Air carrier, large certificated, domestic, all services	4,157	4,380	4,629	4,811	4,911	5,035	5,332	5,664	5,548	5,616	6,085
Rail transit											
Light rail	28	34	35	38	41	44	49	53	54	61	64
Heavy rail	522	532	537	543	558	566	578	595	608	621	630
Commuter rail	224	231	238	242	251	260	266	271	277	284	286

NOTES: See Glossary for definitions of rail transit service types. The data presented here may not be consistent with other sources, particularly data that are revised on an irregular or frequent basis.

SOURCES: Class I rail freight train-miles—Association of American Railroads (AAR), *Railroad Facts 2003* (Washington, DC: 2003), p. 33. **Intercity/Amtrak train-miles**: **1993–2001—**Amtrak, *Amtrak Annual Report* (Washington, DC: Annual issues), statistical appendix. **2002–2003—**AAR, *Railroad Facts 2003* (Washington, DC: 2003), p. 77. **Air carrier—**U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues). **Transit rail—**American Public Transportation Association, *Public Transportation Fact Book, 2005* (Washington, DC: 2005), table 19.

TABLE 2-1a/2-2a Transportation Capital Stock by Mode: 1993–2003
Chained 2000 dollars (billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Public highways and streets	1,261.1	1,284.8	1,306.9	1,328.8	1,359.0	1,383.0	1,409.7	1,437.3	1,468.1	1,498.5	1,528.4
Consumer motor vehicles	806.9	830.4	846.6	867.9	900.6	953.1	1,023.4	1,092.2	1,166.4	1,246.5	1,324.8
In-house transportation	344.0	373.3	402.7	434.5	466.4	505.2	555.5	587.6	597.8	610.1	632.9
Other publicly owned transportation	U	U	U	U	239.3	246.7	255.1	266.5	277.4	288.4	298.9
Railroad transportation	276.8	275.3	273.3	272.0	270.8	270.9	269.7	266.9	264.2	261.7	259.4
Air transportation	114.6	116.6	123.4	132.1	144.8	163.0	177.9	195.7	213.2	222.5	229.6
Other privately owned transportation	100.1	101.1	102.4	101.8	102.2	103.4	103.8	105.2	105.1	104.4	104.0
Pipeline transportation	60.2	61.4	62.7	64.6	66.4	68.3	70.8	73.7	76.2	77.8	79.2
Commercial truck transportation	41.9	47.4	53.6	56.1	61.4	64.4	66.5	68.1	66.6	64.8	63.8
Water transportation	33.2	33.7	33.7	34.4	36.2	37.7	38.8	39.4	39.8	39.9	40.3
Private ground passenger transportation	25.5	26.4	27.1	28.3	28.7	29.9	32.2	33.9	34.6	34.9	35.3
Total	**3,064.3**	**3,150.5**	**3,232.5**	**3,320.4**	**3,675.7**	**3,825.8**	**4,003.5**	**4,166.5**	**4,309.2**	**4,449.6**	**4,596.8**

KEY: U = data are unavailable.

NOTES: Data may not add to total because of independent rounding. Data include only privately owned capital stock unless otherwise noted. Capital stock data are reported after deducting depreciation. *Consumer motor vehicles* are considered consumer durable goods. *In-house transportation* includes transportation services provided within a firm whose main business is not transportation. For example, grocery companies often use their own truck fleets to move goods from their warehouses to their retail outlets. *Other publicly owned transportation* includes publicly owned airway, waterway, and transit structures but does not include associated equipment. *Other privately owned transportation* includes sightseeing, couriers and messengers, and transportation support activities, such as freight transportation brokers.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollar values (see tables 2-1b/2-2b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 2-1b/2-2b.

TABLE 2-1b/2-2b Transportation Capital Stock by Mode: 1993–2003
Current dollars (billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Public highways and streets	940.9	1,004.1	1,074.1	1,127.4	1,211.1	1,254.9	1,337.2	1,437.3	1,500.4	1,564.2	1,603.7
Consumer motor vehicles	760.6	810.4	842.2	875.1	899.4	950.4	1,020.8	1,092.2	1,156.0	1,213.5	1,256.6
In-house transportation	319.8	356.2	391.2	428.2	459.2	496.1	547.8	587.6	603.6	613.5	641.3
Other publicly owned transportation	U	U	U	U	215.0	229.5	245.2	266.5	280.4	302.9	320.9
Railroad transportation	236.7	240.9	246.8	254.3	254.8	260.1	262.7	266.9	272.3	274.3	279.6
Air transportation	103.3	108.1	118.0	128.6	140.8	157.6	173.4	195.7	215.6	226.5	238.9
Other privately owned transportation	89.0	92.6	97.1	97.8	98.4	100.5	102.2	105.2	106.2	107.1	109.4
Pipeline transportation	53.5	56.4	57.8	60.1	62.9	65.0	69.2	73.7	76.7	80.5	84.1
Commercial truck transportation	38.8	45.5	52.2	54.7	59.9	63.6	66.4	68.1	66.4	66.0	65.6
Water transportation	31.0	31.9	32.3	33.6	35.7	37.1	38.3	39.4	40.0	40.8	41.8
Private ground passenger transportation	22.4	23.8	25.1	26.7	27.4	29.0	31.7	33.9	35.1	36.0	36.8
Total	**2,596.0**	**2,769.9**	**2,936.8**	**3,086.5**	**3,464.6**	**3,643.8**	**3,894.9**	**4,166.5**	**4,352.7**	**4,525.3**	**4,678.7**

KEY: U = data are unavailable.

NOTES: Data include only privately owned capital stock unless otherwise noted. Capital stock data are reported after deducting depreciation. *Consumer motor vehicles* are considered consumer durable goods. *In-house transportation* includes transportation services provided within a firm whose main business is not transportation. For example, grocery companies often use their own truck fleets to move goods from their warehouses to their retail outlets. *Other publicly owned transportation* includes publicly owned airway, waterway, and transit structures but does not include associated equipment. *Other privately owned transportation* includes sightseeing, couriers and messengers, and transportation support activities, such as freight transportation brokers. Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Fixed Assets and Consumer Durable Goods in the United States*, tables 3.1ES, 3.2ES, 7.1, 7.2, 8.1, and 8.2, available at http://www.bea.gov/, as of May 2005.

TABLE 2-3 Rural Roads in Poor or Mediocre Condition by Functional Class: 1993–2003
Percentage of mileage in roadway class

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Interstates	34.7	33.0	27.0	23.0	22.7	20.6	16.4	14.3	13.6	12.3	11.4
Other principal arterials	12.1	10.6	12.0	7.3	6.5	6.1	4.5	4.0	3.7	3.4	3.5
Minor arterials	13.0	14.0	12.7	10.5	9.0	7.9	6.9	7.0	6.9	5.8	6.1
Collectors	19.2	17.8	18.0	17.0	20.1	21.8	21.4	21.2	20.4	19.5	19.1

NOTES: Data are for the 50 states and the District of Columbia. The terms *poor* and *mediocre* as used here are Federal Highway Administration (FHWA) pavement condition criteria term categories for quantitative International Roughness Index and Present Serviceability Ratings. For further information, see U.S. Department of Transportation, FHWA, *Status of the Nation's Highways, Bridges, and Transit: 2002 Conditions and Performance Report,* Exhibit 3-3, available at http://www.fhwa.dot.gov/policy, as of August 2005.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-26, available at http://www.bts.gov/, as of January 2005.

TABLE 2-4 Urban Roads in Poor or Mediocre Condition by Functional Class: 1993–2003
Percentage of mileage in roadway class

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Interstates	41.5	42.9	37.2	36.9	36.0	34.9	30.4	28.2	28.2	28.2	26.8
Other freeways and expressways	13.2	18.0	14.6	12.1	12.0	12.0	10.6	10.9	10.2	10.3	10.7
Other principal arterials	22.5	28.8	27.1	25.9	26.7	31.3	30.6	30.0	29.3	29.7	29.1
Minor arterials	21.7	19.0	20.3	19.9	20.2	17.9	17.5	26.0	26.4	26.6	27.9
Collectors	27.4	26.0	26.5	26.3	26.6	20.9	22.0	32.1	31.9	32.8	34.0

NOTES: Data are for the 50 states and the District of Columbia. The terms *poor* and *mediocre* as used here are Federal Highway Administration (FHWA) pavement condition criteria term categories for quantitative International Roughness Index and Present Serviceability Ratings. For further information, see U.S. Department of Transportation, FHWA, *Status of the Nation's Highways, Bridges, and Transit: 2002 Conditions and Performance Report*, Exhibit 3-3, available at http://www.fhwa.dot.gov/policy, as of August 2005.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-26, available at http://www.bts.gov/, as of January 2005.

TABLE 2-5 Structurally Deficient and Functionally Obsolete Bridges: All Roadways, 1993–2003
Number

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Structurally deficient	111,512	107,476	103,920	101,518	98,475	93,076	88,150	86,692	83,630	81,437	79,811
Functionally obsolete	80,012	79,781	81,806	81,208	77,410	79,506	81,900	80,889	81,469	81,573	81,008

NOTES: *Structurally deficient* refers to bridges needing significant maintenance attention, rehabilitation, or replacement. *Functionally obsolete* refers to bridges that do not have the lane widths, shoulder widths, or vertical clearances adequate to serve traffic demand or bridges that may not be able to handle occasional roadway flooding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, Bridge Division, National Bridge Inventory Database, available at http://www.fhwa.dot.gov/bridge/, as of January 2005.

TABLE 2-6a Rural Bridge Condition by Functional Class: 2003
Percent

	Structurally deficient	Functionally obsolete
Interstates	4.2	11.6
Other principal arterials	5.4	9.2
Minor arterials	8.4	11.0
Major collectors	11.8	10.6
Minor collectors	13.7	11.3
Local roads	20.6	11.8

NOTES: *Structurally deficient* refers to bridges needing significant maintenance attention, rehabilitation, or replacement. *Functionally obsolete* refers to bridges that do not have the lane widths, shoulder widths, or vertical clearances adequate to serve traffic demand or bridges that may not be able to handle occasional roadway flooding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, Bridge Division, *National Bridge Inventory Database*, CD-ROM, January 2005.

TABLE 2-6b Rural Bridge Condition by Functional Class: 2003
Number

	Structurally deficient	Functionally obsolete	All rural bridges
Interstates	1,179	3,214	27,763
Other principal arterials	1,931	3,292	35,810
Minor arterials	3,395	4,415	40,233
Major collectors	11,094	9,966	93,932
Minor collectors	6,772	5,560	49,288
Local roads	43,020	24,543	208,499
Total	**67,391**	**50,990**	**455,525**

NOTES: *Structurally deficient* refers to bridges needing significant maintenance attention, rehabilitation, or replacement. *Functionally obsolete* refers to bridges that do not have the lane widths, shoulder widths, or vertical clearances adequate to serve traffic demand or bridges that may not be able to handle occasional roadway flooding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, Bridge Division, *National Bridge Inventory Database*, CD-ROM, January 2005.

TABLE 2-7a Urban Bridge Condition by Functional Class: 2003
Percent

	Structurally deficient	Functionally obsolete
Interstates	6.2	20.1
Other freeways or expressways	6.0	20.3
Other principal arterials	9.3	22.5
Minor arterials	10.4	26.3
Collectors	11.2	26.3
Local roads	11.5	19.0

NOTES: *Structurally deficient* refers to bridges needing significant maintenance attention, rehabilitation, or replacement. *Functionally obsolete* refers to bridges that do not have the lane widths, shoulder widths, or vertical clearances adequate to serve traffic demand or bridges that may not be able to handle occasional roadway flooding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, Bridge Division, *National Bridge Inventory Database*, CD-ROM, January 2005.

TABLE 2-7b Urban Bridge Condition by Functional Class: 2003
Number

	Structurally deficient	Functionally obsolete	All urban bridges
Interstates	1,698	5,549	27,593
Other freeways or expressways	1,009	3,428	16,859
Other principal arterials	2,218	5,390	23,960
Minor arterials	2,558	6,464	24,603
Collectors	1,714	4,009	15,265
Local roads	3,112	5,129	27,048
Total	**12,309**	**29,969**	**135,328**

NOTES: *Structurally deficient* refers to bridges needing significant maintenance attention, rehabilitation, or replacement. *Functionally obsolete* refers to bridges that do not have the lane widths, shoulder widths, or vertical clearances adequate to serve traffic demand or bridges that may not be able to handle occasional roadway flooding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, Office of Engineering, Bridge Division, *National Bridge Inventory Database*, CD-ROM, January 2005.

TABLE 2-8 Runway Pavement Condition of 513 Commercial Service Airports: 1997–2004
Percent

	1997	1998	1999	2000	2001	2002	2003	2004
Good condition	79	N	78	79	79	79	80	82
Fair condition	19	N	20	19	19	19	18	16
Poor condition	2	N	2	2	2	2	2	2

KEY: N = data are nonexistent.

NOTES: Commercial service airports are defined in box 2-B in chapter 2. Only percentage data are readily available. The number of commercial service airports vary from year to year. In 2004, there were 513 commercial service airports.

Data for 1994–1996 are nonexistent.

SOURCES: 1997–2003—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-24, available at http://www.bts.gov/, as of January 2005. **2004—**USDOT, Federal Aviation Administration, National Planning Division, personal communication, February 2005.

TABLE 2-9 Runway Pavement Condition of NPIAS Airports: 1997–2004
Percent

	1997	1998	1999	2000	2001	2002	2003	2004
Good condition	72	N	72	73	73	71	75	75
Fair condition	23	N	23	22	22	24	21	21
Poor condition	5	N	5	5	5	5	4	4

KEY: N = data are nonexistent; NPIAS = National Plan of Integrated Airport Systems.

NOTES: NPIAS airports are defined in box 2-B in chapter 2; they include the 513 commercial service airports. Only percentage data are readily available. The number of existing NPIAS airports vary from year to year. In 2004, there were a total of 3,356 NPIAS airports.

Data for 1994–1996 are nonexistent.

SOURCES: 1997–2003—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-24, available at http://www.bts.gov/, as of January 2005. **2004—**USDOT, Federal Aviation Administration, National Planning Division, personal communication, February 2005.

TABLE 2-10 Median Age of Cars and Trucks in the United States: 1994–2004
Years

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Cars	7.5	7.7	7.9	8.1	8.3	8.3	8.3	8.3	8.4	8.6	8.9
Light trucks	7.2	7.4	7.5	7.4	7.1	6.7	6.3	6.3	6.5	6.6	6.4
Trucks	7.5	7.6	7.7	7.8	7.6	7.2	6.9	6.8	6.8	6.7	6.6

NOTE: *Trucks* represents all types of trucks, including light trucks (sport utility vehicles, vans, and pickup trucks), heavy trucks, and heavy-heavy trucks.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, table 1-25 available at http://www.bts.gov/, as of June 2005.

TABLE 2-11 Average Age of Selected Transit Vehicles: 1993–2003
Years

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Heavy-rail passenger cars	17.8	15.8	19.3	20.2	21.1	22.0	22.5	22.9	21.7	20.0	19.0
Commuter-rail passenger coaches	18.6	20.1	21.4	24.1	21.6	19.4	17.5	16.9	18.1	20.1	20.5
Light-rail vehicles	14.9	16.7	16.8	16.0	15.9	15.7	15.7	16.1	16.4	16.3	15.6
Full-size transit buses	8.5	8.7	8.6	8.7	8.5	8.5	8.4	8.1	7.8	7.5	7.3
Vans	3.1	3.9	3.1	3.1	3.0	2.9	3.1	3.1	3.3	4.9	3.4
Ferryboats	24.7	23.5	23.4	25.3	25.4	25.8	25.1	25.6	24.7	26.8	27.1

NOTES: *Full-size transit buses* have more than 35 seats. Data are for directly operated service vehicles only.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, table 1-28, available at http://www.bts.gov/, as of June 2005.

TABLE 2-12 Average Age of Amtrak Locomotive and Car Fleets: Fiscal Years 1991–2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Locomotives	13.0	13.0	13.2	13.4	13.9	14.4	12.0	12.6	12.8	11.2	13.9
Passenger and other train cars	21.0	21.5	22.6	22.4	21.8	20.7	19.8	21.1	22.2	19.4	18.5

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), *National Transportation Statistics 2003,* table 1-30, available at http://www.bts.gov/, as of March 2004. **2001 data—**USDOT, BTS, calculations based on data provided by Amtrak, personal communication, March 2004.

TABLE 2-13a Age of U.S. Flag Vessels by Type: 2003
Percentage of vessels

	Age range (years)						
Vessel types	< 6	6–10	11–15	16–20	21–25	> 25	Total (%)
Dry cargo	11.8	9.6	11.4	13.1	17.4	36.6	100.0
Tanker	8.7	6.7	2.9	14.4	30.8	36.5	100.0
Towboat	7.0	4.2	2.9	3.8	22.0	60.1	100.0
Passenger	8.8	11.4	15.6	17.0	10.7	36.6	100.0
Offshore support	19.6	7.8	5.8	6.9	36.4	23.5	100.0
Dry barge	18.1	15.3	11.0	3.9	26.3	25.4	100.0
Tank barge	15.0	9.8	6.5	1.8	19.2	47.7	100.0
All vessels	**16.0**	**12.8**	**9.3**	**4.3**	**24.9**	**32.6**	**100.0**

NOTE: *Offshore support* includes crewboats.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 2-13b.

TABLE 2-13b Age of U.S. Flag Vessels by Type: 2003
Number

	Age group (years)						
Vessel types	**< 6**	**6–10**	**11–15**	**16–20**	**21–25**	**> 25**	**Total**
Dry cargo	114	93	110	127	168	354	**969**
Tanker	9	7	3	15	32	38	**104**
Towboat	362	217	148	198	1,135	3,105	**5,172**
Passenger	69	89	122	133	84	287	**789**
Offshore support	314	126	93	111	584	378	**1,609**
Dry barge	4,909	4,155	2,976	1,054	7,135	6,884	**27,304**
Tank barge	604	396	260	71	774	1,923	**4,031**
All vessels	**6,381**	**5,085**	**3,712**	**1,709**	**9,912**	**12,972**	**39,983**

NOTES: Data include vessels available for operation. Age is based on the year vessels were built or rebuilt. Total number in fleet includes vessels for which age and classification are unknown. *Offshore support* includes crewboats.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, table 1-31, available at http://www.bts.gov/, as of June 2005.

TABLE 2-14 Average Age of U.S. Commercial Aircraft: 1992–2002
Years, unless noted

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
All commercial aircraft	11.3	11.6	12.2	12.4	13.2	13.5	13.6	12.9	12.8	12.3	11.7
Major airlines aircraft	10.5	10.4	10.8	11.3	12.3	12.4	12.3	11.8	11.8	11.6	11.7
Major airlines share of commercial aircraft (percent)	84.1	82.1	79.9	76.1	72.5	78.7	77.8	78.5	78.8	82.9	77.8

NOTES: Average aircraft age is based on the year an aircraft was delivered to the original owner from the manufacturer and does not reflect the age of the engines or other parts that may have been replaced more recently. *Commercial aircraft* are aircraft of air carriers providing scheduled or nonscheduled passenger or freight service, including commuter and air taxi on-demand services. *Major airlines* includes only commercial airlines with operating revenues greater than $1 billion annually. In 2002 they were: America West Airlines, American Airlines, American Eagle Airlines, America Trans Air, Alaska Airlines, Continental Airlines, Delta Airlines, DHL Airways, Federal Express, Northwest Airlines, Southwest Airlines, United Airlines, United Parcel Service, and US Airways.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from USDOT, BTS, Form 41, Schedule B-43, 1992–2002.

TABLE 3-1 Transportation Fatalities by Mode: 2003

	Per 100,000 U.S. residents	Number of fatalities
Air	0.24	698
Railroad	0.30	865
Transit	0.08	234
Recreational boating	0.24	703
Pipeline	0.004	12
Highway	14.65	42,643
Pedestrians	1.63	4,749
Pedalcyclists	0.21	622

NOTES: *Air* includes air carrier service, commuter service, air taxi service, and general aviation. *Highway* includes all types of highway motor vehicles, bicycles, and pedestrians. *Railroad* includes railroad and highway-rail grade-crossing incidents. *Transit* includes motor bus, heavy rail, light rail, commuter rail, demand response, trolley bus, aerial tramway, automated guideway transit, cablecar, ferryboat, inclined plane, monorail, and vanpool. *Pipeline* includes hazardous liquid pipelines and gas pipelines.

These fatality rates have not been adjusted to account for double counting across modes because detailed fatality data were not available at the time this report was prepared. Double counting is of particular concern across rail and highway modes due to highway-rail grade-crossings fatalities and across highway and transit due to transit bus fatalities. The Bureau of Transportation Statistics estimates that the double counting inflates the total fatality rate by about 0.1 fatalities per 100,000 residents.

SOURCES: Fatalities—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2005*, table 2-1, available at http://www.bts.gov/, as of August 2005. **Population—**U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States,* section 1, table 2, available at http://www.census.gov/, as of May 2005.

TABLE 3-2 Highway Fatalities per 100,000 Residents for Selected Vehicle Types: 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Passenger car occupants	8.3	8.4	8.4	8.3	8.1	7.7	7.5	7.3	7.1	7.1	6.7
Light-truck occupants	3.3	3.4	3.6	3.7	3.8	3.9	4.0	4.1	4.1	4.2	4.3
Large-truck occupants	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Motorcycle occupants	0.9	0.9	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.1	1.3
Pedestrians	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.7	1.6
Pedalcyclists	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2

NOTES: *Large trucks* are defined as trucks over 10,000 pounds gross vehicle weight rating (GVWR), including single-unit trucks and truck tractors. *Light trucks* are defined as trucks of 10,000 pounds GVWR or less, including pickup trucks, vans, truck-based station wagons, and sport utility vehicles.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using the following data: **Fatalities—**USDOT, BTS, *National Transportation Statistics 2004*, table 2-1, available at http://www.bts.gov/, as of January 2005. **Population—**U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States,* section 1, table 2, available at http://www.census.gov/, as of May 2005.

TABLE 3-3 Highway Fatalities per 100 Million Vehicle-Miles for Selected Vehicle Types: 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Passenger car occupants	1.6	1.6	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.2
Light-truck occupants	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.3	1.2
Large-truck occupants	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3
Motorcycle occupants	24.7	22.7	22.7	21.8	21.0	22.3	23.5	27.7	33.2	34.0	38.4

NOTES: *Large trucks* are defined as trucks over 10,000 pounds gross vehicle weight rating (GVWR), including single-unit trucks and truck tractors. *Light trucks* are defined as trucks of 10,000 pounds GVWR or less, including pickup trucks, vans, truck-based station wagons, and sport utility vehicles. Pedestrian and pedalcyclist data are not included because vehicle-mile data are not available.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using the following data: **Fatalities—**USDOT, BTS, *National Transportation Statistics 2004*, table 2-1, available at http://www.bts.gov/, as of December 2004. **Vehicle-miles—**USDOT, Federal Highway Administration, *Highway Statisitics 2003* (Washington, DC: 2004), table VM-1.

TABLE 3-4 Injuries for Occupants of Highway Vehicles and Motorcycles: 2003

Vehicle type	Injuries per 100 million pmt	Number of injuries
Passenger car	66.9	1,756,495
Motorcycle	553.9	67,103
Light truck	51.4	889,048
Large truck	12.5	26,893
Bus	12.9	18,174
Total	**58.4**	**2,757,713**

KEY: pmt = passenger-miles of travel.

NOTE: Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using the following data: **Injuries—**USDOT, BTS, *National Transportation Statistics 2005*, table 2-2, available at http://www.bts.gov/, as of August 2005. **Pmt—**USDOT, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004).

TABLE 3-5 Injury Rates for Occupants of Highway Vehicles and Motorcycles: 1993–2003
Injuries per 100 million passenger-miles of travel (pmt)

Vehicle type	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Passenger car	102.3	105.1	108.0	105.2	98.0	89.3	85.7	80.6	75.4	68.9	66.9
Light truck	48.0	49.7	57.5	58.7	55.8	55.2	59.1	60.4	51.3	52.5	51.4
Motorcycle	487.8	463.3	533.4	506.6	474.1	433.0	429.4	501.2	512.2	533.5	553.9
Large truck	20.1	17.7	17.0	17.9	16.1	14.6	16.2	15.0	11.9	12.2	12.5
Bus	13.1	11.6	14.1	14.6	11.6	10.5	13.5	11.0	10.3	13.0	12.9

NOTE: Pedestrians and pedalcyclists are not included because pmt data are not available.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using the following data: **Injuries—**USDOT, BTS, *National Transportation Statistics 2005*, table 2-2, available at http://www.bts.gov/, as of August 2005. **Pmt—**USDOT, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004).

TABLE 3-6 Minor Motor Vehicle-Related Injuries by Age and Gender: 2003

Age	Males (number)	Females (number)
0–4	55,937	51,263
5–9	53,736	49,151
10–14	71,580	72,692
15–19	220,451	267,080
20–24	233,149	260,712
25–29	168,121	191,153
30–34	145,455	177,547
35–39	137,408	154,700
40–44	127,255	149,319
45–49	98,874	117,974
50–54	75,163	85,524
55–59	54,608	63,399
60–64	34,599	42,181
65–69	26,621	33,894
70–74	18,065	27,069
75–79	18,201	21,960
80–84	10,002	14,242
85–89	3,621	5,646
90–94	988	1,536
95–99	167	175
100+	249	495

NOTE: *A minor injury* is one in which the victim was treated and released. This table does not include an additional 1,063 minor injuries for which age and sex were unknown or not recorded in the original data.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance System, March 2005.

TABLE 3-7 Serious Motor Vehicle-Related Injuries by Age and Gender: 2003

Age	Males (number)	Females (number)
0–4	3,392	1,596
5–9	4,321	3,021
10–14	6,720	4,711
15–19	22,199	16,539
20–24	25,669	15,823
25–29	15,982	8,909
30–34	15,561	11,253
35–39	14,765	8,213
40–44	14,367	8,146
45–49	13,461	6,313
50–54	9,845	8,063
55–59	7,903	5,537
60–64	5,434	5,128
65–69	4,618	3,845
70–74	4,530	3,372
75–79	3,018	4,173
80–84	3,241	4,378
85–89	1,472	1,826
90–94	512	529
95–99	103	166
100+	0	0

NOTE: *A serious injury* is one in which the victim was either hospitalized or treated and transferred to another facility, was dead on arrival, or died in the emergency room. This table does not include an additional 176 serious injuries for which age and sex were unknown or not recorded in the original data.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance System, March 2005.

TABLE 3-8 Serious Motor Vehicle-Related Injuries by Type: 2003

Type	Total number of injuries	Number of serious injuries	Percentage serious
Vehicle occupants	3,323,139	242,642	7.3
Motorcycle occupants	133,420	26,584	19.9
Pedalcyclists	58,925	7,550	12.8
Pedestrians	126,768	22,475	17.7

NOTES: *A serious injury* is one in which the victim was either hospitalized or treated and transferred to another facility, was dead on arrival, or died in the emergency room. *A pedalcyclist* is a person on a vehicle that is powered solely by pedals. Data are the share of injuries that were serious for one person type (e.g., the share of seriously injured pedestrians of all injured pedestrians).

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance System, March 2005.

[**NOTE:** Figure 3-9 is a highway-rail grade-crossing fatal accident location map, and the corresponding data table is not available.]

TABLE 3-10 General Aviation Fatalities: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number of fatalities	730	735	636	631	625	619	596	562	581	632	556

NOTES: 2004 data are preliminary. *General aviation* includes any civil aircraft operation that is not covered under 14 *Code of Federal Regulations* Parts 121, 129, or 135, commonly referred to as commercial air carrier operations.

SOURCE: National Transportation Safety Board, *Aviation Accident Statistics,* table 10, available at http://www.ntsb.gov/aviation, as of July 2005.

TABLE 3-11 Aviation Fatalities per 100,000 Hours Flown: 1994–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
General aviation	3.28	2.95	2.56	2.47	2.45	2.12	2.14	2.21	2.27	2.46	2.15
Commercial aviation	1.82	1.24	2.76	0.05	0.01	0.07	0.50	2.98	0.00	0.13	0.08

NOTES: 2004 data are preliminary. The 2001 spike in commercial aviation fatalities per hours flown is the result of the terrorist acts of September 11; these data include only fatalities of persons aboard the 4 aircraft. *General aviation* includes any civil aircraft operation that is not covered under 14 *Code of Federal Regulations* (CFR) Parts 121, 129, or 135, commonly referred to as commercial air carrier operations. *Commerical aviation* includes air carriers operating under 14 CFR Part 121 only, both scheduled and nonscheduled service.

SOURCE: National Transportation Safety Board, *Aviation Accident Statistics,* tables 5 and 10, available at http://www.ntsb.gov/aviation/, as of July 2005.

TABLE 3-12 General Aviation Fatalities: 1994–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Fatal accidents	404	413	361	350	365	340	345	325	345	352	312
Nonfatal accidents	1,618	1,643	1,547	1,494	1,540	1,565	1,492	1,402	1,370	1,389	1,302
All accidents	**2,022**	**2,056**	**1,908**	**1,844**	**1,905**	**1,905**	**1,837**	**1,727**	**1,715**	**1,741**	**1,614**
Fatal as a percentage of all accidents	20.0	20.1	18.9	19.0	19.2	17.8	18.8	18.8	20.1	20.2	19.3

NOTES: 2004 data are preliminary. *General aviation* includes any civil aircraft operation that is not covered under 14 *Code of Federal Regulations* Parts 121, 129, or 135, commonly referred to as commercial air carrier operations.

SOURCE: National Transportation Safety Board, *Aviation Accident Statistics,* table 10, available at http://www.ntsb.gov/aviation/, as of July 2005.

TABLE 4-1 Daily Trip-Miles by Mode: 2001

Mode	Percent	Person-miles (millions)	SE (millions)
Personal vehicle	88.7	3,508,613	41,046
Air	7.2	283,307	40,573
Transit	1.2	45,838	2,096
School bus	1.1	45,189	2,092
Bicycle/walk	0.8	31,045	709
Other	1.0	41,378	4,611
Total reported	**100.0**	**3,955,371**	**62,856**

KEY: SE = standard error.

NOTES: Excludes trips where mode was not reported. *Other* includes charter/tour/intercity bus; taxi, limousine, hotel/airport shuttle bus; intercity train; and other not elsewhere classified. Data are from the daily travel segment of the 2001 National Household Travel Survey. Long-distance travel data (i.e., trips of 50 miles or more collected during a 4-week travel period) are not included here. Data may not add to total and percentages may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey Data,* CD-ROM, February 2004.

TABLE 4-2 Long-Distance Trip-Miles by Mode: 2001

Mode	Percent	Person-miles (millions)	SE (millions)
Personal vehicle	55.9	760,369	11,696
Air	41.0	557,621	25,376
Bus	2.0	27,094	3,048
Train	0.8	10,546	1,998
Other	0.4	5,120	1,124
Total	**100.0**	**1,360,750**	**28,293**

KEY: SE = standard error.

NOTES: Excludes trips where mode was not reported. *Other* includes watercraft (e.g., ship, ferry, and motorboat); taxi, limousine, and hotel/airport shuttle; bicycle and walking; and other not elsewhere classified. Data may not add to total and percentages may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey Data,* CD-ROM, February 2004.

TABLE 4-3a Households Without a Vehicle
Percentage of all households

	1993	1995	1997	1999	2001	2003
Below poverty level	32.7	30.3	29.1	27.4	27.2	26.6
Black	28.0	24.7	24.2	22.6	20.9	19.8
65 or older	19.7	18.4	17.9	17.1	16.9	15.8
Hispanic	17.5	13.4	17.1	15.3	15.1	13.4
All occupied units	10.3	9.8	9.5	9.3	8.8	8.6

NOTE: A housing unit is classified as *occupied* if there is at least one person who lives in the unit as a usual resident at the time of the survey or if the occupants are only temporarily absent (e.g., on vacation).

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States,* H150 (Washington, DC: Biennial issues).

TABLE 4-3b Households Without a Vehicle
Number of households (thousands)

	1993	1995	1997	1999	2001	2003
All occupied units	9,793	9,089	9,583	9,447	9,542	9,342
Below poverty level	4,512	3,708	4,446	4,580	3,902	3,977
65 or older	4,017	3,418	3,844	3,742	3,656	3,697
Black	3,114	2,578	2,913	2,919	2,923	2,783
Hispanic	1,155	1,482	1,327	1,306	1,369	1,311

NOTE: A housing unit is classified as *occupied* if there is at least one person who lives in the unit as a usual resident at the time of the survey or if the occupants are only temporarily absent (e.g., on vacation).

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States,* H150 (Washington, DC: Biennial issues).

TABLE 4-4a Households Without a Vehicle in Urban, Suburban, and Rural Areas: 1993 and 2003
Percentage of all households

	1993	2003
MSA—central city	19.4	15.9
MSA—suburb	5.6	5.3
Non-MSA urbanized area	10.5	8.8
Rural	5.5	4.7

KEY: MSA = metropolitan statistical area.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

TABLE 4-4b Households Without a Vehicle in Urban, Suburban, and Rural Areas: 1993 and 2003
Number of households (thousands)

	1993	2003
MSA—central city	5,797	4,985
MSA—suburb	2,458	2,824
Non-MSA urbanized area	815	659
Rural	722	622

KEY: MSA = metropolitan statistical area.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

TABLE 4-5a Households Without a Vehicle by Region: 1993 and 2003
Percentage of all households

	1993	2003
Northeast	18.0	16.6
Midwest	8.9	6.7
South	8.9	7.0
West	7.1	6.1

KEY: **Northeast—**Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, and New Jersey. **Midwest—**Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, North Dakota, and South Dakota. **South—**Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky, Arkansas, Louisiana, Oklahoma, and Texas. **West—**Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Idaho, Alaska, Washington, Oregon, Nevada, California, and Hawaii.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

TABLE 4-5b Households Without a Vehicle by Region: 1993 and 2003
Number of households (thousands)

	1993	2003
Northeast	3,394	3,345
Midwest	2,053	1,641
South	2,933	2,688
West	1,413	1,415

KEY: **Northeast—**Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, and New Jersey. **Midwest—**Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, North Dakota, and South Dakota. **South—**Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky, Arkansas, Louisiana, Oklahoma, and Texas. **West—**Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Idaho, Alaska, Washington, Oregon, Nevada, California, and Hawaii.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

TABLE 4-6 Annual Trips each Weekday and Weekend Day by Departure Time: 2001
Millions

Hour of departure	Trips per weekend day		Trips per weekday	
	Number	SE	Number	SE
12:00 am	383.0	27.7	181.3	11.7
1:00 am	176.3	18.0	92.0	7.1
2:00 am	131.7	15.8	62.1	7.6
3:00 am	69.2	9.7	36.7	4.0
4:00 am	149.3	17.4	254.6	14.6
5:00 am	258.5	19.8	683.0	19.4
6:00 am	580.3	35.3	1,877.5	34.5
7:00 am	1,206.0	48.5	4,500.8	59.0
8:00 am	2,215.6	66.6	3,582.8	52.1
9:00 am	3,338.0	96.3	2,616.1	44.6
10:00 am	4,441.6	101.2	3,030.7	52.4
11:00 am	4,525.3	96.1	3,607.4	45.0
12:00 pm	5,127.0	108.1	4,012.0	56.5
1:00 pm	4,464.2	109.6	3,515.9	59.2
2:00 pm	4,550.1	107.0	4,166.9	53.8
3:00 pm	4,190.7	104.3	5,111.5	60.0
4:00 pm	4,195.2	90.8	4,646.8	58.3
5:00 pm	3,888.7	107.5	4,916.4	68.5
6:00 pm	5,741.7	111.2	3,117.3	44.8
7:00 pm	4,476.3	109.2	2,344.8	47.8
8:00 pm	3,324.4	101.1	1,784.8	42.7
9:00 pm	2,692.0	86.2	1,188.4	28.0
10:00 pm	1,535.6	62.6	619.7	25.1
11:00 pm	996.8	44.9	341.4	13.9
Not reported	83.8	17.2	65.1	9.4
Total	**62,741.2**	**593.1**	**56,356.0**	**230.6**

KEY: SE = standard error.

NOTES: Data are *daily trips,* which are generally defined as traveling from one address to another and not necessarily from home. Most daily trips are local. Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005.

TABLE 4-7 Annual Trips each Weekday by Departure Time and Selected Trip Purpose: 2001
Millions

	Work		Shopping		School		Social and recreation	
Hour of departure	Number	SE	Number	SE	Number	SE	Number	SE
12:00 am	72.5	7.5	8.7	1.9	1.4	0.7	64.7	6.5
1:00 am	32.9	3.7	2.2	0.8	3.5	1.5	32.7	4.0
2:00 am	20.8	2.8	1.9	0.7	1.3	0.9	29.2	4.6
3:00 am	22.8	2.7	1.5	1.0	0.5	0.5	5.3	1.1
4:00 am	139.0	7.9	22.2	4.3	1.8	1.0	22.9	4.9
5:00 am	430.8	12.4	37.1	5.8	15.0	2.4	65.8	5.0
6:00 am	1,007.9	21.1	74.4	5.6	234.0	12.7	155.7	10.2
7:00 am	1,517.7	24.9	153.7	11.0	1,219.9	25.7	277.3	12.3
8:00 am	864.9	19.7	291.7	15.0	725.6	19.7	350.4	14.2
9:00 am	309.2	10.6	539.2	17.7	170.7	10.3	448.4	18.3
10:00 am	190.0	8.5	878.7	27.2	108.5	8.3	539.5	21.4
11:00 am	256.7	11.8	934.8	24.0	166.7	9.1	747.1	20.7
12:00 pm	414.7	14.4	863.2	23.5	188.0	9.6	795.5	26.4
1:00 pm	312.1	11.7	868.5	28.4	175.2	11.8	710.9	24.7
2:00 pm	439.7	12.5	859.2	26.4	587.2	17.9	652.5	18.8
3:00 pm	764.8	19.2	904.8	27.8	818.0	20.0	845.6	23.7
4:00 pm	1,009.7	21.0	914.3	27.3	288.0	16.1	1,000.0	27.2
5:00 pm	1,205.7	21.5	814.2	28.4	335.9	18.3	1,328.3	31.9
6:00 pm	541.3	15.9	526.6	19.7	269.4	16.1	1,100.2	28.0
7:00 pm	293.4	10.8	456.8	21.6	155.7	10.7	953.2	30.4
8:00 pm	208.0	8.5	318.8	19.8	136.1	9.6	759.5	24.0
9:00 pm	200.3	8.1	163.4	10.7	115.5	11.5	472.4	19.4
10:00 pm	154.6	8.0	49.7	5.3	35.5	5.0	242.2	18.4
11:00 pm	112.6	6.7	21.9	3.2	7.4	2.1	138.4	10.4
Not reported	7.8	2.0	17.7	6.6	2.4	1.0	19.3	3.7
Total	**10,530.1**	**82.6**	**9,725.3**	**114.3**	**5,763.2**	**77.2**	**11,756.9**	**127.2**

KEY: SE = standard error.

NOTES: Data are *daily trips,* which are generally defined as traveling from one address to another and not necessarily from home. Most daily trips are local. Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005.

TABLE 4-8 Annual Trips each Weekday by Departure Time and Age: 2001
Millions

	Age groups								
	0–20			21–65			66 and over		
Hour of departure	Number	SE	Percent	Number	SE	Percent	Number	SE	Percent
12:00 am	177.6	26.9	0.3	714.8	47.6	0.4	14.3	4.1	0.1
1:00 am	88.0	14.6	0.1	369.5	32.3	0.2	2.3	1.2	0.0
2:00 am	62.1	15.6	0.1	247.4	32.7	0.1	1.1	0.8	0.0
3:00 am	23.0	7.3	0.0	159.8	18.1	0.1	0.9	0.7	0.0
4:00 am	107.2	45.7	0.2	1,136.4	59.2	0.6	29.5	6.7	0.1
5:00 am	238.8	33.5	0.3	3,053.3	81.6	1.6	122.8	14.9	0.4
6:00 am	1,653.9	82.3	2.4	7,316.9	138.8	3.9	416.7	32.1	1.5
7:00 am	7,204.7	168.6	10.6	14,301.8	211.9	7.7	997.4	45.7	3.6
8:00 am	4,702.7	134.4	6.9	11,664.7	172.6	6.3	1,546.5	51.5	5.6
9:00 am	2,004.0	89.5	2.9	8,681.8	163.3	4.7	2,394.6	68.1	8.6
10:00 am	2,588.9	121.5	3.8	9,649.0	178.6	5.2	2,915.6	100.4	10.5
11:00 am	3,516.0	121.8	5.1	11,642.6	176.1	6.3	2,878.7	88.7	10.4
12:00 pm	3,565.5	132.6	5.2	13,993.6	215.8	7.5	2,501.1	74.4	9.0
1:00 pm	3,278.5	101.2	4.8	11,731.9	228.9	6.3	2,569.0	82.6	9.3
2:00 pm	6,123.8	164.7	9.0	12,142.5	189.7	6.5	2,568.0	88.2	9.3
3:00 pm	8,577.5	173.8	12.6	14,645.5	186.8	7.9	2,334.5	83.0	8.4
4:00 pm	5,868.6	155.9	8.6	15,446.0	211.4	8.3	1,919.4	59.2	6.9
5:00 pm	6,207.1	178.6	9.1	16,825.5	220.3	9.1	1,549.7	57.8	5.6
6:00 pm	3,904.2	125.9	5.7	10,649.4	160.1	5.7	1,033.2	53.0	3.7
7:00 pm	3,122.5	120.9	4.6	7,853.9	149.7	4.2	747.5	41.8	2.7
8:00 pm	2,518.1	111.2	3.7	5,930.4	144.8	3.2	475.3	33.6	1.7
9:00 pm	1,562.5	78.1	2.3	4,003.5	107.5	2.2	376.0	29.9	1.4
10:00 pm	768.7	75.2	1.1	2,165.9	85.0	1.2	163.6	23.6	0.6
11:00 pm	309.8	31.6	0.5	1,343.7	60.0	0.7	53.6	8.8	0.2
Not reported	115.4	20.8	0.2	129.2	23.9	0.1	81.0	21.5	0.3
Total	**68,289.1**	**745.2**	**100.0**	**185,798.7**	**906.2**	**100.0**	**27,692.3**	**465.2**	**100.0**

KEY: SE = standard error.

NOTES: Data are *daily trips,* which are generally defined as traveling from one address to another and not necessarily from home. Most daily trips are local. Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005.

TABLE 4-9 How People Get to Work: 2003

	Percentage of workers	Number of workers (thousands)
Drives self	79.4	91,607
Carpool	8.7	10,057
Mass transportation	4.4	5,081
Work at home	3.1	3,536
Walk only	2.7	3,171
Taxicab or other means	1.0	1,200
Bicycle or motorcycle	0.6	691
Total	**100.0**	**115,342**

NOTE: Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

TABLE 4-10a Workers Driving Alone to Work by Selected Characteristic: 1993 and 2003
Percent

	1993	2003
All workers	76.6	79.4
Black	65.7	73.0
Hispanic	65.1	67.5
Over 65 years old	71.9	75.9
Below poverty level	64.1	64.2

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

TABLE 4-10b Workers Driving Alone to Work by Selected Characteristic: 1993 and 2003
Number of workers (thousands)

	1993	2003
All workers	79,449	91,607
Black	6,664	8,908
Hispanic	5,043	9,793
Over 65 years old	3,825	4,723
Below poverty level	4,470	3,931

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States*, H150 (Washington, DC: Biennial issues).

TABLE 4-11a When People Depart for Work: 1993 and 2003
Number of workers (thousands)

	1993	2003
12:00–2:59 am	501	658
3:00–5:59 am	8,901	11,624
6:00–6:59 am	18,673	20,291
7:00–7:29 am	13,299	15,632
7:30–7:59 am	14,383	14,279
8:00–8:29 am	10,042	12,548
8:30–8:59 am	5,146	5,936
9:00–9:59 am	4,509	6,197
10:00 am–3:59 pm	8,725	10,460
4:00 pm–11:59 pm	5,606	6,484

NOTE: Time increments are consistent with the source document.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States,* H150 (Washington, DC: Biennial issues).

TABLE 4-11b When People Depart for Work: 1993 and 2003
Percent

	1993	2003
12:00–2:59 am	0.6	0.6
3:00–5:59 am	9.9	11.2
6:00–6:59 am	20.8	19.5
7:00–7:29 am	14.8	15.0
7:30–7:59 am	16.0	13.7
8:00–8:29 am	11.2	12.1
8:30–8:59 am	5.7	5.7
9:00–9:59 am	5.0	6.0
10:00 am–3:59 pm	9.7	10.0
4:00 pm–11:59 pm	6.2	6.2

NOTE: Time increments are consistent with the source document.

SOURCE: U.S. Department of Housing and Urban Development and U.S. Department of Commerce, U.S. Census Bureau, *American Housing Survey for the United States,* H150 (Washington, DC: Biennial issues).

TABLE 4-12 Long-Distance Trips and Population by Age: 2001

	Long-distance trips				Population	
Age group	Number	SE	Percent	SE	Number	Percent
0–4	115,225,493	4,437,993	4.4	0.16	19,363,867	6.8
5–17	343,836,299	10,469,412	13.1	0.35	53,239,685	18.7
18–29	408,287,370	15,405,778	15.6	0.51	46,887,873	16.4
18–23	169,718,337	7,951,794	6.5	0.29	24,182,799	8.5
24–29	238,569,033	13,051,406	9.1	0.46	22,705,074	8.0
30–44	774,328,843	21,857,253	29.6	0.64	65,764,297	23.1
45–54	456,884,948	12,509,793	17.5	0.47	39,200,481	13.8
55–64	292,533,009	11,173,336	11.2	0.40	25,299,892	8.9
65–74	159,955,574	5,307,273	6.1	0.20	18,329,175	6.4
75 and older	66,074,832	3,747,206	2.5	0.14	17,008,543	6.0
Total	**2,617,126,367**	**37,924,186**	**100.0**	**U**	**285,093,813**	**100.0**

KEY: SE = standard error. U = data are unavailable.

NOTE: Data may not add to total because of independent rounding.

SOURCES: Long-distance trips—U.S. Department of Transportation (USDOT), Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005. **Population—**U.S. Department of Commerce, U.S. Census Bureau, *National Estimates by Demographic Characteristics: Single Year of Age, Sex, Race, and Hispanic Origin,* available at http://www.census.gov/, as of March 2005.

TABLE 4-13a Long-Distance Trips by Age and Purpose: 2001
Percent

	Commute		Business		Pleasure		Personal business		Other		Total
Age group	**Percent**	**SE**	**Percent**	**SE**	**Percent**	**SE**	**Percent**	**SE**	**Percent**	**SE**	**Percent**
0–4	0.7	0.62	2.8	0.53	81.8	1.51	14.2	1.36	0.5	0.11	100.0
5–17	1.1	0.71	1.9	0.24	77.8	1.20	18.7	1.08	0.5	0.14	100.0
18–29	13.6	2.06	15.5	2.05	57.0	2.10	13.3	0.84	0.6	0.13	100.0
18–23	10.5	2.51	7.8	1.70	64.7	2.67	16.2	1.44	0.7	0.23	100.0
24–29	15.8	2.84	20.9	2.81	51.5	2.69	11.3	1.00	0.5	0.16	100.0
30–44	18.6	1.90	22.6	0.93	45.5	1.25	12.7	0.74	0.5	0.08	100.0
45–54	17.9	1.43	21.1	1.08	44.7	1.29	15.1	0.72	1.3	0.92	100.0
55–64	13.6	2.11	17.4	1.23	52.2	1.88	16.5	1.05	0.3	0.09	100.0
65–74	3.0	1.18	9.6	1.73	64.2	1.84	22.2	1.32	1.0	0.40	100.0
75 and older	0.2	0.16	6.0	1.25	66.3	2.43	27.1	2.45	0.5	0.22	100.0
Total	**12.6**	**0.83**	**15.8**	**0.50**	**55.4**	**0.77**	**15.4**	**0.46**	**0.7**	**0.18**	**100.0**

KEY: SE = standard error.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005.

TABLE 4-13b Long-Distance Trips by Age and Purpose: 2001
Number (thousands)

	Commute		Business		Pleasure		Personal business		Other		Total	
Age group	**Number**	**SE**	**Number**	**SE**	**Number**	**SE**	**Number**	**SE**	**Number**	**SE**	**Number**	**SE**
0–4	863.6	715.3	3,170.3	621.6	94,294.8	4,005.7	16,366.7	1,677.5	530.1	125.2	115,225.5	4,438.0
5–17	3,837.5	2,465.2	6,473.4	825.7	267,521.5	9,361.3	64,234.0	3,845.6	1,769.9	472.3	343,836.3	10,469.4
18–29	55,562.6	9,454.3	63,109.3	9,463.1	232,775.5	7,467.0	54,481.0	3,249.4	2,358.9	528.3	408,287.4	15,405.8
18–23	17,902.4	4,639.7	13,242.5	3,021.1	109,826.1	5,505.0	27,531.6	2,495.5	1,215.8	390.4	169,718.3	7,951.8
24–29	37,660.2	7,885.7	49,866.9	7,980.1	122,949.4	5,246.3	26,949.4	2,108.4	1,143.1	382.2	238,569.0	13,051.4
30–44	143,695.4	17,658.6	175,375.9	7,350.8	352,479.3	8,811.7	98,625.9	5,515.5	4,152.3	607.3	774,328.8	21,857.3
45–54	81,675.8	7,897.2	96,242.9	5,302.8	204,026.0	5,688.4	68,839.9	3,079.6	6,100.3	4,245.5	456,884.9	12,509.8
55–64	39,811.1	7,131.6	50,855.3	4,111.6	152,808.9	5,371.9	48,242.1	3,248.0	815.6	273.0	292,533.0	11,173.3
65–74	4,815.7	1,928.0	15,323.2	2,985.3	102,657.4	3,662.1	35,585.3	2,042.5	1,573.4	638.0	159,955.6	5,307.3
75 and older	106.8	108.2	3,940.5	884.4	43,806.2	2,604.6	17,897.8	2,041.6	323.6	143.1	66,074.8	3,747.2
Total	**330,368.6**	**24,537.0**	**414,490.8**	**14,148.8**	**1,450,369.5**	**23,365.7**	**404,272.7**	**11,544.5**	**17,624.7**	**4,607.3**	**2,617,126.4**	**37,924.2**

KEY: SE = standard error.

NOTE: Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005.

TABLE 4-14a Long-Distance Trips by Age and Mode: 2001

	Personal vehicle		Air		Bus, train, and other		
Age group	**Percent**	**SE**	**Percent**	**SE**	**Percent**	**SE**	**Total (%)**
0–4	94.0	0.8	5.4	0.8	0.6	0.2	100.0
5–17	87.9	0.7	5.1	0.5	7.0	0.6	100.0
18–29	90.4	0.8	6.7	0.6	2.8	0.6	100.0
18–23	91.9	0.9	5.0	0.7	3.0	0.5	100.0
24–29	89.4	1.3	7.8	0.8	2.7	1.0	100.0
30–44	88.3	0.6	9.3	0.6	2.3	0.3	100.0
45–54	88.9	1.1	8.2	0.5	2.0	0.3	100.0
55–64	90.4	0.6	7.1	0.5	2.5	0.4	100.0
65–74	90.3	1.0	4.8	0.6	4.8	0.8	100.0
75 and older	87.2	1.3	6.5	0.9	6.3	0.9	100.0
Total	**89.3**	**0.4**	**7.4**	**0.3**	**3.1**	**0.2**	**100.0**

KEY: SE = standard error.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005.

TABLE 4-14b Long-Distance Trips by Age and Mode: 2001
Number (thousands)

	Personal vehicle		Air		Other		Total	
Age group	Number	SE	Number	SE	Number	SE	Number	SE
0–4	108,313.8	4,269.9	6,182.9	907.1	728.8	264.3	115,225.5	4,438.0
5–17	302,204.2	9,575.6	17,491.9	1,871.3	23,926.4	2,124.6	343,836.3	10,469.4
18–29	369,244.1	15,358.4	27,265.3	2,090.8	11,562.1	2,539.8	408,287.4	15,405.8
18–23	156,028.8	7,890.8	8,553.4	1,115.9	5,136.1	843.3	169,718.3	7,951.8
24–29	213,215.3	12,728.6	18,711.9	1,751.2	6,426.0	2,299.9	238,569.0	13,051.4
30–44	683,674.2	21,489.0	72,313.0	3,895.7	17,722.2	2,270.7	774,328.8	21,857.3
45–54	406,073.6	11,279.2	37,396.6	2,115.5	9,261.6	1,209.8	456,884.9	12,509.8
55–64	264,504.3	10,854.7	20,629.3	1,364.6	7,317.2	1,243.1	292,533.0	11,173.3
65–74	144,491.4	5,054.5	7,701.4	897.5	7,700.6	1,354.0	159,955.6	5,307.3
75 and older	57,588.1	3,422.2	4,309.0	619.5	4,136.5	659.8	66,074.8	3,747.2
Total	**2,336,093.7**	**36,886.3**	**193,289.5**	**6,275.2**	**82,355.4**	**5,066.8**	**2,617,126.4**	**37,924.2**

KEY: SE = standard error.

NOTE: Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics and USDOT, Federal Highway Administration, *2001 National Household Travel Survey,* CD-ROM, February 2005.

TABLE 4-15a Long-Distance Trips by Gender and Age: 2001
Thousands

Age group	Female	SE	Male	SE	All
0–17	220,525	6,162	238,536	7,972	459,062
18–24	91,712	5,528	121,757	9,760	213,469
25–34	184,710	6,720	268,127	11,542	452,837
35–44	199,583	6,256	316,726	15,222	516,310
45–54	192,508	6,696	264,377	9,369	456,885
55–64	122,729	5,265	169,804	7,524	292,533
65–74	72,719	2,928	87,237	4,440	159,956
75 and older	32,673	2,096	33,402	2,220	66,075
All	**1,117,160**	**15,539**	**1,499,967**	**29,286**	**2,617,126**

KEY: SE = standard error.

NOTE: Data may not add to total because of independent rounding.

SOURCE: Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, "A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey," paper presented at the National Household Travel Survey Conference: Understanding Our Nation's Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

TABLE 4-15b Long-Distance Trips by Gender and Age: 2001
Percent

Age group	Female	SE	Male	SE	All
0–17	8.43	0.22	9.11	0.26	17.54
18–24	3.50	0.21	4.65	0.36	8.16
25–34	7.06	0.39	10.25	0.39	17.30
35–44	7.63	0.23	12.10	0.52	19.73
45–54	7.36	0.26	10.10	0.36	17.46
55–64	4.69	0.20	6.49	0.27	11.18
65–74	2.78	0.12	3.33	0.17	6.11
75 and older	1.25	0.08	1.28	0.09	2.52

KEY: SE = standard error.

SOURCE: Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, "A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey," paper presented at the National Household Travel Survey Conference: Understanding Our Nation's Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

TABLE 4-16a Long-Distance Trips by Gender and Purpose: 2001
Percent

Purpose	Female	SE	Male	SE	All
Commute	16.5	1.8	83.5	1.8	100.0
Business	23.3	1.1	76.7	1.1	100.0
Pleasure	51.1	0.4	48.9	0.4	100.0
Personal business	53.0	0.9	47.0	0.9	100.0
Other	52.3	1.9	47.7	1.9	100.0
All trips	**42.6**	**0.5**	**57.4**	**0.5**	**100.0**

KEY: SE = standard error.

SOURCE: Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, "A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey," paper presented at the National Household Travel Survey Conference: Understanding Our Nation's Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

TABLE 4-16b Long-Distance Trips by Gender and Purpose: 2001
Thousands

Purpose	Female	SE	Male	SE	All	SE
Commute	54,373	7,672	275,995	20,481	330,369	24,413
Business	96,678	4,790	317,813	13,121	414,491	14,077
Pleasure	741,100	13,857	708,634	12,272	1,449,735	23,241
Personal business	173,724	6,320	154,153	5,868	327,876	10,535
Other	46,353	2,815	42,284	3,225	88,637	5,119
All trips	**1,112,228**	**15,434**	**1,498,879**	**29,256**	**2,611,108**	**37,578**

KEY: SE = standard error.

NOTE: Data may not add to total because of independent rounding.

SOURCE: Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, "A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey," paper presented at the National Household Travel Survey Conference: Understanding Our Nation's Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

TABLE 4-17a Long-Distance Trips by Gender and Mode: 2001
Percent

	Female	SE	Male	SE	All
Personal vehicle	42.3	0.5	57.7	0.5	100.0
Air	42.6	1.1	57.4	1.1	100.0
Bus	54.9	2.7	45.1	2.7	100.0
Other	39.8	5.4	60.2	5.4	100.0
All trips	**42.6**	**0.5**	**57.4**	**0.5**	**100.0**

KEY: SE = standard error.

NOTE: *Other* includes trains, ships, and all other modes of long-distance travel.

SOURCE: Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, “A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey,” paper presented at the National Household Travel Survey Conference: Understanding Our Nation’s Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

TABLE 4-17b Long-Distance Trips by Gender and Mode: 2001
Thousands

	Female	SE	Male	SE	All	SE
Personal vehicle	988,971	28,751	1,347,123	14,744	2,336,094	36,700
Air	82,292	4,054	110,998	3,573	193,290	6,243
Bus	30,425	2,178	25,018	2,395	55,443	3,435
Other	10,705	2,709	16,208	1,477	26,912	3,048
All trips	**1,112,392**	**29,297**	**1,499,346**	**15,412**	**2,611,739**	**37,509**

KEY: SE = standard error.

NOTE: Data may not add to total because of independent rounding. *Other* includes trains, ships, and all other modes of long-distance travel.

SOURCE: Jonaki Bose, Lee Giesbrecht, Joy Sharp, Jeffery Memmott, Maha Khan, and Elizabeth Roberto, “A Picture of Long-Distance Travel Behavior of Americans Through Analysis of the 2001 National Household Travel Survey,” paper presented at the National Household Travel Survey Conference: Understanding Our Nation’s Travel, Nov. 1–2, 2004, available at http://www.trb.org/, as of March 2005.

TABLE 5-1/5-2 Travel Time Index and Change by Metro Area Population for 85 Metro Areas: 1993 and 2003

Urban areas	Population (000) 2003	Travel Time Index 1993	Travel Time Index 2003	1993–2003 % change
New York-Newark, NY-NJ-CT	17,700	1.28	1.39	8.59
Los Angeles-Long Beach-Santa Ana, CA	12,500	1.73	1.75	1.16
Chicago, IL-IN	8,125	1.34	1.57	17.16
Philadelphia, PA-NJ-DE-MD	5,285	1.20	1.32	10.00
Miami, FL	5,100	1.26	1.42	12.70
Dallas-Fort Worth-Arlington, TX	4,300	1.20	1.36	13.33
Washington, DC-VA-MD	4,270	1.38	1.51	9.42
San Francisco-Oakland, CA	4,125	1.44	1.54	6.94
Detroit, MI	4,050	1.36	1.38	1.47
Boston, MA-NH-RI	3,990	1.26	1.34	6.35
Houston, TX	3,750	1.24	1.42	14.52
Atlanta, GA	3,005	1.18	1.46	23.73
Phoenix, AZ	3,005	1.27	1.35	6.30
Seattle, WA	2,900	1.35	1.38	2.22
San Diego, CA	2,870	1.22	1.41	15.57
Minneapolis-St. Paul, MN	2,475	1.16	1.34	15.52
Baltimore, MD	2,310	1.20	1.37	14.17
St. Louis, MO-IL	2,075	1.18	1.22	3.39
Denver-Aurora, CO	2,050	1.24	1.40	12.90
Tampa-St. Petersburg, FL	2,050	1.30	1.33	2.31
Cleveland, OH	1,880	1.08	1.09	0.93
Pittsburgh, PA	1,795	1.09	1.10	0.92
San Jose, CA	1,675	1.34	1.37	2.24
Riverside-San Bernardino, CA	1,670	1.27	1.37	7.87
Portland, OR-WA	1,670	1.24	1.37	10.48
Sacramento, CA	1,655	1.19	1.37	15.13
Cincinnati, OH-KY-IN	1,605	1.15	1.22	6.09
Virginia Beach, VA	1,535	1.13	1.21	7.08
Kansas City, MO-KS	1,500	1.06	1.11	4.72
Milwaukee, WI	1,450	1.17	1.21	3.42

(Table continues on the next page)

TABLE 5-1/5-2 Travel Time Index and Change by Metro Area Population for 85 Metro Areas: 1993 and 2003 *(continued)*

Urban areas	Population (000) 2003	Travel Time Index 1993	Travel Time Index 2003	1993–2003 % change
Las Vegas, NV	1,360	1.24	1.39	12.10
San Antonio, TX	1,330	1.07	1.22	14.02
Orlando, FL	1,260	1.21	1.30	7.44
Providence, RI-MA	1,230	1.11	1.19	7.21
Columbus, OH	1,190	1.14	1.19	4.39
Buffalo, NY	1,130	1.04	1.10	5.77
New Orleans, LA	1,095	1.16	1.19	2.59
Oklahoma City, OK	1,090	1.04	1.10	5.77
Indianapolis, IN	1,035	1.16	1.24	6.90
Memphis, TN-MS-AR	995	1.11	1.22	9.91
Nashville-Davidson, TN	960	1.09	1.18	8.26
Jacksonville, FL	925	1.14	1.18	3.51
Salt Lake City, UT	920	1.13	1.28	13.27
Richmond, VA	915	1.07	1.09	1.87
Louisville, KY-IN	890	1.15	1.24	7.83
Hartford, CT	880	1.07	1.11	3.74
Bridgeport-Stamford, CT-NY	860	1.15	1.29	12.17
Austin, TX	855	1.14	1.33	16.67
Tulsa, OK	810	1.05	1.10	4.76
Raleigh-Durham, NC	785	1.12	1.19	6.25
Dayton, OH	740	1.07	1.08	0.93
Charlotte, NC-SC	725	1.17	1.31	11.97
Tucson, AZ	720	1.14	1.31	14.91
Honolulu, HI	700	1.19	1.21	1.68
Birmingham, AL	680	1.08	1.17	8.33
El Paso, TX-NM	670	1.07	1.17	9.35
Rochester, NY	660	1.04	1.07	2.88
Springfield, MA-CT	655	1.06	1.06	0.00
Omaha, NE-IA	635	1.10	1.18	7.27
Allentown-Bethlehem, PA-NJ	630	1.12	1.14	1.79

(Table continues on the next page)

TABLE 5-1/5-2 Travel Time Index and Change by Metro Area Population for 85 Metro Areas: 1993 and 2003 *(continued)*

Urban areas	Population (000) 2003	Travel Time Index 1993	Travel Time Index 2003	1993–2003 % change
Fresno, CA	595	1.12	1.14	1.79
Akron, OH	590	1.06	1.09	2.83
Grand Rapids, MI	585	1.11	1.14	2.70
Sarasota-Bradenton, FL	575	1.18	1.25	5.93
Oxnard-Ventura, CA	575	1.10	1.23	11.82
Albuquerque, NM	560	1.14	1.17	2.63
New Haven, CT	550	1.08	1.13	4.63
Albany-Schenectady, NY	525	1.04	1.08	3.85
Toledo, OH-MI	520	1.04	1.10	5.77
Colorado Springs, CO	480	1.07	1.19	11.21
Charleston-North Charleston, SC	470	1.15	1.20	4.35
Bakersfield, CA	440	1.04	1.07	2.88
Columbia, SC	430	1.04	1.06	1.92
Spokane, WA	355	1.08	1.08	0.00
Little Rock, AR	345	1.03	1.06	2.91
Cape Coral, FL	325	1.11	1.18	6.31
Corpus Christi, TX	320	1.03	1.05	1.94
Pensacola, FL-AL	310	1.11	1.12	0.90
Anchorage, AK	275	1.03	1.05	1.94
Eugene, OR	240	1.05	1.11	5.71
Salem, OR	215	1.06	1.11	4.72
Laredo, TX	200	1.04	1.08	3.85
Brownsville, TX	160	1.04	1.06	1.92
Beaumont, TX	145	1.04	1.07	2.88
Boulder, CO	115	1.05	1.08	2.86

NOTE: The Travel Time Index is the ratio of peak period travel time to free-flow travel time. It expresses the average amount of extra time it takes to travel in the peak period relative to free-flow travel.

SOURCE: Texas A&M University, Texas Transportation Institute, *2005 Urban Mobility Report* (College Station, TX: 2005), also available at http://tti.tamu.edu/, as of May 2005.

TABLE 5-3/5-4 Average Daytime Wait Times for Commerical Vehicles at Selected U.S. Surface Border Gateways: 2003 and 2004
Minutes

	2003	2004
United States-Canada border		
Port Huron-Bluewater Bridge, MI	26.8	25.2
Blaine-Pacific Highway, WA	18.7	15.0
Detroit-Ambassador Bridge, MI	16.1	14.8
Buffalo/Niagara Falls-Peace Bridge, NY	10.0	12.5
Champlain, NY	3.7	11.6
Sumas, WA	11.0	7.6
Buffalo/Niagara Falls-Lewiston Bridge, NY	12.1	7.2
Sweetgrass, MT	4.8	6.8
Derby Line, VT	6.1	5.6
Pembina, ND	5.6	5.4
Houlton, ME	3.3	5.3
Sault Ste. Marie, MI	6.7	5.1
Highgate Springs, VT	4.5	4.6
Detroit-Windsor Tunnel, MI	3.6	4.0
Calais-Ferry Point, ME	14.7	3.9
Jackman, ME	1.3	1.3
United States-Mexico border		
Laredo-World Trade Bridge, TX	17.2	20.5
Nogales-Mariposa, AZ	10.4	18.2
Otay Mesa, CA	15.9	15.5
El Paso-Ysleta, TX	8.3	11.0
Brownsville-Veterans International, TX	8.8	10.0
Hidalgo/Pharr, Pharr, TX	7.8	8.8
Calexico-East, CA	7.9	6.6
Tecate, CA	5.0	6.1
El Paso-Bridge of the Americas (BOTA), TX	6.1	5.9
Laredo-Colombia Solidarity, TX	4.9	3.7
Del Rio, TX	3.0	2.6
Rio Grande City, TX	3.1	2.5
Brownsville-Los Indios, TX	1.5	1.3
Santa Teresa, NM	1.4	1.1
Progreso, TX	0.7	0.8
Presidio, TX	1.6	0.5
Eagle Pass-Bridge I, TX	1.6	U

KEY: U = data are unavailable.

NOTES: Wait times for commercial vehicles are recorded hourly. Daytime hours (between 8:00 a.m. and 6:00 p.m.) are generally the busiest portion of the day and are representative of typical delays encountered by the majority of vehicles. Wait times can, however, vary considerably by crossing, time of day, and day of the week; and the actual delays that occur on occasion may be substantially longer than the averages represented above.

SOURCE: U.S. Department of Homeland Security, U.S. Customs and Border Protection, personal communication, April 2005.

TABLE 5-5 Average Daytime Wait Times for Passengers at Selected U.S. Surface Border Gateways: 2003 and 2004
Minutes

	2003	2004
United States-Canada border		
Blaine-Peace Arch, WA	21.1	13.7
Buffalo/Niagara Falls-Lewiston Bridge, NY	7.8	10.0
Blaine-Pacific Highway, WA	11.5	9.1
Champlain, NY	4.1	7.5
Sumas, WA	6.4	7.0
Port Huron-Bluewater Bridge, MI	7.7	6.7
Buffalo/Niagara Falls-Rainbow Bridge, NY	3.6	6.2
Buffalo/Niagara Falls-Peace Bridge, NY	5.5	5.9
Sault Ste. Marie, MI	8.0	5.8
Sweetgrass, MT	8.1	4.9
Detroit-Windsor Tunnel, MI	6.8	4.9
Calais-Ferry Point, ME	14.9	3.9
Pembina, ND	2.9	3.9
Highgate Springs, VT	6.8	3.5
Detroit-Ambassador Bridge, MI	4.7	3.3
Jackman, ME	3.4	2.2
Derby Line, VT	3.4	1.3
Average	**7.5**	**5.9**
United States-Mexico border		
San Ysidro, CA	42.3	36.1
Nogales-Deconcini, AZ	27.0	33.0
Nogales-Mariposa, AZ	21.2	28.6
Calexico-West, CA	21.9	25.1
Otay Mesa, CA	27.8	24.1
El Paso-Bridge of the Americas (BOTA), TX	35.4	23.8
San Luis, AZ	23.9	21.3
Laredo-Bridge II, TX	16.6	19.4
Laredo-Bridge I, TX	12.8	18.4
Tecate, CA	17.2	17.5
Hidalgo/Pharr, Hidalgo, TX	21.6	17.2
El Paso-Ysleta, TX	17.1	16.8
El Paso-Paso Del Norte (PDN), TX	17.2	16.0

(Table continues on the next page)

TABLE 5-5 Average Daytime Wait Times for Passengers at Selected U.S. Surface Border Gateways: 2003 and 2004 *(continued)*
Minutes

	2003	2004
Calexico-East, CA	9.1	14.0
Douglas, AZ	10.8	13.7
Hidalgo/Pharr, Pharr, TX	12.6	12.3
Brownsville-Gateway, TX	12.8	11.0
Brownsville-B&M, TX	13.2	11.0
Del Rio, TX	11.1	10.9
Brownsville-Veterans International, TX	12.0	9.5
Eagle Pass-Bridge I, TX	7.7	7.7
Andrade, CA	3.9	7.1
Eagle Pass-Bridge II, TX	6.8	6.1
Progreso, TX	4.5	5.8
Brownsville-Los Indios, TX	6.0	4.7
Roma, TX	4.5	4.3
Rio Grande City, TX	3.9	3.9
Santa Teresa, NM	4.1	2.1
Presidio, TX	6.0	0.9
Average	**14.5**	**14.6**

KEY: U = data are unavailable.

NOTES: Wait times for private vehicles are recorded hourly. Daytime hours (between 8:00 a.m. and 6:00 p.m.) are generally the busiest portion of the day and are representative of typical delays encountered by the majority of vehicles. Wait times can, however, vary considerably by crossing, time of day, and day of the week; and the actual delays that occur on occasion may be substantially longer than the averages represented above.

SOURCE: U.S. Department of Homeland Security, U.S. Customs and Border Protection, personal communication, April 2005.

TABLE 5-6a U.S. Air Carrier On-Time Performance: 1995–2004
Percentage of scheduled flights

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
On-time flights	78.6	74.5	77.9	77.2	76.1	72.6	77.4	82.1	82.0	78.1
Late arrivals	19.5	22.8	20.0	19.9	20.9	23.8	18.5	16.5	16.3	19.9
Diverted flights	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2
Canceled flights	1.7	2.4	1.8	2.7	2.8	3.3	3.9	1.2	1.6	1.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

NOTES: Percentage may not add to 100 because of independent rounding. Flights are on time if they depart from or arrive at the gate less than 15 minutes after their scheduled departure or arrival times. Data cover nonstop scheduled service flights between points within the United States (including territories) operated by U.S. air carriers that have at least 1 percent of total domestic scheduled service passenger revenues. The airlines required to report in 2004 were: Alaska Airlines, America West Airlines, American Airlines, American Eagle Airlines, ATA Airline (formerly doing business as American Trans Air), Atlantic Coast Airlines (became Independence Air in late 2004), Atlantic Southeast Airlines, Comair, Continental Airlines, Continental Express, Delta Airlines, ExpressJet Airlines, Northwest Airlines, Southwest Airlines, SkyWest Airlines, United Airlines, and US Airways. JetBlue Airways and Hawaiian Airlines reported voluntarily.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 5-6b.

TABLE 5-6b U.S. Air Carrier On-Time Performance: 1995–2004
Number of flights

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
On-time flights	4,185,788	3,989,281	4,218,165	4,156,980	4,207,293	4,130,185	4,619,234	4,329,635	5,317,886	5,566,338
Late arrivals	1,039,250	1,220,045	1,083,834	1,070,071	1,152,725	1,356,450	1,104,439	868,225	1,057,804	1,421,391
Diverted flights	10,492	14,121	12,081	13,161	13,555	14,254	12,909	8,356	11,381	13,784
Canceled flights	91,905	128,536	97,763	144,509	154,311	187,599	231,198	65,143	101,469	127,757
Total flights scheduled	**5,327,435**	**5,351,983**	**5,411,843**	**5,384,721**	**5,527,884**	**5,688,488**	**5,967,780**	**5,271,359**	**6,488,540**	**7,129,270**

NOTES: Flights are on time if they depart from or arrive at the gate less than 15 minutes after their scheduled departure or arrival times. Data cover nonstop scheduled service flights between points within the United States (including territories) operated by U.S. air carriers that have at least 1 percent of total domestic scheduled service passenger revenues. The airlines required to report in 2004 were: Alaska Airlines, America West Airlines, American Airlines, American Eagle Airlines, ATA Airline (formerly doing business as American Trans Air), Atlantic Coast Airlines (became Independence Air in late 2004), Atlantic Southeast Airlines, Comair, Continental Airlines, Continental Express, Delta Airlines, ExpressJet Airlines, Northwest Airlines, Southwest Airlines, SkyWest Airlines, United Airlines, and US Airways. JetBlue Airways and Hawaiian Airlines reported voluntarily.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Airline Service Quality Performance data, March 2005.

TABLE 5-7 Flight Delays by Cause by Month: January–December 2004
Number, except as noted

	Air carrier delay	Aircraft arriving late	National Airspace System delay	Security delay	Extreme weather	Total number of flights delayed	Delays as a percentage of scheduled flights
January	32,476	33,466	53,963	424	7,907	128,236	29.3
February	26,755	31,689	49,883	342	5,848	114,517	26.7
March	25,760	30,557	43,941	280	3,494	104,031	21.3
April	23,687	26,704	39,974	260	3,129	93,754	19.4
May	27,719	34,400	52,073	237	6,591	121,019	26.2
June	35,700	45,783	57,483	422	9,339	148,726	34.6
July	36,633	42,829	49,519	407	6,610	135,999	29.2
August	32,262	39,299	45,378	371	6,574	123,884	25.4
September	21,722	20,462	29,337	384	3,242	75,147	15.3
October	27,532	32,084	43,257	321	5,146	108,341	21.9
November	29,385	33,891	44,134	391	5,895	113,696	24.6
December	43,945	49,258	52,199	809	7,831	154,041	35.5
12-month average number	**30,298**	**35,035**	**46,762**	**387**	**5,967**	**118,449**	**NA**
12-month average percent	**25.6**	**29.6**	**39.5**	**0.3**	**5.0**	**NA**	**NA**

KEY: NA = not applicable.

NOTES: *Air carrier delay* is due to circumstances within the airline's control (e.g., maintenance or crew problems, aircraft cleaning, baggage loading, and fueling). *Aircraft arriving late* refers to the late arrival of the previous flight where the same aircraft is used for the present flight, causing the present flight to depart late. *National Airspace System* are delays and cancellations attributable to the national aviation system that refer to a broad set of conditions (e.g., nonextreme weather conditions, airport operations, heavy traffic volume, and air traffic control). A *security delay* is a delay or cancellation caused by evacuation of a terminal or concourse, reboarding of the aircraft because of a security breach, inoperative screening equipment, and/or long lines in excess of 29 minutes at screening areas. *Extreme weather* is significant meteorological conditions (actual or forecast) that, in the judgment of the carrier, delays or prevents the operation of a flight (e.g., tornado, blizzard, or hurricane).

The airlines required to report in 2004 were: Alaska Airlines, America West Airlines, American Airlines, American Eagle Airlines, ATA Airline (formerly doing business as American Trans Air), Atlantic Coast Airlines (became Independence Air in late 2004), Atlantic Southeast Airlines, Comair, Continental Airlines, Continental Express, Delta Airlines, ExpressJet Airlines, Northwest Airlines, Southwest Airlines, SkyWest Airlines, United Airlines, and US Airways. JetBlue Airways and Hawaiian Airlines reported voluntarily.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Airline Service Quality Performance data, March 2005.

TABLE 5-8 Air Travel Time Index (ATTI) and Change in Scheduled Travel Time: 1990–2004
Yearly averages
Index: 1990 = 100.0

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ATTI	100.0	98.8	98.2	98.5	98.4	99.4	101.3	100.3	101.3	102.3	105.0	101.8	99.4	99.0	101.9
Scheduled	100.0	100.5	100.3	99.9	99.7	99.6	99.6	100.3	101.2	101.7	102.5	103.3	102.5	102.2	102.6

NOTE: ATTI measures average times of nonstop flights using the time elapsed between scheduled departure and actual arrival, while controlling for different flight characteristics, such as distance.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using USDOT, BTS, Airline Service Quality Performance data, May 2005.

TABLE 5-9 Air Travel Time Index (ATTI), Air Travel Time Variability Index (ATTVI), and Operated Flights: 1990–2004
Yearly averages
Index: 1990 = 100.0

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ATTI	100.0	98.8	98.2	98.5	98.4	99.4	101.3	100.3	101.3	102.3	105.0	101.8	99.4	99.0	101.9
ATTVI	100.0	93.5	87.5	93.2	94.9	107.4	124.2	116.9	127.1	134.2	148.7	129.3	115.4	113.2	129.9
Operated flights	100.0	97.7	100.8	103.2	108.3	116.6	119.4	118.9	119.2	125.3	128.6	126.3	122.9	135.1	148.9

NOTES: ATTVI measures the variability of times of nonstop flights based on differences between travel times on individual flights and the average travel times for the same flight. The number of operations is based on data for large certificated carriers.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using the following: **ATTI and Variability—**USDOT, BTS, Airline Service Quality Performance data, May 2005. **Operated flights—**USDOT, BTS, Airline Market and Segment (T-100) data, May 2005.

TABLE 5-10 Amtrak Trains Arriving On Time: 1994–2000 and 2001–2004
Percent

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
System on-time performance	72	76	71	74	79	79	78	75	76	74	71
Short distance (<400 miles)	78	81	76	79	81	80	82	85	87	82	76
Long distance (≥400 miles)	49	57	49	53	59	61	55	69	70	70	68

NOTES: Short distance includes all Amtrak Northeast Corridor and Empire Service (New York State) trains. Amtrak provides on-time performance data in percentages. Amtrak revised its methodology for collecting and calculating on-time performance data in 2001. This resulted in minor changes in short-distance, long-distance, and system on-time performance percentages starting in 2001 compared with previous years.

SOURCES: 1994–1999—National Railroad Passenger Corp. (Amtrak), *Amtrak Annual Report* (Washington, DC: Annual issues). **2000—**Amtrak, personal communication, October 2003. **2001–2004—**Amtrak, personal communication, February 2005.

TABLE 5-11 Amtrak Hours of Delay by Cause: 2000–2004

	2001	2001	2002	2003	2004
Amtrak	23,337	27,822	26,575	25,711	28,328
Host railroad	43,881	52,273	55,090	57,346	61,256
Other	3,176	3,741	4,266	5,355	5,577
Total	**70,396**	**83,837**	**85,932**	**88,413**	**95,162**

NOTES: Data may not add to total because of independent rounding. *Amtrak* includes all delays when operating on Amtrak-owned tracks and delays for equipment or engine failure, passenger handling, holding for connections, train servicing, and mail/baggage handling when on tracks of a host railroad.
Host railroad includes all operating delays not attributable to Amtrak when operating on tracks of a host railroad, such as track- and signal-related delays, power failures, freight and commuter train interference, and routing delays. Also includes delays for track repairs/track conditions, freight train interference, and signal delays.
Other includes delays not attributable to Amtrak or host railroads, such as customs and immigrations, law enforcement action, weather, or waiting for scheduled departure time.

SOURCES: 2000—Amtrak, personal communication, October 2003. **2001–2004—**Amtrak, personal communication, February 2005.

TABLE 5-12/5-13 Rail Freight Average Speeds, Revenue Ton-Miles, and Terminal Dwell Times

Quarter	Average line-haul speed (mph)	Revenue ton-miles (billions)	Average terminal dwell time (hours)
99Q3	23.1	364.0	U
99Q4	23.4	372.8	U
00Q1	24.3	358.6	U
00Q2	24.0	359.7	U
00Q3	23.8	376.0	U
00Q4	24.0	361.3	U
01Q1	24.4	370.4	U
01Q2	24.0	364.6	U
01Q3	24.3	367.7	U
01Q4	24.9	371.3	U
02Q1	25.5	352.0	U
02Q2	25.6	369.1	U
02Q3	25.0	361.2	U
02Q4	25.3	364.2	U
03Q1	24.7	368.4	U
03Q2	24.4	379.2	U
03Q3	23.8	387.6	U
03Q4	23.7	396.0	U
04Q1	23.2	395.6	U
04Q2	22.3	409.8	23.5
04Q3	22.5	417.3	23.1
04Q4	22.1	429.3	24.0
05Q1	21.8	416.7	24.2

KEY: U = data are unavailable.

NOTES: Data cover Class I railroads only (see Glossary for definition). Average line-haul speed data for 2004 and 2005 are preliminary.

SOURCES: Average line-haul speed and terminal dwell time—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data reported by Class I railroads to the Association of American Railroads for posting at http://www.railroadpm.org/, and Surface Transportation Board (STB), *Statistics of Class I Railroads in the United States*, table 8, available at http://www.stb.dot.gov/, as of May 2005. **Revenue ton-miles—**STB, *Quarterly Selected Earnings Report*, available at http://www.stb.dot.gov/, as of May 2005.

TABLE 6-1/6-2 Transit Passenger-Miles by Type of Service: 1993–2003
Millions

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bus	17,363.7	17,195.4	17,024.0	16,802.2	17,509.2	17,873.7	18,683.8	18,807.3	19,582.9	19,527.8	19,178.9
Heavy rail	10,231.0	10,668.0	10,558.8	11,530.2	12,056.1	12,284.4	12,902.1	13,843.5	14,178.1	13,663.2	13,606.2
Commuter rail	6,912.0	7,996.0	8,244.0	8,350.4	8,037.5	8,702.3	8,764.0	9,399.9	9,544.0	9,499.8	9,555.4
Light rail	703.7	831.0	858.7	955.2	1,023.7	1,115.4	1,190.2	1,339.4	1,427.0	1,431.7	1,476.0
Demand response	389.5	377.0	397.0	391.0	466.0	513.4	559.0	589.0	626.0	651.0	688.6
Other	625.0	814.0	888.0	955.0	1,088.0	1,116.0	1,180.0	1,121.0	1,150.0	1,171.7	1,171.7
Total	**36,224.9**	**37,881.5**	**37,970.6**	**38,984.1**	**40,180.2**	**41,605.0**	**43,278.9**	**45,100.2**	**46,507.5**	**45,945.2**	**45,676.8**

NOTES: *Other* includes modes such as automated guideway, Alaska Railroad, cable car, ferryboat, inclined plane, monorail, trolleybus, and vanpool. Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation, Federal Transit Administration, *National Transit Summaries and Trends,* annual reports, available at http://www.ntdprogram.com/, as of April 2005.

TABLE 6-3/6-4 Transit Ridership by Type of Service: 1993–2003
Millions of unlinked trips

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bus	4,638.5	4,629.4	4,579.1	4,505.6	4,602.0	4,753.7	4,991.9	5,040.2	5,215.1	5,267.5	5,146.5
Commuter rail	320.8	339.0	343.5	352.2	357.2	380.6	395.7	412.8	418.1	414.1	409.7
Heavy rail	2,045.5	2,169.4	2,033.5	2,156.9	2,429.5	2,392.8	2,521.4	2,632.2	2,728.3	2,688.0	2,666.8
Light rail	187.5	282.2	249.3	258.7	259.4	272.9	288.6	316.2	333.9	336.5	337.7
Other	240.0	282.0	298.0	291.0	306.0	315.0	326.0	318.6	312.0	311.0	315.3
Total	**7,432.7**	**7,701.6**	**7,503.7**	**7,564.6**	**7,954.2**	**8,115.1**	**8,523.2**	**8,719.9**	**9,007.8**	**9,016.7**	**8,876.0**

NOTES: *Other* includes vanpool, demand response, ferryboats, inclined planes, monorail, jitney, publico, Alaska Railroad, aerial tramway, and trolley buses. Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation, Federal Transit Administration, *National Transit Summaries and Trends,* annual reports, available at http://www.ntdprogram.com/, as of April 2005.

TABLE 6-5 Top 30 Transit Authorities by Unlinked Passenger Trips: 2003

Authority	Number of unlinked trips (thousands)
MTA New York City Transit (NYCT)	2,615,470,373
Chicago Transit Authority (CTA)	474,742,925
Los Angeles County Metropolitan Transportation Authority (LACMTA)	429,804,232
Washington Metropolitan Area Transit Authority (WMATA)	391,992,038
Massachusetts Bay Transportation Authority (MBTA)	388,605,206
Southeastern Pennsylvania Transportation Authority (SEPTA)	320,584,200
New Jersey Transit Corporation (NJTransit)	222,348,751
San Francisco Municipal Railway (MUNI)	216,947,379
Metropolitan Atlanta Rapid Transit Authority (MARTA)	142,762,444
New York City Department of Transportation (NYCDOT)	123,090,194
Maryland Transit Administration (MTA)	111,655,555
King County Department of Transportation—Metro Transit Division (King County Metro)	98,547,887
Tri-County Metropolitan Transportation District of Oregon (Tri-Met)	98,502,917
MTA Long Island Rail Road (MTA-LIRR)	97,958,000
San Francisco Bay Area Rapid Transit District (BART)	94,261,459
Metropolitan Transit Authority of Harris County, Texas (Metro)	93,001,555
Miami-Dade Transit (MDT)	86,278,051
Denver Regional Transportation District (RTD)	78,584,328
Dallas Area Rapid Transit (DART)	77,678,807
Metro-North Commuter Railroad Company, NY (MTA-MNCR)	72,933,707
City and County of Honolulu Department of Transportation Services (DTS)	69,848,768
Port Authority of Allegheny County	68,242,432
Northeast Illinois Regional Commuter Railroad Corporation (Metra)	67,726,987
Metro Transit, MN	67,235,776
Port Authority Trans-Hudson Corporation (PATH)	66,284,718

(Table continues on the next page)

TABLE 6-5 Top 30 Transit Authorities by Unlinked Passenger Trips: 2003 *(continued)*

Authority	Number of unlinked trips (thousands)
Orange County Transportation Authority (OCTA)	66,034,770
Alameda-Contra Costa Transit District (AC Transit)	62,963,073
The Greater Cleveland Regional Transit Authority (GCRTA)	59,641,790
Milwaukee County Transit System (MCTS)	58,200,166
New Orleans Regional Transit Authority (NORTA)	53,316,933
Total, top 30 authorities	**6,875,245,421**
Total, all authorities	**8,876,000,000**
Top 30 authorities as percent of all authorities	77.5

SOURCES: U.S. Department of Transportation, Federal Transit Administration (FTA), National Transit Database, available at http://www.ntdprogram.com/, as of April 2005. **Total, all authorities—**FTA, personal communication, August 2005.

TABLE 6-6 ADA-Compliant Transit Rail Stations: 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total number of transit rail stations	2,452	2,554	2,573	2,617	2,643	2,675	2,728	2,777	2,807	2,786	2,799
ADA-compliant transit rail stations (number)	553	659	729	836	911	1,050	1,170	1,278	1,355	1,457	1,537
ADA-compliant transit rail stations (percent)	22.6	25.8	28.3	31.9	34.5	39.3	42.9	46.0	48.3	52.3	54.9

KEY: ADA = Americans with Disabilities Act.

NOTE: Table does not include station data for automated guideway, jitney, and inclined plane transit services.

SOURCES: 1993–2001: U.S. Department of Transportation, Federal Transit Administration, National Transit Database, personal communication, May 2005. **2002–2003:** U.S. Department of Transportation, Federal Transit Administration, *National Transit Summaries and Trends*, annual reports, table 21, available at http://www.ntdprogram.com/, as of May 2005.

TABLE 6-7a Share of Transit Rail Stations that are ADA-Compliant by Service Type: 1993–2003
Percent

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Commuter rail	22.4	24.1	29.2	32.0	34.8	44.6	46.8	48.0	50.5	54.6	55.9
Heavy rail	22.1	23.4	24.0	24.8	25.7	25.9	28.3	33.7	35.2	36.8	40.7
Light rail	23.8	34.5	35.1	45.4	50.0	52.3	60.1	62.4	65.0	71.6	75.9
Other rail	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total ADA-compliant transit rail stations	**22.6**	**25.8**	**28.3**	**31.9**	**34.5**	**39.3**	**42.9**	**46.0**	**48.3**	**52.3**	**56.7**

KEY: ADA = Americans with Disabilities Act.

NOTES: *Other rail* includes monorail and (for 2001–2003 only) Alaska Railroad. Table does not include station data for automated guideway, jitney, and inclined plane transit services. Percentages may not add to 100 because of independent rounding.

SOURCES: 1993–2001: U.S. Department of Transportation (USDOT), Federal Transit Administration (FTA), personal communication, May 2005. **2002–2003:** USDOT, FTA, *National Transit Summaries and Trends*, annual reports, table 21, available at http://www.ntdprogram.com/, as of May 2005.

TABLE 6-7b Transit Rail Stations that are ADA-Compliant by Service Type: 1993–2003
Number

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Commuter rail	242	262	322	356	388	500	533	552	583	624	643
Heavy rail	217	231	237	245	256	258	284	340	359	366	416
Light rail	92	164	168	233	265	290	351	384	408	458	466
Other rail	2	2	2	2	2	2	2	2	5	9	12
ADA-compliant transit rail stations	**553**	**659**	**729**	**836**	**911**	**1,050**	**1,170**	**1,278**	**1,355**	**1,457**	**1,537**
Total number of transit rail stations	**2,452**	**2,554**	**2,573**	**2,617**	**2,643**	**2,675**	**2,728**	**2,777**	**2,807**	**2,786**	**2,799**

KEY: ADA = Americans with Disabilities Act.

NOTES: *Other rail* includes monorail and (for 2001–2003 only) Alaska Railroad. Table does not include station data for automated guideway, jitney, and inclined plane transit services. Data may not add to total because of independent rounding.

SOURCES: 1993–2001: U.S. Department of Transportation (USDOT), Federal Transit Administration (FTA), personal communication, May 2005. **2002–2003:** USDOT, FTA, *National Transit Summaries and Trends*, annual reports, table 21, available at http://www.ntdprogram.com/, as of May 2005.

TABLE 7-1a Average Household Transportation Expenditures: 1993–2003
Chained 2000 dollars

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Vehicle purchases	2,569	2,889	2,693	2,820	2,732	2,989	3,320	3,418	3,561	3,687	3,834
Gasoline and motor oil	1,281	1,287	1,293	1,310	1,330	1,415	1,349	1,291	1,328	1,366	1,268
Other vehicle expenses	1,806	1,925	1,979	2,025	2,206	2,202	2,262	2,281	2,317	2,370	2,216
Other transportation	368	437	396	467	421	450	407	427	393	378	364
Total	**6,025**	**6,538**	**6,361**	**6,621**	**6,689**	**7,056**	**7,337**	**7,417**	**7,600**	**7,801**	**7,681**

NOTES: Data may not add to total because of independent rounding. Data are based on survey results. The Bureau of Labor Statistics (BLS) uses the term consumer unit rather than household. BLS defines a consumer unit as 1) members of a household related by blood, marriage, adoption, or other legal arrangement; 2) a person living alone; sharing a household with others; rooming in a private home, lodging, or in permanent living quarters in a hotel or motel but who is financially independent; or 3) two or more persons living together and making joint expenditure decisions.

Other transportation includes fares for mass transit, buses, trains, airlines, taxis, school buses for which a fee is charged, and boats.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollar amounts (see table 7-1b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data in table 7-1b.

TABLE 7-1b Average Household Transportation Expenditures: 1993–2003
Current dollars

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Vehicle purchases	2,319	2,725	2,638	2,815	2,736	2,964	3,305	3,418	3,579	3,665	3,732
Gasoline and motor oil	977	986	1,006	1,082	1,098	1,017	1,055	1,291	1,279	1,235	1,333
Other vehicle expenses	1,843	1,953	2,015	2,058	2,230	2,206	2,254	2,281	2,375	2,471	2,331
Other transportation	314	381	355	427	393	429	397	427	400	389	385
Total	**5,453**	**6,045**	**6,014**	**6,382**	**6,457**	**6,616**	**7,011**	**7,417**	**7,633**	**7,760**	**7,781**

NOTES: Data may not add to total because of independent rounding. Data are based on survey results. The Bureau of Labor Statistics (BLS) uses the term consumer unit rather than household. BLS defines a consumer unit as 1) members of a household related by blood, marriage, adoption, or other legal arrangement; 2) a person living alone; sharing a household with others; rooming in a private home, lodging, or in permanent living quarters in a hotel or motel but who is financially independent; or 3) two or more persons living together and making joint expenditure decisions.

Other transportation includes fares for mass transit, buses, trains, airlines, taxis, school buses for which a fee is charged, and boats.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Expenditure Survey,* available at http://www.bls.gov/, as of March 2005.

TABLE 7-2a Average Cost per Mile of Owning and Operating an Automobile: 1993–2003
Cents (in chained 2000 dollars)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Variable costs	11	11	11	11	12	13	12	12	14	12	13
Fixed costs	33	32	32	33	34	36	37	37	37	39	40
Total costs	**44**	**43**	**43**	**44**	**46**	**49**	**49**	**49**	**51**	**51**	**53**

NOTES: Data are the cost per mile based on 15,000 miles per year and a composite of three current model American automobiles. Fuel costs are based on a late year average price per gallon of regular unleaded gasoline. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 7-2b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data in table 7-2b.

TABLE 7-2b Average Cost per Mile of Owning and Operating an Automobile: 1993–2003
Cents (in current dollars)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Variable costs	9	9	10	10	11	11	11	12	14	12	13
Fixed costs	29	30	32	33	34	35	36	37	37	38	39
Total costs	**38**	**39**	**42**	**43**	**45**	**46**	**47**	**49**	**51**	**50**	**52**

NOTE: Data are the cost per mile based on 15,000 miles per year and a composite of three current model American automobiles. Fuel costs are based on a late year average price per gallon of regular unleaded gasoline.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004* (Washington, DC: 2005), table 3-14.

TABLE 7-3 Average Amtrak Revenue per Revenue Passenger-Mile: 1993–2002

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Revenue per RPM (chained 2000 dollars)	0.16	0.15	0.16	0.16	0.17	0.17	0.21	0.22	0.22	0.23
Revenue per RPM (current dollars)	0.13	0.12	0.14	0.15	0.15	0.15	0.20	0.22	0.23	0.25

KEY: RPM = revenue passenger-mile.

NOTES: Amtrak data are not available prior to 1993. Revenue includes revenue from concessions and other passenger services in addition to passenger fares. A revenue passenger-mile is the number of revenue passengers multiplied by the number of miles traveled by each passenger. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars to chained 2000 dollars. Data beyond 2002 were not available at the time this report was prepared.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics, calculations based on Association of American Railroads, *Railroad Facts* (Washington, DC: 1994–2004 issues), annual Amtrak passenger revenue and revenue passenger-miles data.

TABLE 7-4 Average Class I Intercity Bus Fare: 1992–2002

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Class I intercity bus (chained 2000 dollars)	22.93	23.87	22.16	23.22	25.91	23.51	24.79	27.36	29.46	29.31	28.26
Class I intercity bus (current dollars)	21.15	21.32	19.77	20.10	22.85	20.83	23.14	26.16	29.46	30.27	30.11

NOTES: To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars to chained 2000 dollars. Data beyond 2002 were not available at the time this report was prepared.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), *National Transportation Statistics 2003,* tables 3-15a and 3-15b, available at http://www.bts.gov/, as of May 2004. **2002—**USDOT, BTS, personal communication, May 2004.

TABLE 7-5a/7-6a Average Transit Fare per Passenger-Mile by Service Type: 1993–2003
Cents (in chained 2000 dollars)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bus	18	19	19	19	18	20	20	21	19	18	18
Commuter rail	16	15	14	14	15	14	15	15	15	14	14
Demand response	19	33	27	24	22	19	20	20	21	22	23
Heavy rail	21	21	21	20	19	19	18	18	17	17	17
Light rail	17	18	16	15	13	13	14	13	14	15	14
Trolley bus	32	33	32	30	30	30	32	31	31	30	27
Other	17	20	19	13	14	11	12	13	14	14	14
Total	**18**	**19**	**19**	**18**	**18**	**18**	**18**	**18**	**18**	**17**	**17**

NOTES: Data for 2003 are preliminary. Fares include subsidies. For definitions of service types, see Glossary. *Other* includes aerial tramway, automated guideway transit, cable car, inclined plane, and monorail. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 7-5b/7-6b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data in table 7-5b/7-6b.

TABLE 7-5b/7-6b Average Transit Fare per Passenger-Mile: 1993–2003
Cents (in current dollars)

	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Bus	15	17	17	18	18	20	20	21	20	19	19
Commuter rail	14	14	13	14	15	14	15	15	15	15	15
Demand response	17	30	24	24	23	19	20	20	21	23	23
Heavy rail	19	19	19	20	19	19	18	18	18	18	18
Light rail	15	16	15	15	13	13	14	13	14	16	16
Trolley bus	28	29	29	30	30	30	32	31	32	32	32
Other	15	18	17	13	14	11	12	13	14	15	15
Total	**16**	**17**	**17**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**

NOTES: Data for 2003 are preliminary. Fares include subsidies. For definitions of service types, see Glossary. *Other* includes aerial tramway, automated guideway transit, cable car, inclined plane, and monorail.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on American Public Transportation Association, *Public Transportation Fact Book 2005* (Washington, DC: 2005), tables 11 and 71.

TABLE 7-7 Air Travel Price Index by City of Origin for Three Medium-Sized U.S. Cities: 1995–2004
All classes of service combined, domestic carriers only
Q1: 1995 = 100.0

Quarter	Charleston, SC	Colorado Springs, CO	Des Moines, IA
95Q1	100.0	100.0	100.0
95Q2	102.5	95.5	102.5
95Q3	104.5	90.0	97.1
95Q4	104.9	81.8	95.7
96Q1	103.2	76.4	95.5
96Q2	93.2	83.0	96.1
96Q3	98.8	83.8	95.7
96Q4	97.8	79.6	101.3
97Q1	100.2	80.8	106.1
97Q2	102.4	81.9	105.5
97Q3	99.2	86.3	107.1
97Q4	104.9	93.3	115.3
98Q1	104.5	94.6	103.0
98Q2	102.4	93.6	96.5
98Q3	96.8	98.5	94.9
98Q4	98.9	98.0	91.0
99Q1	102.1	104.8	93.1
99Q2	104.4	106.2	94.9
99Q3	101.6	105.9	92.8
99Q4	102.0	107.8	91.9
00Q1	105.0	111.9	94.8
00Q2	105.3	113.0	100.7
00Q3	103.6	113.0	99.6
00Q4	108.6	110.9	96.3

(Table continues on the next page)

TABLE 7-7 Air Travel Price Index by City of Origin for Three Medium-Sized U.S. Cities: 1995–2004 *(continued)*
All classes of service combined, domestic carriers only
Q1: 1995 = 100.0

Quarter	Charleston, SC	Colorado Springs, CO	Des Moines, IA
01Q1	117.4	119.6	102.4
01Q2	110.7	111.1	100.7
01Q3	112.5	108.4	95.4
01Q4	107.4	106.7	92.6
02Q1	112.5	109.9	97.8
02Q2	112.3	105.4	95.9
02Q3	111.8	105.1	91.5
02Q4	105.9	107.6	91.4
03Q1	113.7	104.5	91.5
03Q2	122.1	104.9	89.8
03Q3	120.6	108.6	92.2
03Q4	116.1	105.9	93.9
04Q1	123.7	109.5	95.7
04Q2	119.2	105.0	95.4
04Q3	111.2	105.2	92.8
04Q4	106.5	105.6	92.8

NOTE: The Bureau of Transportation Statistics computes the *Air Travel Price Index* values using the Fisher Index formula.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Air Travel Price Index*, available at http://www.bts.gov/, as of May 2005.

TABLE 7-8 Air Travel Price Index by City of Origin for Three Major U.S. Cities: 1995–2004
All classes of service combined, domestic carriers only
Q1: 1995 = 100.0

Quarter	New York, NY	Los Angeles (Greater), CA	Chicago, IL
95Q1	100.0	100.0	100.0
95Q2	103.2	100.7	104.7
95Q3	103.9	101.8	106.1
95Q4	103.8	98.5	105.1
96Q1	100.8	98.4	101.6
96Q2	101.6	100.0	102.8
96Q3	101.0	100.3	103.8
96Q4	105.4	99.6	107.0
97Q1	105.9	103.4	107.9
97Q2	108.6	105.3	113.3
97Q3	107.8	104.8	113.2
97Q4	117.3	111.1	120.1
98Q1	113.2	110.5	108.1
98Q2	109.7	104.6	106.3
98Q3	107.0	104.6	105.3
98Q4	106.6	104.3	104.8
99Q1	107.9	107.5	108.2
99Q2	108.4	107.4	110.2
99Q3	106.3	106.4	106.8
99Q4	110.4	108.2	107.4
00Q1	113.5	112.1	110.8
00Q2	116.6	114.4	112.8
00Q3	117.8	116.2	114.2
00Q4	120.8	116.8	118.3

(Table continues on the next page)

TABLE 7-8 Air Travel Price Index by City of Origin for Three Major U.S. Cities: 1995–2004 *(continued)*
All classes of service combined, domestic carriers only
Q1: 1995 = 100.0

Quarter	New York, NY	Los Angeles (Greater), CA	Chicago, IL
01Q1	124.3	121.4	125.2
01Q2	120.2	115.0	121.4
01Q3	114.5	111.2	113.0
01Q4	110.1	107.9	107.5
02Q1	114.2	114.5	111.6
02Q2	113.0	112.2	110.6
02Q3	110.6	108.3	102.9
02Q4	111.3	110.0	104.2
03Q1	112.7	111.6	103.4
03Q2	111.3	108.4	104.1
03Q3	109.4	109.9	108.0
03Q4	110.8	109.3	109.3
04Q1	111.1	107.9	106.8
04Q2	111.4	107.4	104.3
04Q3	106.2	106.3	99.0
04Q4	105.3	105.4	99.5

NOTE: The Bureau of Transportation Statistics computes the *Air Travel Price Index* values using the Fisher Index formula.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Air Travel Price Index*, available at http://www.bts.gov/, as of May 2005.

TABLE 7-9 Comparison of Airfare Indexes: 1995–2004
Not seasonally adjusted, domestic carriers only
Q1: 1995 = 100.0

Quarter	Air Travel Price Index (all origins)	Air Travel Price Index (U.S origin only)	Air Travel Price Index (foreign origin only)
95Q1	100.0	100.0	100.0
95Q2	101.9	101.1	106.7
95Q3	102.3	100.4	113.6
95Q4	98.6	99.0	97.6
96Q1	98.4	98.7	97.3
96Q2	97.8	97.8	98.4
96Q3	99.3	98.4	105.6
96Q4	98.2	99.3	93.4
97Q1	100.5	102.0	93.3
97Q2	101.9	103.5	94.4
97Q3	101.9	102.2	101.9
97Q4	105.2	107.8	91.8
98Q1	101.4	104.6	84.5
98Q2	97.5	100.0	85.2
98Q3	97.3	99.5	86.3
98Q4	96.2	99.1	81.1
99Q1	98.9	102.2	81.6
99Q2	98.7	102.1	80.7
99Q3	98.4	100.4	88.0
99Q4	98.8	101.7	83.6
00Q1	102.5	106.1	83.0
00Q2	104.6	108.2	85.1
00Q3	106.4	109.0	92.8
00Q4	107.3	111.6	84.4

(Table continues on the next page)

TABLE 7-9 Comparison of Airfare Indexes: 1995–2004 *(continued)*
Not seasonally adjusted, domestic carriers only
Q1: 1995 = 100.0

Quarter	Air Travel Price Index (all origins)	Air Travel Price Index (U.S origin only)	Air Travel Price Index (foreign origin only)
01Q1	111.8	116.9	84.2
01Q2	107.4	111.8	83.8
01Q3	103.5	106.0	89.7
01Q4	99.1	102.9	78.1
02Q1	103.8	108.2	78.8
02Q2	102.6	106.4	80.9
02Q3	101.2	103.4	90.0
02Q4	101.1	104.7	81.2
03Q1	104.1	108.0	82.5
03Q2	102.5	105.8	84.7
03Q3	103.3	105.5	93.2
03Q4	103.2	106.3	87.5
04Q1	105.3	108.6	88.7
04Q2	103.6	106.2	91.1
04Q3	101.4	102.5	98.5
04Q4	100.0	102.2	90.3

NOTES: The Bureau of Transportation Statistics computes the *Air Travel Price Index* values using the Fisher Index formula. *U.S. origin only* measures change in the cost of itineraries originating in the United States, whether the destinations are domestic or international. *Foreign origin only* measures change in the cost of itineraries with a foreign origin and a U.S. destination. *All origins* (Full-scope ATPI) combines the U.S.- and foreign-origin itineraries.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Air Travel Price Index*, available at http://www.bts.gov/, as of May 2005.

TABLE 8-1 Change in Labor Productivity of Major Sectors: 1992–2002
Output per hour
Index: 1992 = 100.0

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
For-hire transportation	100.0	100.3	103.7	103.8	105.6	109.3	107.9	110.4	114.0	111.1	118.4
Manufacturing	100.0	102.7	106.1	109.9	113.9	118.0	123.6	128.1	134.1	136.9	146.5
Business	100.0	100.3	101.5	101.6	104.6	106.5	109.4	112.6	115.9	118.8	123.9

NOTES: Labor productivity for transportation measures quality-adjusted ton- and passenger-miles per hour. Quality adjustment corrects for differences in services and handling, e.g., the difference between flying first class and coach or differences in the handling requirements and revenue generation of high- and low-value commodities.

Labor productivity for transportation is calculated by dividing an index of output by an index of employee hours. The transportation output index is a weighted average of output indexes of railroad, trucking, and air transportation. The shares of each mode in total transportation value added (Gross Domestic Product) are used as annual weighting factors. The index of transportation employee hours is computed by weighting the employee hour indexes of each mode by its share in total transportation employees. The modal output and employee hour indexes were initially estimated by the Bureau of Labor Statistics using 1987 as the base year.

SOURCES: For-hire transportation—U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Labor (USDOL), Bureau of Labor Statistics (BLS), Office of Productivity and Technology, “Industry Productivity Database,” available at http://www.bls.gov/, as of November 2004; and U.S. Department of Commerce, Bureau of Economic Analysis, “Gross Domestic Product by Industry,” available at http://www.bea.gov/, as of November 2004. **Manufacturing and business—**USDOL, BLS, Office of Productivity and Technology, “Industry Productivity Database,” available at http://www.bls.gov/, as of November 2004.

TABLE 8-2 Change in Labor Productivity of the For-Hire Transportation Industries: 1992–2002
Index: 1992 = 100.0

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Railroad	100.0	104.1	107.7	111.8	119.6	121.5	124.1	128.2	138.9	148.1	160.3
Trucking, long distance	100.0	98.1	100.6	97.8	98.2	102.6	101.6	104.6	108.2	106.9	112.2
Local trucking	100.0	102.2	106.9	111.6	114.3	117.3	128.1	135.0	136.9	U	U
Bus carriers, Class I	100.0	103.7	94.3	104.2	100.8	118.3	99.9	127.8	106.2	U	U
Air	100.0	104.1	111.5	117.1	121.4	122.9	119.9	120.6	120.6	112.9	126.8
Petroleum pipeline	100.0	104.2	107.9	115.9	130.4	134.1	137.1	145.1	140.8	U	U

KEY: U = data are unavailable.

NOTES: No data are available for water transportation or natural gas pipeline. Data for local trucking, bus carriers, and petroleum pipeline are not available beyond 2000.

These productivity measures capture railroad, long-distance trucking, and air transportation as defined by the North American Industry Classification System (NAICS), whereas those for local trucking, bus, and petroleum pipeline are defined by the Standard Industrial Classification (SIC) system. At the time this report was prepared, the Bureau of Labor Statistics did not have plans to continue estimating productivity measures for petroleum pipeline, local trucking, and bus carriers because of a lack of reliable data.

Labor productivity measures quality-adjusted ton- and passenger-miles per hour. Quality adjustment corrects for differences in services and handling, e.g., the difference between flying first class and coach or differences in the handling requirements and revenue generation of high- and low-value commodities. Petroleum pipeline labor productivity is measured by output per employee. Railroad includes line-haul railroads primarily engaged in transportation of passengers and cargo over a long distance within a rail network. Trucking comprises establishments engaged in providing long-distance general freight trucking, usually between metropolitan areas that may cross North American country borders. Air includes establishments that provide scheduled and nonscheduled air transportation of passengers and cargo using aircraft, e.g., airplanes and helicopters. Local trucking includes establishments that generally provide trucking services within a single municipality, contiguous municipalities, or a municipality and its suburban areas.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, reindexing calculations based on data from U.S. Department of Labor, Bureau of Labor Statistics, Office of Productivity and Technology, "Industry Productivity Database," available at http://www.bls.gov/, as of November 2004.

TABLE 8-3 Change in Multifactor Productivity: 1991–2001
Index: 1991 = 100.0

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Railroad industry	100.0	106.4	109.8	112.2	118.8	123.2	123.3	122.0	125.9	U	U
Air transportation	100.0	103.6	100.5	107.0	111.3	115.5	116.8	115.7	117.8	121.3	116.2
Business sector (all industries)	100.0	102.3	102.8	103.9	104.1	105.8	107.1	108.5	109.4	111.1	109.9

KEY: U = data are unavailable.

NOTES: Rail productivity data are only available through 1999. Source data are indexes with base years of 1997 (air), 1996 (business), and 1987 (rail). The Bureau of Transportation Statistics reindexed these data so that 1991 is the base year for all.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, available at http://www.bls.gov/, as of October 2003. **Business sector—** "Most Requested Statistics." **Rail—**"Industry Multifactor Productivity Data Table by Industry, 1987–1999." **Air—**"Multifactor Productivity Data for Air Transportation."

TABLE 9-1 Transportation Services Index (TSI): May 1990–May 2005
Index: Monthly average of 2000 = 100.0; seasonally adjusted

May	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TSI total	68.3	67.2	73.5	76.8	81.4	84.5	86.7	91.3	97.8	99.8	99.7	100.0	99.3	99.7	108.3	112.6
TSI freight	67.9	66.4	74.2	77.3	83.1	86.8	87.6	92.7	100.7	102.6	99.5	99.9	101.3	102.7	110.5	113.1
TSI passenger	69.5	70.2	71.4	75.5	77.6	79.0	84.2	87.7	91.1	93.4	100.3	100.2	94.4	92.6	102.8	111.2

NOTE: March–May 2005 data are preliminary. Data shown here are only for the month of May due to space limitations. See source for balance of data in figure 9-1.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Transportation Services Index*, available at http://www.bts.gov/, as of August 2005.

TABLE 9-2a Transportation-Related Final Demand and Share of GDP: 1993–2003
Billions of chained 2000 dollars, except as noted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Transportation-related final demand	833.8	878.0	892.8	932.5	991.0	1,048.4	1,095.9	1,089.5	1,098.7	1,098.2	1,112.8
Share of GDP (percent)	11.1	11.2	11.1	11.2	11.4	11.6	11.6	11.1	11.1	10.9	10.7

KEY: GDP = Gross Domestic Product.

NOTES: *Total transportation-related final demand* is the sum of all consumer, private business, and government purchases of transportation-related goods and services, plus net exports (i.e., the difference between transportation imports and transportation exports).

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 9-2b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts, available at http://www.bea.doc.gov/, as of January 2005.

TABLE 9-2b Transportation-Related Final Demand and Share of GDP: 1993–2003
Billions of current dollars, except as noted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Transportation-related final demand	711.1	771.0	804.4	865.5	933.1	973.7	1,041.3	1,089.5	1,103.9	1,100.6	1,150.0
Share of GDP (percent)	10.7	10.9	10.9	11.1	11.2	11.1	11.2	11.1	10.9	10.5	10.5

KEY: GDP = Gross Domestic Product.

NOTES: *Total transportation-related final demand* is the sum of all consumer, private business, and government purchases of transportation-related goods and services, plus net exports (i.e., the difference between transportation imports and transportation exports).

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts, available at http://www.bea.doc.gov/, as of January 2005.

TABLE 9-3a Transportation-Related Final Demand by Type: 1993–2003
Billions of chained 2000 dollars

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Personal consumption	611.4	646.3	658.6	690.8	730.7	781.3	832.1	853.5	872.1	889.3	911.8
Gross private domestic investment	98.8	115.3	124.6	130.2	142.4	153.0	174.2	167.4	149.4	131.8	127.3
Government purchases	156.1	160.1	156.5	157.6	161.2	165.4	173.1	177.6	185.7	191.5	199.8
Net exports (exports minus imports)	–32.5	–43.7	–46.9	–46.1	–43.3	–51.3	–83.5	–109.0	–108.5	–114.4	–126.1
Total	**833.8**	**878.0**	**892.8**	**932.5**	**991.0**	**1,048.4**	**1,095.9**	**1,089.5**	**1,098.7**	**1,098.2**	**1,112.8**

NOTES: Data may not add to total because of independent rounding. *Total transportation-related final demand* is the sum of all consumer, private business, and government purchases of transportation-related goods and services, plus net exports (i.e., the difference between transportation imports and transportation exports). *Gross private domestic investment* covers transportation equipment and structures for railroads and petroleum pipelines.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts, available at http://www.bea.doc.gov/, as of January 2005.

TABLE 9-3b Transportation-Related Final Demand by Type: 1993–2003
Billions of current dollars

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Personal consumption	520.8	567.3	594.6	641.8	685.2	718.0	785.1	853.5	872.3	877.5	925.4
Gross private domestic investment	92.5	111.0	119.6	127.6	141.6	151.2	173.9	167.4	148.6	132.6	132.9
Government purchases	124.8	131.6	133.8	139.2	146.9	153.8	165.6	177.6	191.2	202.6	216.9
Net exports (exports minus imports)	–27.0	–38.9	–43.6	–43.1	–40.6	–49.3	–83.3	–109.0	–108.2	–112.1	–125.2
Total	**711.1**	**771.0**	**804.4**	**865.5**	**933.1**	**973.7**	**1,041.3**	**1,089.5**	**1,103.9**	**1,100.6**	**1,150.0**

NOTES: Data may not add to total because of independent rounding. *Total transportation-related final demand* is the sum of all consumer, private business, and government purchases of transportation-related goods and services, plus net exports (i.e., the difference between transportation imports and transportation exports). *Gross private domestic investment* covers transportation equipment and structures for railroads and petroleum pipelines.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts, available at http://www.bea.doc.gov/, as of January 2005.

TABLE 9-4a Value Added by For-Hire Transportation to U.S. GDP and Share of GDP: 1993–2003
Billions of chained 2000 dollars, except as noted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Value added	217.2	234.8	242.7	255.1	266.5	275.8	287.4	301.6	293.6	299.1	314.3
Share of GDP (percent)	2.9	3.0	3.0	3.1	3.1	3.0	3.0	3.1	3.0	3.0	3.0

KEY: GDP = Gross Domestic Product.

NOTES: *For-hire transportation* includes air transportation, rail transportation, water transportation, truck transportation, transit and ground passenger transportation, pipeline transportation, other transportation and supporting activities, and warehousing and storage.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 9-4b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry," available at http://www.bea.gov/, as of January 2005.

TABLE 9-4b Value Added by For-Hire Transportation to U.S. GDP and Share of GDP: 1993–2003
Billions of current dollars, except as noted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Value added	201.0	218.0	226.3	235.2	253.7	273.7	287.4	301.6	296.9	304.4	319.3
Share of GDP (percent)	3.0	3.1	3.1	3.0	3.1	3.1	3.1	3.1	2.9	2.9	2.9

KEY: GDP = Gross Domestic Product.

NOTE: *For-hire transportation* includes air transportation, rail transportation, water transportation, truck transportation, transit and ground passenger transportation, pipeline transportation, other transportation and supporting activities, and warehousing and storage.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry," available at http://www.bea.gov/, as of January 2005.

TABLE 9-5a Share of For-Hire Transportation Value Added by Mode: 1993–2003
Percentage of total for-hire transportation value added

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Air	13.7	14.9	15.7	17.7	17.8	17.6	18.4	19.1	19.5	20.5	23.3
Rail	10.6	10.4	10.4	9.9	8.8	8.8	8.6	8.5	8.5	8.1	7.7
Water	2.6	2.6	2.5	2.6	2.7	2.5	2.2	2.4	2.3	2.1	2.0
Trucking	33.1	33.5	33.2	32.8	32.8	32.9	31.9	30.8	30.0	29.4	27.8
Transit and ground passenger transportation	5.0	4.8	4.9	4.7	5.2	5.2	5.1	4.8	4.9	4.9	4.6
Oil and natural gas pipelines	3.2	2.7	3.0	2.9	2.6	2.5	2.7	2.9	2.9	2.7	2.4
Other transportation and support activities	24.7	24.0	22.9	22.1	22.3	22.6	23.0	23.3	23.7	23.3	22.5
Warehousing and storage	7.1	7.1	7.4	7.3	7.8	7.9	8.1	8.3	8.3	9.0	9.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

NOTES: Percentages may not add to 100 because of rounding. *Other transportation and support activities* cover scenic and sightseeing transportation, support activities for transportation (e.g., private air traffic control services, marine cargo handling, and motor vehicle towing), and couriers and messengers.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 9-5b.

TABLE 9-5b For-Hire Transportation Services Value Added by Mode: 1993–2003
Billions of chained 2000 dollars

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Air	30.0	35.2	38.2	45.1	47.6	48.7	52.9	57.7	57.1	61.2	73.7
Rail	23.2	24.7	25.4	25.2	23.6	24.4	24.8	25.5	24.8	24.1	24.3
Water	5.6	6.1	6.0	6.6	7.3	7.0	6.4	7.2	6.8	6.4	6.4
Trucking	72.4	79.1	80.8	83.8	87.7	91.0	91.9	92.8	87.9	87.9	88.0
Transit and ground passenger transportation	11.0	11.4	12.0	12.0	13.9	14.3	14.7	14.5	14.5	14.7	14.5
Oil and natural gas pipelines	7.0	6.4	7.4	7.5	6.9	6.9	7.7	8.7	8.4	8.0	7.6
Other transportation and support activities	54.1	56.6	55.9	56.5	59.6	62.6	66.2	70.2	69.4	69.6	71.3
Warehousing and storage	15.5	16.9	17.9	18.7	20.7	22.0	23.4	25.0	24.4	27.0	30.3
Total	**217.2**	**234.8**	**242.7**	**255.1**	**266.5**	**275.8**	**287.4**	**301.6**	**293.6**	**299.1**	**314.3**

NOTES: To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars to chained 2000 dollars. Because of the way these chained dollars were calculated, the total is not a sum of the individual data but rather a separate calculation.

Other transportation and support activities cover scenic and sightseeing transportation, support activities for transportation (e.g., private air traffic control services, marine cargo handling, and motor vehicle towing), and couriers and messengers.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry," available at http://www.bea.gov/, as of January 2005.

TABLE 10-1a Federal, State, and Local Government Transportation Revenues: Fiscal Years 1991–2001
Billions of chained 2000 dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Federal	32.8	32.2	32.7	31.5	33.8	33.7	33.7	41.3	53.7	46.8	41.9
State	45.9	48.1	49.7	50.1	51.1	51.2	52.2	53.8	53.9	54.1	54.3
Local	18.6	18.9	19.7	20.6	21.2	22.0	23.4	24.0	24.4	24.9	26.0
Total	**97.4**	**99.2**	**102.1**	**102.2**	**106.1**	**106.9**	**109.3**	**119.1**	**132.0**	**125.9**	**122.1**

NOTES: Data may not add to total because of independent rounding. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 10-1b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003*, available at http://www.bts.gov/, as of February 2005.

TABLE 10-1b Federal, State, and Local Government Transportation Revenues: Fiscal Years 1991–2001
Billions of current dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Federal	26.0	25.9	27.4	27.2	30.2	30.7	31.4	38.9	52.0	46.8	42.7
State	36.6	39.1	41.4	42.9	44.8	46.0	47.7	50.0	51.6	54.1	55.8
Local	14.8	15.4	16.4	17.6	18.6	19.7	21.3	22.3	23.3	24.9	26.7
Total	**77.4**	**80.3**	**85.2**	**87.6**	**93.7**	**96.4**	**100.5**	**111.2**	**126.9**	**125.9**	**125.2**

NOTE: Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003*, available at http://www.bts.gov/, as of February 2005.

TABLE 10-2 Federal, State, and Local Government Transportation Revenues by Mode: Fiscal Year 2001

	Chained 2000 dollars (millions)	Percentage of total
Highway	83,947	68.8
Transit	12,989	10.6
Air	21,439	17.6
Water	3,662	3.0
Pipeline	43	0.04
General support	18	0.01
Total	**122,096**	**100.0**

NOTES: Data may not add to total and percentage may not add to 100 because of independent rounding. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003*, available at http://www.bts.gov/, as of February 2005.

TABLE 10-3a Federal, State, and Local Government Transportation Expenditures: Fiscal Years 1991–2001
Billions of chained 2000 dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
State and local	94.5	97.6	95.1	100.9	102.2	103.2	105.7	112.3	116.0	117.9	123.1
Federal	41.7	43.9	44.6	46.0	45.7	44.8	44.9	43.8	45.2	49.4	53.1
Total	**136.3**	**141.5**	**139.7**	**146.9**	**147.9**	**148.0**	**150.5**	**156.1**	**161.2**	**167.4**	**176.2**

NOTES: Data may not add to total because of independent rounding. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 10-3b) to chained 2000 dollars.

Federal transportation expenditures consist of outlays of the federal government including not only direct spending but also grants made to state and local governments. To avoid double counting, state and local transportation expenditures include their outlays from all sources of funds except federal grants received. State and local data are reported together because disaggregated federal grants data are not available.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003*, available at http://www.bts.gov/, as of February 2005.

TABLE 10-3b Federal, State, and Local Government Transportation Expenditures: Fiscal Years 1991–2001
Billions of current dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
State and local	75.3	79.3	79.2	86.2	89.7	92.6	96.6	104.3	111.0	117.9	126.6
Federal	33.0	35.3	37.3	39.7	40.8	40.8	41.8	41.3	43.8	49.4	56.5
Total	**108.3**	**114.6**	**116.5**	**125.9**	**130.5**	**133.4**	**138.4**	**145.7**	**154.7**	**167.4**	**183.1**

NOTES: Data may not add to total because of independent rounding.

Federal transportation expenditures consist of outlays of the federal government including not only direct spending but also grants made to state and local governments. To avoid double counting, state and local transportation expenditures include their outlays from all sources of funds except federal grants received. State and local data are reported together because disaggregated federal grants data are not available.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003*, available at http://www.bts.gov/, as of February 2005.

TABLE 10-4 Federal, State, and Local Government Transportation Expenditures by Mode: Fiscal Year 2001

	Chained 2000 dollars (millions)	Percentage of total
Highway	107,673	61.1
Transit	32,722	18.6
Rail	723	0.4
Air	24,485	13.9
Water	10,219	5.8
Pipeline	28	0.02
General support	357	0.2
Total	**176,209**	**100.0**

NOTES: Data may not add to total and percentage may not add to 100 because of independent rounding. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars to chained 2000 dollars.

Federal transportation expenditures consist of outlays of the federal government including not only direct spending but also grants made to state and local governments. To avoid double counting, state and local transportation expenditures include their outlays from all sources of funds except federal grants received. State and local data are reported together because disaggregated federal grants data are not available. *Pipeline* data only include federal-level expenditures because state and local data are not available.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Government Transportation Financial Statistics 2003*, available at http://www.bts.gov/, as of February 2005.

TABLE 10-5a Gross Government Investments in Transportation Infrastructure and Rolling Stock: 1991–2001
Billions of chained 2000 dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Infrastructure	57.9	59.2	63.0	65.5	62.9	63.6	65.2	66.1	70.5	75.5	79.4
Rolling stock	4.3	5.8	6.2	6.6	7.0	6.8	7.3	8.0	8.5	8.8	9.4
Total	**62.2**	**65.0**	**69.2**	**72.2**	**69.9**	**70.4**	**72.5**	**74.1**	**79.0**	**84.4**	**88.8**

NOTES: Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years. *Investment in transportation infrastructure* constitutes the purchase or construction value of transportation facilities and structures. Federal, state, and local data are combined. Data include all modes except pipeline; state and local rail data were only available from 1993–2000 when this report was prepared. *Investment in rolling stock* data consist of government outlays for motor vehicles only, because data for other rolling stock (e.g., aircraft, vessels, and boats) are not available.

These transportation investment data are not comparable to those in the September 2004 edition of this report because of changes in methodology and data sources. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 10-5b) to chained 2000 dollars. Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Transportation Investment," forthcoming. U.S. Department of Commerce, U.S. Census Bureau, "Value of Construction Put in Place Statistics," Detailed Construction Expenditures Tables, available at http://www.census.gov/, as of June 2005.

TABLE 10-5b Gross Government Investments in Transportation Infrastructure and Rolling Stock: 1991–2001
Billions of current dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Infrastructure	44.1	45.2	48.6	51.8	52.3	55.1	58.6	60.8	67.1	75.5	81.7
Rolling stock	4.5	5.8	6.1	6.5	6.8	6.7	7.2	7.9	8.5	8.8	9.4
Total	**48.6**	**51.0**	**54.7**	**58.3**	**59.2**	**61.8**	**65.8**	**68.8**	**75.6**	**84.4**	**91.1**

NOTES: Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years. *Investment in transportation infrastructure* constitutes the purchase or construction value of transportation facilities and structures. Federal, state, and local data are combined. Data include all modes except pipeline; state and local rail infrastructure investment data were only available from 1993–2000 when this report was prepared. *Investment in rolling stock* data consist of government outlays for motor vehicles only, because data for other rolling stock (e.g., aircraft, vessels, and boats) are not available.

These transportation investment data are not comparable to those in the September 2004 edition of this report because of changes in methodology and data sources. Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Transportation Investment," forthcoming. U.S. Department of Commerce, U.S. Census Bureau, "Value of Construction Put in Place Statistics," Detailed Construction Expenditures Tables, available at http://www.census.gov/, as of June 2005.

TABLE 10-6a Gross Government Investment in Transportation Infrastructure by Level of Government: 1991–2001
Billions of chained 2000 dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Federal (direct)	3.7	4.3	4.4	4.7	4.7	4.5	4.5	4.3	3.8	4.0	4.1
State and local	54.2	55.0	58.6	60.8	58.2	59.1	60.8	61.8	66.6	71.6	75.3
Total	**57.9**	**59.2**	**63.0**	**65.5**	**62.9**	**63.6**	**65.2**	**66.1**	**70.5**	**75.5**	**79.4**

NOTES: Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years. *Investment in transportation infrastructure* constitutes the purchase or construction value of transportation facilities and structures. Data include all modes except pipeline; state and local rail data were only available from 1993–2000 when this report was prepared. *Investment in rolling stock* data consist of government outlays for motor vehicles only, because data for other rolling stock (e.g., aircraft, vessels, and boats) are not available.

These transportation investment data are not comparable to those in the September 2004 edition of this report because of changes in methodology and data sources. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 10-6b) to chained 2000 dollars. Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Transportation Investment," forthcoming. U.S. Department of Commerce, U.S. Census Bureau, "Value of Construction Put in Place Statistics," Detailed Construction Expenditures Tables, available at http://www.census.gov/, as of June 2005.

TABLE 10-6b Gross Government Investment in Transportation Infrastructure by Level of Government: 1991–2001
Billions of current dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Federal (direct)	2.9	3.3	3.5	3.9	4.0	4.0	4.0	4.0	3.7	4.0	4.3
State and local	41.2	41.8	45.1	48.0	48.3	51.1	54.5	56.9	63.4	71.6	77.4
Total	**44.1**	**45.2**	**48.6**	**51.8**	**52.3**	**55.1**	**58.6**	**60.8**	**67.1**	**75.5**	**81.7**

NOTES: Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years. *Investment in transportation infrastructure* constitutes the purchase or construction value of transportation facilities and structures. Data include all modes except pipeline; state and local rail data were only available from 1993–2000 when this report was prepared. *Investment in rolling stock* data consist of government outlays for motor vehicles only, because data for other rolling stock (e.g., aircraft, vessels, and boats) are not available.

These transportation investment data are not comparable to those in the September 2004 edition of this report because of changes in methodology and data sources. Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Transportation Investment," forthcoming. U.S. Department of Commerce, U.S. Census Bureau, "Value of Construction Put in Place Statistics," Detailed Construction Expenditures Tables, available at http://www.census.gov/, as of June 2005.

TABLE 10-7a Gross Government Investment in Transportation Infrastructure by Mode: 1991–2001
Billions of chained 2000 dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Highway	44.1	44.2	46.1	48.7	46.5	46.7	49.4	50.5	53.5	55.0	58.6
Air	7.1	8.2	8.8	7.7	6.8	7.3	7.5	7.9	8.3	9.2	9.9
Water	1.7	1.7	1.6	1.6	1.8	1.9	1.8	1.9	2.0	3.9	3.3
Transit	4.7	4.7	5.7	6.6	6.7	6.7	5.4	4.6	5.2	5.5	6.1
Railroad	0.3	0.4	0.7	1.0	1.1	1.1	1.1	1.2	1.4	1.9	1.4
Total	**57.9**	**59.2**	**63.0**	**65.5**	**62.9**	**63.6**	**65.2**	**66.1**	**70.5**	**75.5**	**79.4**

NOTES: Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years. *Investment in transportation infrastructure* constitutes the purchase or construction value of transportation facilities and structures. Federal, state, and local data are combined. Data include all modes except pipeline; state and local rail data were only available from 1993–2000 when this report was prepared. *Investment in rolling stock* data consist of government outlays for motor vehicles only, because data for other rolling stock (e.g., aircraft, vessels, and boats) are not available.

These transportation investment data are not comparable to those in the September 2004 edition of this report because of changes in methodology and data sources. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 10-7b) to chained 2000 dollars. Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Transportation Investment," forthcoming. U.S. Department of Commerce, U.S. Census Bureau, "Value of Construction Put in Place Statistics," Detailed Construction Expenditures Tables, available at http://www.census.gov/, as of June 2005.

TABLE 10-7b Gross Government Investment in Transportation Infrastructure by Mode: 1991–2001
Billions of current dollars

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Highway	33.5	33.6	35.4	38.4	38.7	40.5	44.5	46.4	50.9	55.0	60.7
Air	5.4	6.4	6.9	6.2	5.7	6.3	6.7	7.3	7.9	9.2	10.1
Water	1.3	1.3	1.3	1.3	1.5	1.6	1.6	1.8	2.0	3.9	3.4
Transit	3.6	3.6	4.5	5.2	5.5	5.7	4.8	4.3	5.0	5.5	6.2
Railroad	0.3	0.3	0.6	0.8	0.9	0.9	1.0	1.1	1.3	1.9	1.4
Total	**44.1**	**45.2**	**48.6**	**51.8**	**52.3**	**55.1**	**58.6**	**60.8**	**67.1**	**75.5**	**81.7**

NOTES: Investment data here are in terms of calendar years unlike the other data in section 10, which are in terms of fiscal years. *Investment in transportation infrastructure* constitutes the purchase or construction value of transportation facilities and structures. Federal, state, and local data are combined. Data include all modes except pipeline; state and local rail data were only available from 1993–2000 when this report was prepared. *Investment in rolling stock* data consist of government outlays for motor vehicles only, because data for other rolling stock (e.g., aircraft, vessels, and boats) are not available.

These transportation investment data are not comparable to those in the September 2004 edition of this report because of changes in methodology and data sources. Data may not add to total because of independent rounding.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, “Transportation Investment,” forthcoming. U.S. Department of Commerce, U.S. Census Bureau, “Value of Construction Put in Place Statistics,” Detailed Construction Expenditures Tables, available at http://www.census.gov/, as of June 2005.

TABLE 10-8a Net Federal Subsidies to Passenger Transportation by Mode: Fiscal Years 1992–2002
Millions of chained 2000 dollars

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Highway	–5,204	–5,248	–7,592	–9,391	–9,645	–8,441	–11,693	–10,410	–8,909	–5,297	–4,238
Autos, pickups, and vans	–5,340	–5,390	–7,740	–9,530	–9,784	–8,584	–11,822	–10,558	–9,086	–5,494	–4,452
School buses	83	85	92	89	89	91	87	96	109	116	125
Transit buses	56	58	62	60	60	61	59	65	74	78	84
Intercity buses	–2	–2	–6	–10	–11	–8	–16	–12	–7	2	5
Air	4,253	4,338	4,143	3,893	6,192	4,463	1,120	–1,083	–446	2,898	4,026
Commercial aviation	3,091	3,065	2,993	2,774	4,944	3,373	–19	–2,073	–1,433	1,472	2,831
General aviation	1,162	1,274	1,150	1,119	1,248	1,090	1,139	991	987	1,427	1,194
Transit	4,570	4,200	4,364	5,007	4,796	4,918	4,564	4,402	5,334	6,917	7,314
Railroad	1,031	872	858	1,049	994	1,099	2,160	1,434	629	591	1,093
Total, all modes	**4,651**	**4,162**	**1,773**	**558**	**2,338**	**2,039**	**–3,849**	**–5,657**	**–3,392**	**5,108**	**8,195**

NOTES: Data may not add to total because of independent rounding. To eliminate the effects of inflation over time, the Bureau of Transportation Statistics (BTS) converted current dollars (see table 10-8b) to chained 2000 dollars.

Net federal subsidy is estimated as federal outlays minus federal receipts from transportation taxes and user fees. Actual outlays and receipts are used in the calculation. Negative numbers show user charge payments to the federal government in excess of cost responsibility. The Taxpayer Relief Act of 1997 allowed motor fuel distributors to delay until Oct. 5, 1998, the payment of fuel taxes that otherwise would be due in August and September of 1998. This provision effectively shifted about $6 billion in Highway Trust Fund receipts from 1998 to 1999. BTS included these funds in fiscal year 1998, when they were actually paid by highway users.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Federal Subsidies to Passenger Transportation," December 2004, available at http://www.bts.gov/, as of February 2005.

TABLE 10-8b Net Federal Subsidies to Passenger Transportation by Mode: Fiscal Years 1992–2002
Millions of current dollars

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Highway	–4,184	–4,394	–6,558	–8,391	–8,798	–7,866	–11,022	–10,085	–8,909	–5,398	–4,459
Autos, pickups, and vans	–4,294	–4,513	–6,686	–8,515	–8,925	–8,000	–11,144	–10,229	–9,086	–5,598	–4,684
School buses	66	72	79	79	82	84	82	93	109	118	131
Transit buses	45	48	54	54	55	57	55	63	74	80	89
Intercity buses	–1	–1	–5	–9	–10	–8	–15	–12	–7	2	6
Air	3,420	3,633	3,578	3,478	5,648	4,159	1,056	–1,049	–446	2,953	4,235
Commercial aviation	2,486	2,566	2,585	2,479	4,510	3,143	–17	–2,009	–1,433	1,500	2,979
General aviation	935	1,067	993	999	1,139	1,016	1,074	960	987	1,454	1,257
Transit	3,675	3,517	3,770	4,474	4,375	4,583	4,302	4,265	5,334	7,048	7,695
Railroad	829	730	741	938	907	1,024	2,036	1,389	629	602	1,150
Total, all modes	**3,740**	**3,485**	**1,531**	**499**	**2,132**	**1,900**	**–3,628**	**–5,480**	**–3,392**	**5,205**	**8,621**

NOTES: Data may not add to total because of independent rounding.

Net federal subsidy is estimated as federal outlays minus federal receipts from transportation taxes and user fees. Actual outlays and receipts are used in the calculation. Negative numbers show user charge payments to the federal government in excess of cost responsibility. The Taxpayer Relief Act of 1997 allowed motor fuel distributors to delay until Oct. 5, 1998, the payment of fuel taxes that otherwise would be due in August and September of 1998. This provision effectively shifted about $6 billion in Highway Trust Fund receipts from 1998 to 1999. The Bureau of Transportation Statistics included these funds in fiscal year 1998, when they were actually paid by highway users.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, “Federal Subsidies to Passenger Transportation,” December 2004, available at http://www.bts.gov/, as of February 2005.

TABLE 10-9a Net Federal Subsidies to Passenger Transportation per Thousand Passenger-Miles by Mode: Fiscal Years 1992–2002
Chained 2000 dollars per thousand passenger-miles

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Highway	–1.5	–1.5	–2.1	–2.6	–2.6	–2.2	–2.9	–2.5	–2.1	–1.2	–1.0
Autos, pickups, and vans	–1.6	–1.6	–2.2	–2.7	–2.7	–2.3	–3.1	–2.7	–2.3	–1.3	–1.0
Buses	3.4	3.6	3.7	3.5	3.4	3.4	2.9	3.2	3.7	4.0	4.4
Air	11.6	11.7	10.4	9.4	13.9	9.6	2.4	–2.2	–0.8	5.8	U
Commercial aviation	8.7	8.5	7.7	6.9	11.4	7.5	–0.0	–4.2	–2.8	3.0	5.9
General aviation	107.6	128.7	117.4	103.6	104.0	87.2	86.9	70.3	64.9	89.7	U
Transit	113.6	106.6	110.3	125.8	115.9	116.2	103.4	96.0	111.9	141.0	151.4
Railroad	169.3	140.6	145.0	189.2	196.9	212.7	407.2	269.0	114.4	106.2	199.9
Total, all modes	**1.2**	**1.0**	**0.4**	**0.1**	**0.6**	**0.5**	**–0.9**	**–1.2**	**–0.7**	**1.0**	**1.6**

KEY: U = data are unavailable

NOTES: Data may not add to total because of independent rounding. Net federal subsidy is estimated as federal outlays minus federal receipts from transportation taxes and user fees. Actual outlays and receipts are used in the calculation. Negative numbers show user charge payments to the federal government in excess of cost responsibility. The Taxpayer Relief Act of 1997 allowed motor fuel distributors to delay until Oct. 5, 1998, the payment of fuel taxes that otherwise would be due in August and September of 1998. This provision effectively shifted about $6 billion in Highway Trust Fund receipts from 1998 to 1999. The Bureau of Transportation Statistics (BTS) included these funds in fiscal year 1998, when they were actually paid by highway users. There is some double counting of bus passenger-miles in the highway and transit modes. However, no adjustments were made since data are not available to reliably estimate the magnitude of the double counting.

To eliminate the effects of inflation over time, BTS converted current dollars (see table 10-9b) to chained 2000 dollars.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Federal Subsidies to Passenger Transportation," December 2004, available at http://www.bts.gov/, as of February 2005.

TABLE 10-9b Net Federal Subsidies to Passenger Transportation per Thousand Passenger-Miles by Mode: Fiscal Years 1992–2002
Current dollars per thousand passenger-miles

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Highway	–1.2	–1.2	–1.8	–2.3	–2.3	–2.0	–2.8	–2.5	–2.1	–1.2	–1.0
Autos, pickups, and vans	–1.9	–2.0	–3.0	–3.7	–3.8	–3.3	–4.5	–4.1	–3.6	–2.2	–1.8
Buses	2.7	3.0	3.2	3.1	3.1	3.2	2.8	3.1	3.7	4.1	4.7
Air	9.4	9.8	9.0	8.4	12.3	9.0	2.2	–2.1	–0.8	5.9	U
Commercial aviation	7.0	7.1	6.7	6.1	10.4	7.0	–0.0	–4.1	–2.8	3.1	6.2
General aviation	86.5	107.7	101.4	92.5	94.9	81.3	82.0	68.1	64.9	91.4	U
Transit	91.3	89.3	95.2	112.4	105.7	108.3	97.5	93.0	111.9	143.6	159.2
Railroad	136.1	117.7	125.2	169.1	179.6	198.2	383.8	260.6	114.4	108.3	210.3
Total, all modes	**1.0**	**0.9**	**0.4**	**0.1**	**0.5**	**0.4**	**–0.8**	**–1.2**	**–0.7**	**1.1**	**1.7**

KEY: U = data are unavailable

NOTES: Data may not add to total because of independent rounding. Net federal subsidy is estimated as federal outlays minus federal receipts from transportation taxes and user fees. Actual outlays and receipts are used in the calculation. Negative numbers show user charge payments to the federal government in excess of cost responsibility. The Taxpayer Relief Act of 1997 allowed motor fuel distributors to delay until Oct. 5, 1998, the payment of fuel taxes that otherwise would be due in August and September of 1998. This provision effectively shifted about $6 billion in Highway Trust Fund receipts from 1998 to 1999. The Bureau of Transportation Statistics included these funds in fiscal year 1998, when they were actually paid by highway users. There is some double counting of bus passenger-miles in the highway and transit modes. However, no adjustments were made since data are not available to reliably estimate the magnitude of the double counting.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, "Federal Subsidies to Passenger Transportation," December 2004, available at http://www.bts.gov/, as of February 2005.

TABLE 11-1 Relative Prices for Transportation Goods and Services for the United States and Selected Major Trade Partners: 2001
United States = 1.00

Country	2001
Turkey	0.66
Greece	0.74
Mexico	0.74
Australia	0.78
New Zealand	0.79
Hungary	0.82
Poland	0.82
Italy	0.90
Spain	0.90
Canada	0.92
Germany	0.94
Portugal	0.97
Belgium	0.98
France	0.99
United States	1.00
Austria	1.03
Sweden	1.04
Netherlands	1.10
Ireland	1.12
Switzerland	1.24
United Kingdom	1.29
Japan	1.35
Denmark	1.38
Norway	1.71

NOTES: 2001 was the most recent year for which these data were available by country at the time this report was prepared. Data are not available for goods and services separately. Relative prices are based on purchasing power parity for transportation-related goods and services.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from Organisation for Economic Co-operation and Development (OECD), *Purchasing Power Parities and Real Expenditures, 1999 Results* (Paris, France: August 2002), table 11; and OECD, Main Economic Indicators, January 2002 for 1999 and 2000 Gross Domestic Product implicit price index, consumer price index, and exchange rates.

TABLE 11-2a U.S. Trade in Transportation-Related Goods: 1994–2004
Millions of current dollars

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Imports	105,754	110,781	115,504	126,927	140,054	166,552	185,027	183,002	190,881	194,863	211,112
Exports	81,658	80,092	89,959	103,818	114,971	111,469	105,430	106,860	108,744	107,796	118,749
Total	**187,412**	**190,873**	**205,463**	**230,745**	**255,025**	**278,021**	**290,457**	**289,862**	**299,625**	**302,659**	**329,861**

NOTES: *Transportation-related goods* are motor vehicles and parts, aircraft and spacecraft and parts, railway vehicles and parts, and ships and boats. Data may not add to total because of independent rounding.

All dollar amounts are in current dollars. These data have not been adjusted for inflation because there is no specific deflator available for transportation-related goods. In addition, it is difficult to control for trading partners' inflation rates as well as currency exchange fluctuations when adjusting the value of internationally traded goods and services for inflation.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, U.S. International Trade Commission, Interactive Tariff and Trade DataWeb, available at http://dataweb.usitc.gov/, as of May 2005.

TABLE 11-2b U.S. Trade in Transportation-Related Goods by Commodity: 2004
Millions of current dollars

	Overall (exports plus imports)	Balance (exports minus imports)
Vehicles other than railway	264,350	–118,150
Aircraft, spacecraft, and parts	58,613	25,621
Ships, boats, and floating structures	3,864	–304
Railway locomotives and parts	3,034	470
Total, transportation-related goods	**329,861**	**–92,363**
Total, all commodities	2,286,219	–653,123

NOTES: *Transportation-related goods* are motor vehicles and parts, aircraft and spacecraft and parts, railway vehicles and parts, and ships and boats. Data may not add to total because of independent rounding.

These data have not been adjusted for inflation because there is no specific deflator available for transportation-related goods. In addition, it is difficult to control for trading partners' inflation rates as well as currency exchange fluctuations when adjusting the value of internationally traded goods and services for inflation.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, U.S. International Trade Commission, Interactive Tariff and Trade DataWeb, available at http://dataweb.usitc.gov/, as of May 2005.

TABLE 11-3 U.S. Trade Balance in Transportation-Related Goods: 1994–2004
Transportation-related goods exports minus imports
Millions of current dollars

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Trade balance	–24,096	–30,689	–25,545	–23,109	–25,083	–55,083	–79,597	–76,142	–82,137	–87,067	–92,363

NOTES: *Transportation-related goods* are motor vehicles and parts, aircraft and spacecraft and parts, railway vehicles and parts, and ships and boats.

These data have not been adjusted for inflation because there is no specific deflator available for transportation-related goods. In addition, it is difficult to control for trading partners' inflation rates as well as currency exchange fluctuations when adjusting the value of internationally traded goods and services for inflation.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, U.S. International Trade Commission, Interactive Tariff and Trade DataWeb, available at http://dataweb.usitc.gov/, as of May 2005.

TABLE 11-4 U.S. International Trade in Transportation-Related Services: 1994–2004
Millions of current dollars

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Imports	39,081	41,697	43,212	47,097	50,334	55,454	65,699	61,315	58,376	65,725	77,483
Exports	40,751	44,990	46,496	47,874	45,702	46,701	50,490	46,368	46,241	47,526	55,986
Total	**79,832**	**86,687**	**89,708**	**94,971**	**96,036**	**102,155**	**116,189**	**107,683**	**104,617**	**113,251**	**133,469**

NOTE: *Transportation-related services* include passenger fares and freight and port services. It excludes receipts and payments for travel services, which includes purchases of goods and services (e.g., food, lodging, recreation, gifts, entertainment, and any incidental expense on a foreign visit).

These data have not been adjusted for inflation because there is no specific deflator available for transportation-related services. In addition, it is difficult to control for trading partners' inflation rates as well as currency exchange fluctuations when adjusting the value of internationally traded goods and services for inflation.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, Bureau of Economic Analysis, International Transactions Accounts data, available at http://www.bea.doc.gov/, as of May 2005.

TABLE 11-5 U.S. Trade Balance in Transportation-Related Services: 1994–2004
Transportation-related services exports minus imports
Millions of current dollars

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Trade balance	1,670	3,293	3,284	777	–4,632	–8,753	–15,209	–14,947	–12,135	–18,199	–21,497

NOTE: *Transportation-related services* include passenger fares and freight and port services. It excludes receipts and payments for travel services, which includes purchases of goods and services (e.g., food, lodging, recreation, gifts, entertainment, and any incidental expense on a foreign visit).

These data have not been adjusted for inflation because there is no specific deflator available for transportation-related services. In addition, it is difficult to control for trading partners' inflation rates as well as currency exchange fluctuations when adjusting the value of internationally traded goods and services for inflation.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data from U.S. Department of Commerce, Bureau of Economic Analysis, International Transactions Accounts data, available at http://www.bea.doc.gov/, as of May 2005.

TABLE 12-1 Roadside Truck Inspections: 1994–2004
Thousands

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Trucks inspected	1,974	1,840	2,039	2,148	1,763	1,862	1,928	2,072	2,173	2,160	2,152
Trucks taken out of service	472	417	437	439	448	453	457	486	498	495	508

NOTES: Trucks are taken out of service (OOS) when inspectors find serious violations that warrant the issuance of a vehicle OOS order. There may be data inconsistencies across the 1994–2004 time series. The Bureau of Transportation Statistics obtained the data at different times (see Sources) and was unable to verify the consistency of the entire data series prior to publication.

SOURCES: **1994–1998—**U.S. Department of Transportation (USDOT), Federal Motor Carrier Safety Administration (FMCSA), Motor Carrier Management Information System, available at http://www.fmcsa.dot.gov/, as of June 2003. **1999–2000—**USDOT, FMCSA, personal communication, Aug. 11, 2003. **2001—** USDOT, FMCSA, Roadside Inspection Activity Summary by Inspection Type, available at http://ai.volpe.dot.gov/, as of March 2005. **2002–2004—** USDOT, FMCSA, Roadside Inspection Activity Summary by Inspection Type, available at http://ai.volpe.dot.gov/, as of May 2005.

TABLE 12-2 Rail Replaced or Added by U.S. Class I Railroads: 1993–2003
Thousands of tons

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Rail replaced	824.3	728.8	657.6	803.3	642.7	679.0	769.3	726.1	660.1	635.5	632.6
Rail added	26.2	62.9	61.3	68.7	113.8	204.8	213.4	196.3	197.0	125.2	139.4

SOURCES: Association of American Railroads, *Railroad Ten-Year Trends, 1990–2000* (Washington, DC: 2000); **2000–2003—**Association of American Railroads, *Analysis of Class I Railroads* (Washington, DC: 2001–2004).

TABLE 12-3 Crossties Replaced or Added by U.S. Class I Railroads: 1993–2003
Thousands of tons

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Crossties replaced	12.8	12.3	12.1	13.4	11.9	10.4	10.8	10.8	11.4	13.1	13.2
Crossties added	0.4	0.6	0.7	0.8	1.5	1.8	1.3	0.7	0.5	0.3	0.5

SOURCES: Association of American Railroads, *Railroad Ten-Year Trends, 1990–2000* (Washington, DC: 2000); **2000–2003**—Association of American Railroads, *Analysis of Class I Railroads* (Washington, DC: 2001–2004).

TABLE 12-4 New and Rebuilt Locomotives and Freight Cars: 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Locomotives	707	1,214	1,129	821	811	1,061	865	721	755	778	621
Percentage of fleet	3.9	6.6	6.0	4.3	4.1	5.2	4.3	3.6	3.8	3.8	3.0
Freight cars	43,332	51,079	66,052	59,993	51,963	83,076	77,901	58,245	35,475	18,832	33,155
Percentage of fleet	3.7	4.3	5.4	4.8	4.1	6.3	5.7	4.2	2.7	1.4	2.6

NOTES: Locomotive data are for Class I railroads only. Freight car data cover Class I railroads, other railroads, and private car owners.

SOURCE: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), pp. 49, 51, and 55.

TABLE 12-5 Interruptions of Service by Type of Transit: 1995–2000 and 2001–2003
Number per 100,000 revenue vehicle-miles

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Motor bus	38	38	37	38	38	37	27	24	22
Light rail	33	27	21	15	17	15	14	14	14
Heavy rail	4	4	3	7	7	6	3	5	3
Commuter rail	4	3	3	3	3	3	2	1	1
Demand response	4	4	5	5	5	5	4	3	4
Other	N	1.0	0.4	0.9	0.9	0.8	0.3	0.3	0.2
Total	**83.2**	**77.2**	**69.8**	**68.8**	**71.0**	**67.2**	**49.7**	**48.4**	**43.7**

KEY: N = data are nonexistent.

NOTES: Data from 1995–2000 and 2001–2003 are not compatible due to a methodology change. *Interruptions of service* include major and minor mechanical failures. Since 2001, if the vehicle operator was able to fix the problem and return the vehicle to service without assistance, the incident has not been considered an interruption of service. *Other* generally includes automated guideway, Alaska Railroad, cable car, ferryboat, inclined plane, jitney, trolleybus, aerial tramway, and vanpool. However, aerial tramway data are not included prior to 2003, Alaska Railroad data are not included prior to 2001, and jitney data are not included in 2000 or 2001.

For definitions of service types, see Glossary.

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on various data. **Revenue vehicle-miles—**USDOT, Federal Transit Administration (FTA), National Transit Database, *2003 National Transit Summaries and Trends*, 2003 NTST Table of Charts, available at http://www.ntdprogram.com/, as of April 2005. **1995–2002 interruptions of service—**USDOT, FTA, National Transit Database, 2003 Data Tables, Revenue Vehicle Maintenance Performance table, available at http://www.ntdprogram.com/, as of April 2005. **2003 interruptions of service—**American Public Transportation Association, personal communication, April 2005.

TABLE 12-6 Saint Lawrence Seaway U.S. Locks Downtime by Cause: 1994–2004
Hours of downtime, unless otherwise noted

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Weather related	101.0	88.5	143.4	65.2	43.2	2.0	53.7	56.8	41.1	57.6	43.8
Vessel incident	17.7	32.6	38.3	31.2	43.3	46.3	27.8	45.1	16.9	15.9	15.0
All other causes	45.0	16.7	5.9	35.6	12.1	1.3	2.6	8.9	5.1	0.0	7.2
Weather (percentage of total)	62	64	76	49	44	4	64	51	65	78	66
Total	**163.7**	**137.8**	**187.6**	**132.0**	**98.6**	**49.6**	**84.1**	**110.8**	**63.1**	**73.5**	**66.0**

NOTES: *Weather-related* causes includes poor visibility and high wind/ice; *All other causes* includes lock equipment malfunction, civil interference, and water level/flow. These data pertain only to the two U.S. locks (Snell and Eisenhower) on the Saint Lawrence Seaway between the Port of Montreal and Lake Ontario. Canada operates another five locks along this portion of the Seaway, as well as other Seaway locks.

SOURCES: 1994–2001—U.S. Department of Transportation, Saint Lawrence Seaway Development Corp. (SLSDC), *Annual Reports* (Washington, DC: Various years). Reports for 1997–2001 available at http://www.greatlakes-seaway.com/, as of March 2004. **2002–2004—**SLSDC, personal communication, March and December 2004 and February 2005.

[NOTE: Figure 12-7 is a map, and the corresponding table data are not available.]

TABLE 12-8 Passengers on Major U.S. Carriers to and from the United States: 1994–2004
Millions of passengers

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
American Airlines	15.1	16.5	16.8	17.0	17.4	17.5	18.0	16.4	16.6	16.6	18.9
Alaska Airlines	0.7	0.6	0.8	1.0	1.4	1.5	1.6	1.7	1.8	2.0	2.0
Continental	3.2	3.2	3.7	5.0	6.6	7.8	8.7	8.1	8.2	8.0	9.2
Delta	7.6	7.2	7.2	7.0	7.3	7.2	7.6	7.2	7.0	6.4	7.4
America West	0.1	0.2	0.6	0.6	0.5	0.4	0.5	0.6	0.6	0.9	1.0
Northwest	6.2	6.8	7.7	8.0	6.9	7.6	8.2	7.4	7.5	6.9	7.6
ATA	0.7	0.9	0.9	0.8	0.6	0.8	0.7	0.7	0.6	0.6	0.5
Trans World Airlines	1.7	1.6	2.0	1.5	1.3	1.4	1.5	1.0	N	N	N
United	9.2	9.5	9.6	10.0	9.9	10.0	10.6	10.0	9.5	8.6	9.5
US Airways	1.7	1.9	2.1	2.3	2.4	2.5	3.1	3.5	3.7	4.0	4.6
Total	**46.2**	**48.3**	**51.3**	**53.1**	**54.2**	**56.7**	**60.6**	**56.4**	**55.6**	**53.7**	**60.6**

KEY: N = data are nonexistent. (In 2001, Trans World Airlines merged with American Airlines.)

NOTE: Includes only passengers traveling to and from the United States on major airlines (U.S. commercial airlines with operating revenues greater than $1 billion annually).

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, T-100 International Market Passenger Data, available at http://www.bts.gov/, as of March 2005.

TABLE 12-9 Florida Hurricane Season Cancelled Flights: 2003 and 2004
Number per 1,000 flights

	2003	2004
June	0.8	0.8
July	1.2	1.1
August	1.2	19.9
September	3.8	124.0
October	0.3	0.3
November	0.4	0.6

NOTE: Data are limited to the hurricane season for flights into and out of Florida airports.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Airline On-time Performance Data, available at http://www.bts.gov/, as of February 2005.

TABLE 13-1 Number of Trucks by Vehicle Weight: 1992, 1997, and 2002
Thousands of trucks

	1992	1997	2002
Light trucks (< 6,001 lb)	50,545.7	62,798.4	62,617.3
Medium trucks (6,001 to 19,500 lb)	5,906.5	6,737.1	19,056.4
Light-heavy trucks (19,501 to 26,000 lb)	732.0	729.3	910.3
Heavy trucks (> 26,000 lb)	3,074.5	3,986.9	2,590.9
Total	**60,258.7**	**74,251.7**	**85,174.9**

KEY: lb = pound.

NOTES: Weight is the empty weight of the vehicle plus the average vehicle load. Data may not add to total because of independent rounding.

Excludes vehicles owned by federal, state, or local governments; ambulances; buses; motor homes; farm tractors; unpowered trailer units; and trucks reported to have been sold, junked, or wrecked prior to July 1 of the year preceding the 1992 and 1997 surveys and January 1, 2002, for the 2002 survey.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-21, available at http://www.bts.gov/, as of January 2005.

TABLE 13-2 Number of Medium Trucks by Vehicle Weight: 1992, 1997, and 2002
Thousands of trucks

	1992	1997	2002
6,001 to 10,000 lb	4,647.5	5,301.5	17,142.3
10,001 to 14,000 lb	694.3	818.9	1,142.1
14,001 to 16,000 lb	282.4	315.9	395.9
16,001 to 19,500 lb	282.3	300.8	376.1
Total	**5,906.5**	**6,737.1**	**19,056.4**

KEY: lb = pound.

NOTES: Weight is the empty weight of the vehicle plus the average vehicle load. Data may not add to total because of independent rounding.

Excludes vehicles owned by federal, state, or local governments; ambulances; buses; motor homes; farm tractors; unpowered trailer units; and trucks reported to have been sold, junked, or wrecked prior to July 1 of the year preceding the 1992 and 1997 surveys and January 1, 2002, for the 2002 survey.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics 2004*, table 1-21, available at http://www.bts.gov/, as of January 2005.

TABLE 13-3 Share of Loadings and Volumes on Urban Interstate Highways by Vehicle Type: 2003
Percent

Location	Passenger cars, buses, and light trucks	Heavy single-unit trucks	3- and 4-axle combination trucks	5-axle or more combination trucks
Loadings	4	15	4	76
Volumes	91	4	1	5

NOTES: Based on data from the Truck Weight Study that are collected by the states for varying time periods each year and are not adjusted to typify annual averages. Loadings are based on *equivalent single-axle loads*, a standard unit of pavement damage based on the amount of force applied to pavement by an 18,000-pound axle, which is roughly equivalent to a standard truck axle. Totals may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004), table TC-3.

TABLE 13-4 Share of Loadings and Volumes on Rural Interstate Highways by Vehicle Type: 2003
Percent

Location	Passenger cars, buses, and light trucks	Heavy single-unit trucks	3- and 4-axle combination trucks	5-axle or more combination trucks
Loadings	2	10	5	83
Volumes	79	5	1	14

NOTES: Based on data from the Truck Weight Study that are collected by the states for varying time periods each year and are not adjusted to typify annual averages. Loadings are based on *equivalent single-axle loads*, a standard unit of pavement damage based on the amount of force applied to pavement by an 18,000-pound axle, which is roughly equivalent to a standard truck axle. Totals may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2003* (Washington, DC: 2004), table TC-3.

TABLE 13-5 Average Capacity of Vessels Calling at U.S. Ports by Type: 1998–2003
Deadweight tons (dwt) per call

	1998	1999	2000	2001	2002	2003
Combination	82,895	88,433	89,462	87,873	84,459	84,016
Tanker	68,670	67,703	67,551	69,313	69,412	72,387
Dry bulk	41,740	41,833	41,694	42,142	42,876	42,685
Containerships	36,243	36,586	37,784	39,656	42,158	43,168
Roll-on, roll-off vessels	19,898	18,662	18,456	20,445	20,376	20,270
Gas carriers	29,954	31,402	31,397	33,438	32,099	37,818
General cargo	21,409	22,331	22,857	23,416	23,496	23,655
All vessels	45,289	45,117	45,646	47,034	47,625	49,557

NOTES: Calls are by oceangoing vessels of 10,000 dwt or greater at U.S. ports, excluding Great Lakes ports. 1998 is the first year for which data are available. Beginning in 2002, chemical tanker data are no longer reported separately and are, instead, included in tanker data; historical data were adjusted for consistency. *Combination* includes ore/bulk/oil carriers, and bulk/oil carriers. *Gas carriers* includes liquified natural gas (LNG) carriers, liquified petroleum gas (LPG) carriers, and LNG/LPG carriers. *General cargo* includes general cargo carriers, partial containerships, refrigerated ships, barge carriers, and livestock carriers. *Roll-on, roll-off vessels* are especially designed to carry wheeled container trailers or other wheeled cargo and use the roll-on, roll-off method for loading and unloading.

SOURCE: U.S. Department of Transportation, Maritime Administration, Office of Statistical and Economic Analysis, *Vessel Calls at U.S. Ports 2002–2003* (Washington, DC: 2004), table S-1.

TABLE 13-6 U.S. Railroad Freight Carloads and Tonnage: 1993–2003
Millions

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Tons	1,397	1,470	1,550	1,611	1,585	1,649	1,717	1,738	1,742	1,767	1,799
Carloads (number)	21.7	23.2	23.7	24.2	25.0	25.7	27.1	27.8	27.2	27.9	28.9

SOURCE: Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), pp. 24 and 28.

TABLE 13-7 Average Loaded U.S. Railcar Weight: 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Tons per carload	64.4	63.4	65.3	66.7	63.4	64.1	63.4	62.6	64.0	63.3	62.3

NOTE: Average railcar weight is total tons transported divided by total carloads transported.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data in table 13-6.

TABLE 13-8 Average Loaded U.S. Railcar Weight for Selected Commodities: 1993 and 2003
Tons per carload

	1993	2003
Farm products	90.1	93.0
Coal	100.5	111.4
Nonmetallic minerals	91.8	96.8
Food and kindred products	63.5	69.1
Chemicals and allied products	83.4	84.2
Transportation equipment	21.1	20.4
Miscellaneous mixed shipments	16.8	14.5

NOTES: Miscellaneous mixed shipments is mostly intermodal traffic. Some intermodal traffic is included in commodity-specific categories as well.

SOURCES: 2003—Association of American Railroads (AAR), *Railroad Facts 2004* (Washington, DC: 2004), pp. 25 and 29. **1993—**U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on AAR, *Railroad Ten-Year Trends 1990–1999* (Washington, DC: 2000).

TABLE 14-1 U.S. Energy Consumption by Sector: 1994–2004
Quadrillion British thermal units (Btu)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Transportation	23.5	24.0	24.5	24.8	25.4	26.1	26.7	26.3	26.7	26.9	27.5
Residential	18.1	18.7	19.6	19.1	19.1	19.6	20.5	20.3	20.9	21.3	21.4
Commercial	14.1	14.7	15.2	15.7	16.0	16.3	17.1	17.3	17.6	17.5	17.7
Industrial	33.6	33.9	34.9	35.2	34.8	34.7	34.6	32.5	32.8	33.0	33.8
Total	**89.3**	**91.2**	**94.2**	**94.7**	**95.1**	**96.8**	**98.9**	**96.4**	**98.0**	**98.8**	**100.3**
Transportation as a % of total	26.3	26.3	26.0	26.2	26.6	27.0	27.0	27.3	27.2	27.3	27.4

NOTE: Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, table 2.1, available at http://www.eia.doe.gov/mer/, as of April 2005.

TABLE 14-2a Change in Transportation Sector Energy Use and Gross Domestic Product: 1994–2004
1994 = 100

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Transportation sector energy use	100	102	104	106	108	111	114	112	114	115	117
Gross Domestic Product (GDP)	100	103	106	111	116	121	125	126	129	132	138
Transportation energy use per dollar GDP	100	99	98	95	93	92	91	89	88	86	85

NOTE: To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 14-2b) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data in table 14-2b.

TABLE 14-2b Transportation Sector Energy Use and Gross Domestic Product: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Transportation sector energy use (quadrillion Btu)	23.5	24.0	24.5	24.8	25.4	26.1	26.7	26.3	26.7	26.9	27.5
Gross Domestic Product (GDP) (billions of chained 2000 dollars)	7,836	8,032	8,329	8,704	9,067	9,470	9,817	9,891	10,075	10,381	10,842
Transportation energy use per dollar GDP	3,000	2,983	2,943	2,850	2,797	2,757	2,720	2,657	2,649	2,593	2,538

KEY: Btu = British thermal units. The average heat content of motor gasoline is 129,024 Btu per gallon. One quadrillion Btu is equivalent to 7.75 billion gallons of motor gasoline.

SOURCES: Transportation sector energy use—U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, available at http://www.eia.doe.gov/mer/, as of April 2005. **GDP—**U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Account tables, available at http://www.bea.gov/, as of April 2005.

TABLE 14-3 U.S. Petroleum Use by Sector: 1993–2003
Million barrels per day

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Transportation	11.1	11.4	11.7	11.9	12.1	12.4	12.8	13.0	12.9	13.1	13.2
Industry	4.4	4.7	4.6	4.8	5.0	4.8	5.0	4.9	4.9	5.0	5.0
Buildings	1.2	1.2	1.1	1.2	1.2	1.1	1.2	1.3	1.3	1.3	1.3
Utilities	0.5	0.5	0.3	0.4	0.4	0.6	0.5	0.5	0.6	0.4	0.5
Total	**17.2**	**17.7**	**17.7**	**18.3**	**18.6**	**18.9**	**19.5**	**19.7**	**19.6**	**19.8**	**20.0**
Transportation as a % of total	64.5	64.4	65.8	65.1	65.0	65.7	65.4	66.1	65.8	66.4	66.1

NOTES: 2003 data are estimates, except for utilities, which are preliminary. Data may not add to total because of independent rounding.

SOURCE: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2003*, table 5.13a-d, available at http://www.eia.doe.gov/aer/, as of November 2004.

TABLE 14-4a Average Transportation Fuel Prices by Type: 1994–2004
Chained 2000 dollars per gallon

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Aviation gasoline	1.06	1.09	1.19	1.18	1.01	1.08	1.31	1.29	1.24	1.41	1.68
Jet fuel, kerosene	0.59	0.59	0.69	0.64	0.47	0.55	0.90	0.76	0.69	0.82	1.11
Motor gasoline, all types	1.30	1.31	1.37	1.35	1.16	1.25	1.56	1.50	1.38	1.55	1.78
Diesel no. 2	0.61	0.61	0.73	0.67	0.51	0.60	0.94	0.82	0.73	0.89	1.15
Railroad diesel	0.66	0.65	0.72	0.71	0.59	0.57	0.87	0.83	0.70	0.84	U
Crude oil	0.41	0.45	0.53	0.48	0.31	0.43	0.67	0.53	0.55	0.64	0.81

KEY: U = data are unavailable.

NOTES: Except for motor gasoline, data do not include taxes. Motor gasoline data are retail prices, U.S. city average. Aviation, jet, and diesel no. 2 data are refiner prices to end users. Crude oil data are refiner acquisition costs.

To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 14-4b) to chained 2000 dollars.

SOURCES: Except railroad diesel—U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, tables 9.1 (crude oil), 9.4 (motor gasoline), and 9.7 (aviation, jet, and diesel no. 2), available at http://www.eia.doe.gov/, as of May 2005. **Railroad diesel—**Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 61.

TABLE 14-4b Average Transportation Fuel Prices by Type: 1994–2004
Current dollars per gallon

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Aviation gasoline	0.96	1.01	1.12	1.13	0.98	1.06	1.31	1.32	1.29	1.49	1.82
Jet fuel, kerosene	0.53	0.54	0.65	0.61	0.45	0.54	0.90	0.78	0.72	0.87	1.21
Motor gasoline, all types	1.17	1.21	1.29	1.29	1.12	1.22	1.56	1.53	1.44	1.64	1.92
Diesel no. 2	0.55	0.56	0.68	0.64	0.49	0.58	0.94	0.84	0.76	0.94	1.24
Railroad diesel	0.60	0.60	0.68	0.68	0.57	0.55	0.87	0.85	0.73	0.89	U
Crude oil	0.37	0.41	0.49	0.45	0.30	0.42	0.67	0.55	0.57	0.68	0.88

KEY: U = data are unavailable.

NOTES: Except for motor gasoline, data do not include taxes. Motor gasoline data are retail prices, U.S. city average. Aviation, jet, and diesel no. 2 data are refiner prices to end users. Crude oil data are refiner acquisition costs.

SOURCES: Except railroad diesel—U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, tables 9.1 (crude oil), 9.4 (motor gasoline), and 9.7 (aviation, jet, and diesel no. 2), available at http://www.eia.doe.gov/, as of May 2005. **Railroad diesel—**Association of American Railroads, *Railroad Facts 2004* (Washington, DC: 2004), p. 61.

TABLE 14-5 Average Motor Gasoline Prices and Highway Vehicle-Miles of Travel per Capita: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Motor gasoline price (chained 2000 dollars)	1.30	1.31	1.37	1.35	1.16	1.25	1.56	1.50	1.38	1.55	1.78
Vmt per capita	8,960	9,098	9,228	9,396	9,540	9,644	9,735	9,812	9,916	9,941	U

KEY: U = data are unavailable; vmt = vehicle-miles of travel.

NOTE: To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (see table 14-4b) to chained 2000 dollars.

SOURCES: Motor gasoline prices—U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review,* table 9.4, available at http://www.eia.doe.gov/, as of May 2005. **Vmt per capita—**U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from USDOT, BTS, *National Transportation Statistics 2004,* table 1-32, available at http://www.bts.gov/, as of May 2005. **Population—**U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States,* section 1, table 2, available at http://www.census.gov/, as of May 2005.

TABLE 14-6 Average Jet Fuel Prices and Aircraft-Miles of Travel per Capita: 1994–2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Jet fuel price (chained 2000 dollars)	0.59	0.59	0.69	0.64	0.47	0.55	0.90	0.76	0.69	0.82	1.11
Aircraft-miles of travel per capita	16.6	17.4	17.9	18.0	18.3	19.1	20.1	19.5	19.5	20.9	U

KEY: U = data are unavailable.

NOTES: To eliminate the effects of inflation over time, the Bureau of Transportation Statistics converted current dollars (available in table 14-4b) to chained 2000 dollars. Aircraft-miles of travel pertain to large carriers only.

SOURCES: Jet fuel prices—U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review,* table 9.7, available at http://www.eia.doe.gov, as of May 2005. **Aircraft-miles of travel per capita—**U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations using data from USDOT, BTS, *National Transportation Statistics 2004,* table 1-32, available at http://www.bts.gov/, as of May 2005. **Population—**U.S. Department of Commerce, U.S. Census Bureau, *Statistical Abstract of the United States,* section 1, table 2, available at http://www.census.gov/, as of May 2005.

TABLE 14-7a Change in Passenger-Miles of Travel, Energy Consumption, and Energy Efficiency: 1992–2002
1992 = 100

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Passenger-miles of travel	100	102	104	105	108	111	115	118	121	125	127
Energy consumption	100	103	105	107	109	112	114	119	119	119	121
Energy efficiency	100	99	99	99	99	100	100	99	102	105	105

NOTES: To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 14-7b) by the initial year value and multiplied the result by 100.

Passenger-miles of travel (pmt) is the sum of pmt for certificated air carriers (domestic), passenger cars, motorcycles, light trucks (other 2-axle, 4-tire vehicles), buses, transit (excluding bus), and intercity/Amtrak rail. *Energy consumption* is the sum of usage by commercial aviation (passenger), gasoline fuel (passenger cars, light trucks, and buses), and Amtrak (which includes electricity and distillate/diesel fuels). Passenger commercial domestic aviation fuel consumption data were estimated from total commercial domestic aviation fuel consumption data. General aviation data were excluded because passenger and freight operations data cannot be disaggregated.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based in data on table 14-7b.

TABLE 14-7b Passenger-Miles of Travel, Energy Consumption, and Energy Efficiency: 1992–2002

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Passenger-miles of travel (billions)	3,925	3,996	4,082	4,120	4,247	4,376	4,497	4,620	4,733	4,916	4,967
Energy consumption (trillions of Btu)	14,668	15,123	15,404	15,631	16,033	16,399	16,787	17,416	17,387	17,437	17,735
Energy efficiency (pmt/thousand Btu)	0.268	0.264	0.265	0.264	0.265	0.267	0.268	0.265	0.272	0.282	0.280

KEY: Btu = British thermal units; pmt = passenger-miles of travel.

NOTES: *Pmt* is the sum of pmt for certificated air carriers (domestic), passenger cars, motorcycles, light trucks (other 2-axle, 4-tire vehicles), buses, transit (excluding bus), and intercity/Amtrak rail. *Energy consumption* is the sum of usage by commercial aviation (passenger), gasoline fuel (passenger cars, light trucks, and buses), and Amtrak (which includes electricity and distillate/diesel fuels). Passenger commercial domestic aviation fuel consumption data were estimated from total commercial domestic aviation fuel consumption data. General aviation data were excluded because passenger and freight operations data cannot be disaggregated.

SOURCES: Pmt and energy use (except transit)—U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations based on USDOT, BTS, *National Transportation Statistics 2004,* tables 4-6 and 4-8, available at http://www.bts.gov/, as of March 2005. **Transit energy use—**American Public Transportation Association, *Public Transportation Fact Book 2005* (Washington, DC: 2005), tables 34 and 35.

TABLE 14-8a Change in Freight Ton-Miles, Energy Consumption, and Energy Efficiency: 1992–2002
1992 = 100

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Ton-miles	100	100	106	111	113	113	115	117	119	121	122
Energy consumption	100	99	104	110	112	112	119	123	129	125	125
Energy efficiency	100	101	102	101	101	101	97	95	93	97	98

NOTES: To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 14-8b) by the initial year value and multiplied the result by 100.

Ton-miles is the sum of individual ton-miles for air carriers, intercity trucks, Class I rail, and domestic water transportation. *Energy consumption* is the sum of usage by air carriers; single unit, 2-axle, 6-tire trucks; combination trucks; Class I rail (distillate/diesel fuel); and water transportation (residual and distillate/diesel fuel oil). Marine gasoline use data were excluded, because marine gasoline is used primarily in recreational vehicles. Commercial domestic aviation fuel consumption data were estimated from total commercial domestic aviation fuel consumption. General aviation data were excluded, because passenger and freight data cannot be disaggregated. Pipeline data were excluded, because ton-miles data include all types of petroleum products and energy consumption data were available for natural gas only.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations based on data in table 14-8b.

TABLE 14-8b Freight Ton-Miles, Energy Consumption, and Energy Efficiency: 1992–2002

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Ton-miles (billions)	2,862	2,872	3,044	3,179	3,227	3,232	3,284	3,360	3,411	3,458	3,487
Energy consumption (trillions of Btu)	5,654	5,606	5,898	6,220	6,326	6,315	6,706	6,959	7,272	7,048	7,046
Energy efficiency (ton-miles/thousand Btu)	0.506	0.512	0.516	0.511	0.510	0.512	0.490	0.483	0.469	0.491	0.495

KEY: Btu = British thermal units.

NOTES: *Ton-miles* is the sum of individual ton-miles for air carriers, intercity trucks, Class I rail, and domestic water transportation. *Energy consumption* is the sum of usage by air carriers; single unit, 2-axle, 6-tire trucks; combination trucks; Class I rail (distillate/diesel fuel); and water transportation (residual and distillate/diesel fuel oil). Marine gasoline use data were excluded because marine gasoline is used primarily in recreational vehicles. Commercial domestic aviation fuel consumption data were estimated from total commercial domestic aviation fuel consumption. General aviation data were excluded because passenger and freight data cannot be disaggregated. Pipeline data were excluded because ton-miles data include all types of petroleum products and energy consumption data were available for natural gas only.

SOURCE: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration, Bureau of Transportation Statistics (BTS), calculations based on: **Ton-miles—**see table 1-12b in appendix B; **Energy use—**USDOT, BTS, *National Transportation Statistics 2004,* tables 1-44, 4-6, and 4-8, available at http://www.bts.gov/, as of March 2005.

TABLE 15-1a Change in Transportation Air Pollutant Emissions by Type: 1992–2002
1992 = 100

All modes	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Carbon monoxide	100	95	90	85	80	77	75	71	70	65	62
Nitrogen oxides	100	99	98	97	96	96	95	91	92	87	82
Volatile organic compounds	100	95	90	84	79	77	76	74	70	66	62
PM-10	100	97	94	91	88	85	82	78	75	71	69
PM-2.5	100	97	94	90	86	83	79	75	71	67	65
Lead	100	94	93	97	90	90	89	92	97	N	N
Ammonia	100	107	114	122	127	141	137	143	147	149	154

KEY: N = data are nonexistent; PM-10 = particulate matter of 10 microns in diameter or smaller; PM-2.5 = particulate matter of 2.5 microns in diameter or smaller.

NOTE: To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 15-1b) by the initial year value and multiplied the result by 100.

SOURCE: U.S. Department of Transportation, Research and Innovative Technoloy Administration, Bureau of Transportation Statistics, calculations using data in table 15-1b.

TABLE 15-1b Transportation Air Pollutant Emissions by Type: 1992–2002
Thousands of short tons

All modes	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Carbon monoxide	103,890	98,668	93,440	88,216	82,991	80,222	77,644	73,641	72,493	67,987	64,660
Nitrogen oxides	11,445	11,333	11,217	11,102	10,989	11,023	10,820	10,358	10,571	9,949	9,438
Volatile organic compounds	9,549	9,051	8,551	8,053	7,555	7,326	7,212	7,104	6,682	6,305	5,927
PM-10	463	450	437	423	408	395	378	361	347	331	320
PM-2.5	391	378	366	350	337	325	307	295	279	262	254
Lead	0.6	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.6	N	N
Ammonia	188	202	215	229	239	266	258	269	277	281	289
Total	**125,927**	**120,083**	**114,227**	**108,374**	**102,520**	**99,558**	**96,620**	**92,029**	**90,650**	**85,115**	**80,888**

KEY: N = data are nonexistent; PM-10 = particulate matter of 10 microns in diameter or smaller; PM-2.5 = particulate matter of 2.5 microns in diameter or smaller.

NOTE: Data may not add to total because of independent rounding.

SOURCES: Except as noted—U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards, *National Emissions Inventory, 2002 Air Pollutant Emission Trends*, available at http://www.epa.gov/ttn/, as of March 2005. **Lead—**Because EPA no longer estimates lead emissions, the data presented on this table are from prior year EPA reports.

TABLE 15-2 Share of Selected Air Pollutants by Mode: 2002
Percent

	CO	NO_x	VOC	PM-10
Highway gasoline	91.8	42.1	73.1	28.4
Highway diesel	1.5	36.0	3.5	35.3
Aircraft	0.4	0.9	0.4	0.9
Marine vessels	0.2	10.7	0.5	13.8
Railroad	0.1	9.4	0.6	6.9
Other	6.0	1.0	21.9	14.7
Total	**100.0**	**100.0**	**100.0**	**100.0**

KEY: CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; PM-10 = particulate matter of 10 microns in diameter or smaller.

NOTES: Percentages may not add to 100 because of independent rounding. EPA no longer estimates lead emissions. Modal shares in 2000 were: highway gasoline vehicles, 4.1%; aircraft, 95.9%. *Highway gasoline* includes light-duty gas vehicles and motorcycles, light-duty gas trucks, and heavy-duty gas vehicles. *Highway diesel* includes heavy-duty diesel vehicles, and light-duty diesel trucks and vehicles. *Marine vessels* include coal, diesel, residual oil, gasoline, and other. *Other* includes diesel and gasoline recreational vehicles, airport service, railway maintenance, and recreational marine service. This table does not include farm, construction, industrial, logging, light commercial, and lawn and garden equipment.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statististics calculations using data from U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards, *National Emissions Inventory, 2002 Air Pollutant Emission Trends*, available at http://www.epa.gov/ttn/, as of March 2005.

TABLE 15-3a Change in Carbon Dioxide Emissions by Mode: 1993–2003
1993 = 100

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Passenger cars	100	101	101	102	102	105	106	107	107	109	108
Light-duty trucks	100	102	106	110	113	116	120	121	122	125	128
All other trucks	100	107	111	117	123	128	134	141	144	144	150
Buses	100	105	104	111	114	117	130	128	121	115	112
Total highway	100	102	105	108	110	113	116	118	119	121	123
Aircraft	100	105	102	107	106	108	111	115	109	104	102
Ships and boats	100	99	102	99	71	60	78	116	79	106	106
Locomotives	100	108	112	117	115	116	120	120	123	118	123
Other	100	108	109	110	116	104	106	105	99	105	100
Total, all modes	**100**	**103**	**105**	**107**	**108**	**110**	**114**	**117**	**116**	**118**	**119**
International bunker fuels	100	102	106	108	115	112	111	111	107	97	91

NOTES: To make it easier to compare data of differing magnitudes over time, the Bureau of Transportation Statistics divided the data for all years in each category (see table 15-3b) by the initial year value and multiplied the result by 100.

Highway total includes passenger cars, buses, light-duty trucks, and other trucks. *Other* carbon dioxide emissions are from motorcycles, construction equipment, agricultural machinery, pipelines, and lubricants. *International bunker fuel* emissions (not included in the total) result from the combustion of fuels purchased in the United States but used for international aviation and maritime transportation. Thus, *aircraft* and *ships and boats* data included in U.S. total emissions involve only domestic activities of these modes as do all other data shown. The large annual variations in ships and boats data may result from methodological problems related to the domestic/international partition of maritime emissions. Economic factors may also contribute.

Aircraft emissions consist of emissions from all jet fuel (less bunker fuels) and aviation gas consumption. Alternative-fuel vehicle emissions are allocated to the specific vehicle types in which they were classified (i.e., passenger cars, light-duty trucks, and other trucks and buses).

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 15-3b.

TABLE 15-3b Carbon Dioxide Emissions by Mode: 1993–2003
Teragrams of carbon dioxide equivalent

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Passenger cars	584.8	589.8	592.5	598.4	595.5	613.8	622.4	623.4	625.7	639.5	633.7
Light-duty trucks	373.0	381.5	396.2	409.3	421.6	432.1	449.2	452.1	456.2	468.1	478.8
All other trucks	226.7	241.7	251.6	265.7	279.9	290.4	304.3	320.4	327.5	327.5	341.2
Buses	8.0	8.4	8.3	8.8	9.1	9.3	10.4	10.2	9.6	9.1	8.9
Total highway	1,192.6	1,221.4	1,248.7	1,282.3	1,306.0	1,345.6	1,386.2	1,406.2	1,419.0	1,444.2	1,462.5
Aircraft	168.1	176.1	171.8	180.1	179.0	181.3	186.7	193.2	183.4	174.9	171.3
Ships and boats	54.2	53.4	55.2	53.4	38.7	32.4	42.3	63.1	42.7	57.2	57.5
Locomotives	34.8	37.6	39.1	40.7	40.0	40.5	41.7	41.8	42.8	41.0	42.8
Other	46.7	50.6	51.0	51.4	54.2	48.7	49.3	48.9	46.1	49.0	46.6
Total, all modes	**1,496.4**	**1,539.1**	**1,565.8**	**1,607.9**	**1,618.0**	**1,648.7**	**1,706.2**	**1,753.1**	**1,734.2**	**1,766.4**	**1,780.7**
International bunker fuels	92.1	94.2	98.0	99.3	106.1	103.3	102.7	102.2	98.5	89.5	84.2

KEY: 1 teragram = 1 trillion grams.

NOTES: *Other* carbon dioxide emissions are from motorcycles, pipelines, and lubricants. *International bunker fuel* emissions (not included in the total) result from the combustion of fuels purchased in the United States but used for international aviation and maritime transportation. Thus, *aircraft* and *ships and boats* data included in U.S. total emissions involve only domestic activities of these modes as do all other data shown. *Aircraft* emissions consist of emissions from all jet fuel (less bunker fuels) and aviation gas consumption. Alternative-fuel vehicle emissions are allocated to the specific vehicle types in which they were classified (i.e., passenger cars, light-duty trucks, and other trucks and buses).

SOURCE: U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2003* (Washington, DC: April 2005), table 2-17.

TABLE 15-4 Carbon Dioxide Emissions by Type of Highway Vehicle: 2003

	$TgCO_2Eq$	Percent
Passenger cars	633.7	43.3
Light-duty trucks	478.8	32.7
All other trucks	341.2	23.3
Buses	8.9	0.6
Total, highway	**1,462.5**	**100.0**

KEY: $TgCO_2Eq$ = teragrams of carbon dioxide equivalent. A teragram = 1 trillion grams.

NOTE: Data may not add to total and percentages may not add to 100 because of independent rounding.

SOURCE: U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2003* (Washington, DC: April 2005), table 2-17.

TABLE 15-5 Oil Spills Reported to the U.S. Coast Guard by Source: 1991–2001
Gallons

Mode or source	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Transportation-related	1,624,043	1,440,177	1,893,188	2,040,858	2,543,706	3,035,138	767,439	832,689	991,313	1,373,538	786,157
Maritime vessels and facilities	1,565,492	1,159,266	1,462,701	1,966,782	2,484,891	2,050,317	537,668	772,261	940,212	1,342,630	757,309
All other	58,551	280,911	430,487	74,076	58,815	984,821	229,771	60,428	51,101	30,908	28,848
Pipeline	49,382	200,396	362,399	62,340	11,894	978,392	224,122	47,863	36,140	17,021	13,577
Air	760	63,717	63,384	3,360	1,716	2,221	683	943	355	2,224	861
Highway	7,203	13,577	748	3,219	758	690	1,432	10,111	13,037	7,148	13,905
Rail	1,206	123	3,419	2,117	43,955	610	34	305	563	7	500
Other	0	3,098	537	3,040	492	2,908	3,500	1,206	1,006	4,508	5
Nontransportation	77,872	152,249	102,348	48,161	27,602	43,540	102,671	20,987	90,779	25,890	31,073
Unknown and other	174,038	283,241	71,852	400,254	66,921	39,153	72,464	31,627	90,357	31,942	37,290
Total	**1,875,953**	**1,875,667**	**2,067,388**	**2,489,273**	**2,638,229**	**3,117,831**	**942,574**	**885,303**	**1,172,449**	**1,431,370**	**854,520**
Transportation as % of total	86.6	76.8	91.6	82.0	96.4	97.3	81.4	94.1	84.6	96.0	92.0

NOTE: *Transportation-related* includes oil spilled from transportation vessels, vehicles, and equipment, as well as from transportation-related facilities (e.g., at ports and fuel stations). *Other* includes nonvessel common carriers. Data may not add to total because of independent rounding

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics, calculations based on U.S. Department of Homeland Security, U.S. Coast Guard, *Pollution Incidents In and Around U.S. Waters,* available at http://www.uscg.mil/, as of October 2003.

TABLE 15-6 Total Reported Oil Spills by Source: 1991–2001

Mode or source	Percentage of total	All oil spills (gallons)
Maritime tank vessels	37.4	7,245,027
Maritime nontank and other vessels	18.5	3,584,388
Maritime facilities	21.8	4,210,114
Pipeline	10.4	2,003,526
Highway, air, rail, and other transportation	1.5	285,191
Nontransportation structures and facilities	3.7	723,172
Unknown and other	6.7	1,299,139
Total	**100.0**	**19,350,557**

NOTE: Percentages may not add to 100 because of independent rounding.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, calculations using data in table 15-5.

TABLE 15-7 Hazardous Materials Incidents by Mode: 1994–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Air	931	817	925	1,031	1,386	1,582	1,419	1,083	732	751	995
Highway	14,011	12,869	12,034	11,932	13,111	14,953	15,063	15,806	13,505	13,599	12,977
Rail	1,157	1,155	1,112	1,102	989	1,073	1,058	899	870	802	753
Water	6	12	6	5	11	8	17	6	10	10	15
Total	**16,105**	**14,853**	**14,077**	**14,070**	**15,497**	**17,616**	**17,557**	**17,794**	**15,117**	**15,162**	**14,740**

SOURCES: 1994—U.S. Department of Transportation (USDOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Hazardous Materials Information System database, available at http://hazmat.dot.gov/pubs/, as of April 2005. **1995–2004**—USDOT, PHMSA, Hazardous Materials Information System, 10-Year Hazardous Materials Data, available at http://hazmat.dot.gov/pubs/, as of May 2005.

TABLE 15-8 Hazardous Materials Fatalities by Mode: 1994–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Air	0	0	110	0	0	0	0	0	0	0	0
Highway	11	7	8	12	13	9	16	9	8	15	10
Rail	0	0	2	0	0	0	0	3	1	0	3
Water	0	0	0	0	0	0	0	0	0	0	0
Total	**11**	**7**	**120**	**12**	**13**	**9**	**16**	**12**	**9**	**15**	**13**

SOURCES: 1994—U.S. Department of Transportation (USDOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Hazardous Materials Information System database, available at http://hazmat.dot.gov/pubs/, as of April 2005. **1995–2004**—USDOT, PHMSA, Hazardous Materials Information System, 10-Year Hazardous Materials Data, available at http://hazmat.dot.gov/pubs/, as of May 2005.

TABLE 15-9 Hazardous Materials Injuries by Mode: 1994–2004
Number

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Air	57	33	33	24	20	12	5	13	4	1	12
Highway	425	296	216	152	151	217	164	109	118	105	156
Rail	95	71	926	45	22	35	82	46	14	13	121
Water	0	0	0	0	2	0	0	0	0	0	0
Total	**577**	**400**	**1,175**	**221**	**195**	**264**	**251**	**168**	**136**	**119**	**289**

SOURCES: 1994—U.S. Department of Transportation (USDOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Hazardous Materials Information System database, available at http://hazmat.dot.gov/pubs/, as of April 2005. **1995–2004**—USDOT, PHMSA, Hazardous Materials Information System, 10-Year Hazardous Materials Data, available at http://hazmat.dot.gov/pubs/, as of May 2005.

U.S. Department of Transportation
Research and Innovative Technology Administration
Bureau of Transportation Statistics