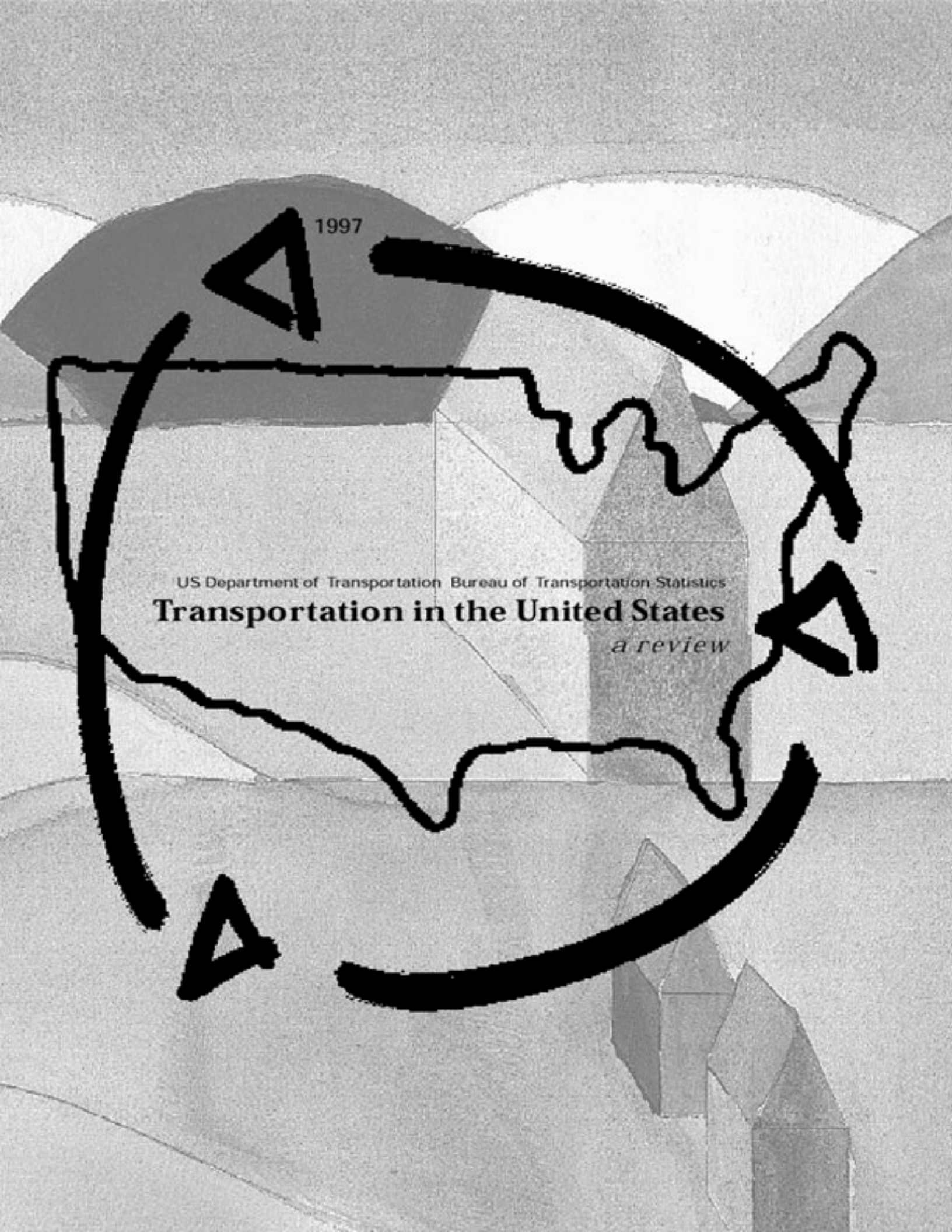

US Department of Transportation Bureau of Transportation Statistics

Transportation in the United States

a review

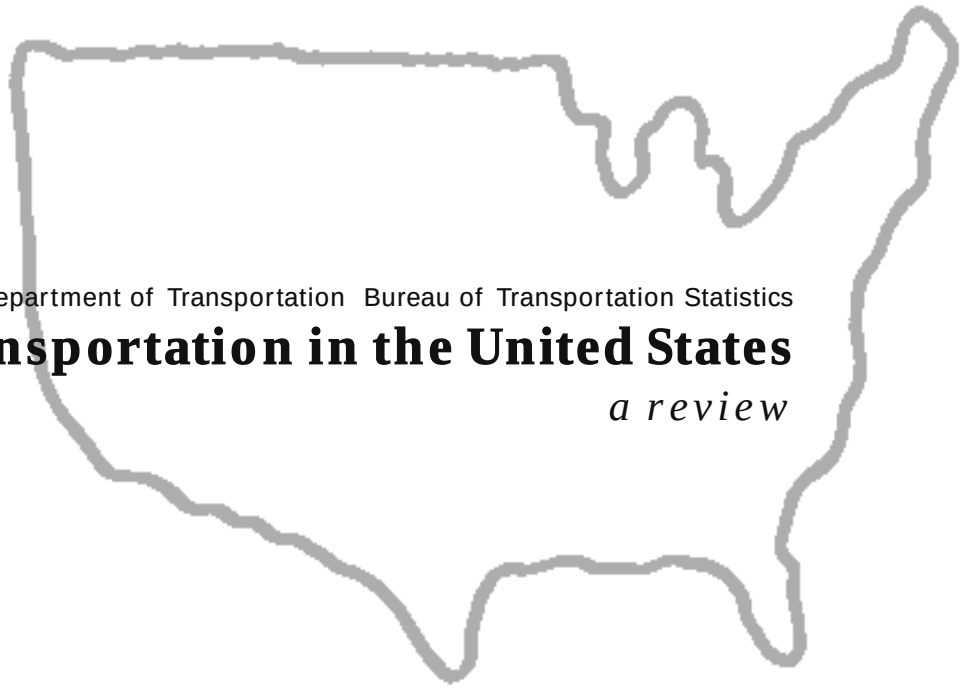

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TABLE OF CONTENTS

The United States has the largest transportation system in the world. It serves 260 million people and 6 million business establishments spread over the fourth largest country (in land area) in the world. This report provides a snapshot of the transportation system, highlighting its physical characteristics and trends in passenger travel and freight movement, and examining transportation's economic performance, its safety record, energy use, and environmental impacts.[1]

As users and customers of the transportation system, few of us notice anything but a small part of the system unless we are caught in a traffic jam, suffer or read about an accident, or sit in a plane delayed on the runway. We buy fresh fruits and vegetables in mid-winter, send packages on overnight delivery, fly cross country to solve a business crisis, move hundreds or thousands of miles to a new job knowing we can easily return often to visit family, send our children to distant colleges, and take it all for granted. Some of us even travel 1,000 miles on special flights to shop, or enjoy weekend respites half a continent away. None of this would be possible without a complex network of road, rail, water, pipeline, and air routes blanketing the country, which, for the most part, works well.

Long before the communications revolution, freedom to travel helped to bind the nation together.

Long before the communications revolution, freedom to travel helped to bind the nation together. And freedom to travel is more than a physical ability; travel must also be affordable enough so that anyone can travel extraordinary distances frequently, by historical standards. There was a

[1] A more detailed assessment is published by the Bureau of Transportation Statistics (BTS) in the *Transportation Statistics Annual Report.* To obtain this and other BTS products, see ordering information at the end of this report.

time when it was not uncommon for people to travel no more than 20 miles from their birthplace during their lifetime; now that is difficult to imagine. Mobility and remarkable access to economic and social opportunities are made possible by the U.S. transportation system. The system consists of not only vehicles and an extensive physical infrastructure, but also the intellectual capital of its large workforce, and the agencies that administer transportation programs and regulations. Increasingly, information technologies, including telecommunications, computers, and global positioning systems, are used in all aspects of the transportation system.

The distance traveled by the average car or light truck in the United States in 1995 equaled a journey nearly halfway around the earth.

The sheer physical size of the transportation system is difficult to comprehend (see table 1). Its 4 million miles of roads would circle the globe more than 157 times, or go to the moon and back more than 8 times. Its rail lines would circle the globe nearly 7 times, and the oil and gas pipelines nearly 56 times. In 1995, cars and light trucks—the vast majority of them personal vehicles—were driven 2.2 trillion miles in the United States. This is literally an astronomical distance, nearly one-tenth of the distance to the nearest star outside our solar system. A more down-to-earth measure: the distance traveled by the average car or light truck in the United States in 1995 equaled a journey nearly halfway around the earth.

Transportation is a major component of the economy, accounting for nearly 11 percent of gross domestic product (GDP)—more than education, but less than food and health care (see figure 1). It provides the links between businesses, industries, and consumers. Transportation and related industries employ 9.9 million people in the United States—slightly more than 7 percent of the total civilian labor force.

The economic importance of the U.S. transportation system goes well beyond our borders. It affects the ability of U.S. businesses to compete in the expanding global economy. Over time, international trade has grown in importance as a component of the U.S. economy. The ratio of the sum of U.S. exports and imports to U.S. GDP shows this trend clearly.[2] In 1995, total exports and imports of goods and services amounted to 24.7 percent of GDP, compared with 11.3 percent in 1970. Commodities trade, which is more closely relat-

[2] GDP measures the size of the economy, and the sum of exports and imports measures the size of the international trade component of the economy. The ratio of the sum of U.S. exports and imports to GDP should not be confused with the share of international trade as a component of GDP. The latter measures the net value of exports minus imports as a component of GDP.

TABLE 1.
MAJOR ELEMENTS OF THE TRANSPORTATION SYSTEM, 1995

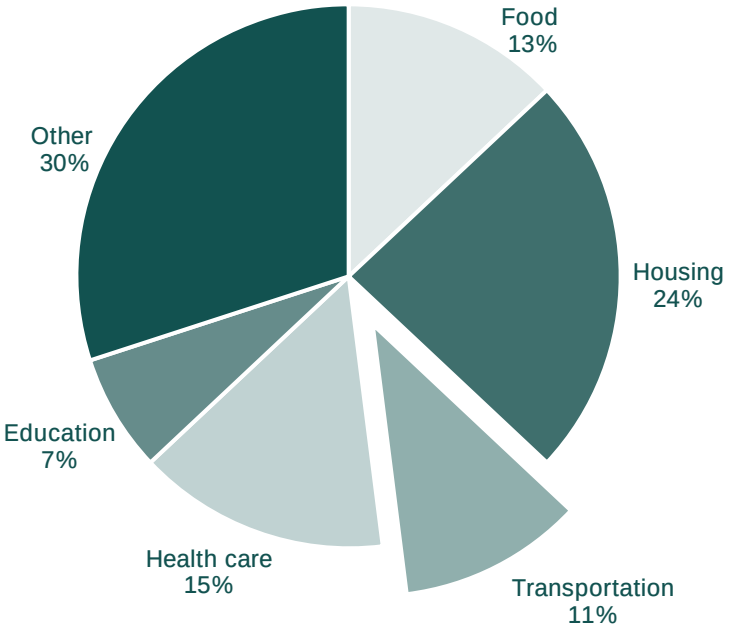
Mode	Major defining elements	Components
Highways[a]	Public roads and streets; automobiles, vans, trucks, motorcycles, taxis, and buses (except local transit buses) operated by transportation companies, other businesses, governments, and households; garages, truck terminals, and other facilities for motor vehicles	*Roads* 45,744 miles of Interstate highway 111,237 miles of other National Highway System roads 3,755,245 miles of other roads *Vehicles and use* 136 million cars, driven 1.5 trillion miles 58 million light trucks, driven 0.7 trillion miles 6.9 million freight trucks, driven 0.2 trillion miles 686,000 buses, driven 6.4 billion miles
Air	Airways and airports; airplanes, helicopters, and other flying craft for carrying passengers and cargo	*Public use airports* 5,415 airports *Airports serving large certificated carriers*[b] 29 large hubs (67 airports), 393 million enplaned passengers 33 medium hubs (59 airports), 86 million enplaned passengers 58 small hubs (73 airports), 34 million enplaned passengers 561 nonhubs (593 airports), 14 million enplaned passengers *Aircraft* 5,567 certificated air carrier aircraft, 4.6 billion miles flown* *Passenger and freight companies* 86 carriers, 506 million domestic revenue passenger enplanements, 12.5 billion domestic ton-miles of freight* *General aviation* 171,000 aircraft, 2.9 billion miles flown[c]
Rail[d]	Freight railroads and Amtrak	*Railroads* 125,072 miles of major (Class I) 18,815 miles of regional 26,546 miles of local *Equipment* 1.2 million freight cars 18,812 locomotives *Freight railroad firms* Class I: 11 companies, 188,215 employees, 1.3 trillion ton-miles of freight carried Regional: 30 companies, 10,647 employees Local: 500 companies, 13,269 employees *Passenger (Amtrak)* 23,646 employees, 1,921 passenger cars, 356 locomotives, 20.7 million passengers carried
Transit[e]	Commuter trains, heavy-rail (rapid-rail) and light-rail (streetcar) transit systems, local transit buses, vans and other demand response vehicles, and ferryboats	*Vehicles* 43,723 buses, 17.2 billion passenger-miles 9,046 rapid rail and light rail, 11.5 billion passenger-miles 4,349 commuter rail, 8.0 billion passenger-miles 86 ferries, 243 million passenger-miles 12,828 demand response, 377 million passenger-miles
Water	Navigable rivers, canals, the Great Lakes, St. Lawrence Seaway, Intercoastal Waterway, ocean shipping channels; ports; commercial ships and barges, fishing vessels, and recreational boating	*U.S.-flag domestic fleet*[f] Great Lakes: 698 vessels, 60 billion ton-miles Inland: 31,910 vessels, 306 billion ton-miles Ocean: 7,033 vessels, 440 billion ton-miles *Ports*[g] Great Lakes: 362 terminals, 507 berths Inland: 1,811 terminals Ocean: 1,578 terminals, 2,672 berths
Pipeline[h]	Crude oil, petroleum product, and natural gas lines	*Oil* Crude lines: 114,000 miles of pipe, 323 billion ton-miles transported Product lines: 86,500 miles of pipe, 269 billion ton-miles transported 161 companies, 14,900 employees *Gas* Transmission: 276,000 miles of pipe Distribution: 919,000 miles of pipe 19.7 trillion cubic feet, 150 companies, 187,200 employees

[a] U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 1995* (Washington, DC: 1996).
[b] U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Airport Activity Statistics of Certificated Air Carriers, 12 Months Ending December 31, 1995* (Washington DC: 1996).
[c] Data for 1994.
[d] All numbers are from Association of American Railroads, *Railroad Facts* (Washington, DC: 1996), except Amtrak figures from National Railroad Passenger Corporation, *1995 Annual Report* (Washington, DC: 1996).
[e] Data for 1994. U.S. Department of Transportation, Federal Transit Administration, *National Transit Summaries and Trends for the 1994 National Transit Database, Section 15 Report Year* (Washington, DC: 1996). Figures exclude transit for nonurbanized areas (Section 18, Federal Transit Act).
[f] Vessel data from U.S. Army Corps of Engineers, *Transportation Lines of the United States* (New Orleans, LA: 1996); ton-miles data from U.S. Army Corps of Engineers, *Waterborne Commerce of the United States 1995* (New Orleans, LA: 1996).
[g] Ports data from U.S. Department of Transportation, Maritime Administration, *A Report to Congress on the Status of the Public Ports of the United States 1994–1995* (Washington, DC: October 1996).
[h] Data for 1994.

*Preliminary data.

SOURCE: Unless otherwise noted, U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics 1997* (Washington, DC: 1996).

FIGURE 1. U.S. GROSS DOMESTIC PRODUCT BY MAJOR SOCIAL FUNCTION, 1995



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, various issues, 1996.

ed to freight movement, also more than doubled its ratio to GDP—from 8.1 percent in 1970 to 19.5 percent in 1995. The volume of trade also grew rapidly in absolute terms: for example, waterborne commerce in the United States involving foreign trade increased from 581 million tons in 1970 to over 1.1 billion in 1995.

The benefits of our transportation system do not come without costs: lives lost and shattered in accidents, dependence on foreign sources of oil, pollution of air and water, and the frustrations of congestion. Although safety, energy efficiency, and emissions controls have improved, transportation policies, regulations, and technological advances are still racing to keep up with the continual growth in travel and goods movement.

The ability of the transportation system to meet our logistical and personal mobility needs with a minimum impact on our pocketbooks, our safety, and the environment depends on informed decisions by public agencies, private enterprise, and individuals. Because transportation and the world it serves are constantly changing, informed decisions require continual updating of our understanding of the transportation system, how it is used, what it contributes, and what it affects. This report summarizes our present understanding.

PASSENGER TRAVEL

Between 1970 and 1995, passenger travel nearly doubled in the United States, growing by an average of 2.7 percent a year. Passenger-miles per person increased during this time from 11,400 miles to 17,200 miles. In terms of absolute-miles traveled, the rise in automobile use overshadowed all other modes, growing by over 1 trillion passenger-miles during this period. Passenger-miles in light-duty trucks (including pick-ups, sport utility vehicles, and minivans) grew nearly fivefold.

Air travel more than tripled from 118 billion passenger-miles in 1970 to 415 billion in 1995, an annual growth rate of about 5 percent. Mass transit travel rose from 6.5 billion unlinked trips at its nadir in 1972 to 8 billion in 1980 and fluctuated around that level through the 1980s. In 1994, unlinked trips totaled 7.7 billion. One form of mass transit, commuter rail, continued to grow, increasing from 260 million unlinked trips in 1975 to 338 million in 1994.

Causes of Growth

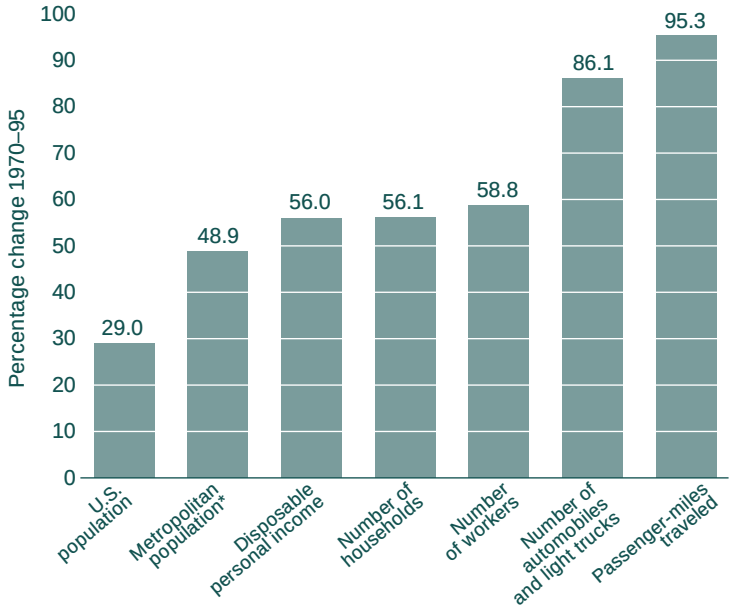
The extraordinary growth in passenger travel cannot be explained simply by the growth in the U.S. population, which rose by only 28 percent during the 1970 to 1995 period, as travel soared by 95 percent. Rather, changes in the labor force, income, the makeup of metropolitan areas, and other factors increased travel (see figure 2).

Passenger travel is growing faster than the population.

During the last quarter century, as baby boomers and women poured into the workplace, the civilian labor force increased by 59 percent, from 83 million to 132 million. The number of women working outside the home nearly doubled, from approximately 32 million to about 61 million. More people working means more people commuting and traveling. The Nationwide Personal Transportation Survey found that, in 1990, employed persons with a license drove 15,280 miles compared with 8,048 miles for those unemployed.

From 1970 to 1995, the number of households increased by 56 percent, nearly twice as much as the increase in population would suggest. The reason: household size decreased

FIGURE 2. CHANGES IN PASSENGER-MILES TRAVELED AND FACTORS AFFECTING TRAVEL DEMAND, 1970–95



*1970–1994.

SOURCES: Adapted from U.S. Department of Transportation, *1995 Status of the Nation's Surface Transportation System: Condition and Performance* (Washington, DC: Oct. 27, 1995); U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1996* (Washington, DC: U.S. Government Printing Office, 1996); and various sources as compiled and cited in U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics 1997* (Washington, DC: December 1996).

from 3.14 people in 1970 to 2.65 in 1995. More households translate into more trips for shopping, recreation, and taking care of children's needs.

Increases in the number of motor vehicles also contributed to the growth in passenger-miles. The number of automobiles and light trucks grew from 107 million in 1970 to 191 million in 1994. This increase is partly related to income growth. Disposable personal income per capita rose from $9,900 in 1970 to $14,700 in 1994 (in constant 1987 dollars). When people have more money to spend, they spend more on transportation, particularly on personal vehicles and long-distance travel.

Changes in locations where people live, work, and shop increased travel and the dependence on private vehicles. Between the 1970 and 1990 censuses, the population in metropolitan areas grew from 140 million to 189 million. Between 1980 and 1990, the central cities lost 500,000 people, while the suburbs gained 17.5 million. At the same time, the suburban share of jobs rose from 37 percent to 42 percent.

TABLE 2.
FACTORS AFFECTING
FUTURE TRANSPORTATION DEMAND

Factor	Comments
Forces of stability	
Population growth	Slow overall growth (approximately 1 percent annually), but higher than most western European countries.
Household formation	Leveling off.
Migration patterns	Slowing of internal migration to growth areas of South and West.
Employment	Slower growth in the labor force.
Women's labor force participation	Slower growth as it approaches that of men's participation.
Vehicle availability	Reaching saturation levels.
Forces of change	
Immigration	Possibly large, with immediate impact on transportation systems.
Aging	Baby boomers coming into prime traveling age: large impact on long-distance domestic and international travel. Retirement decisions, particularly of baby boomers, in 10 to 15 years may also alter commuting patterns and total travel.
Residential and job dispersal	Continued dispersal will lead to more travel, particularly single-occupancy vehicles.
Income	Slow increases in income, but large increases in travel by the low-income population.
Women's travel	Increasing travel by women, not related to having a driver's license or labor force participation.
Work-at-home/telecommuting	Uncertain.

The shift in the location of jobs changed travel patterns. Suburb-to-suburb commutes in 1990 accounted for 44 percent of all metropolitan commutes, while suburb-to-downtown made up only 20 percent. As metropolitan areas expanded and low-density suburbs spread into rural areas, mass transit struggled to provide the same level of service as in higher density city cores. Thus, private vehicle trips soared, as they offered the most direct connections for many suburb-to-suburb commutes by passengers.

Because of these and other factors, passenger travel is likely to continue to increase, although at a more moderate pace. Table 2 summarizes factors that may contribute to future transportation demand.

THE MOVEMENT OF FREIGHT

A modern industrial society depends on the movement of goods of all kinds, from food to iron ore, petroleum, and aluminum, to furniture, computers, and paper. In 1993, the U.S. transportation system carried more than 12 billion tons of goods, and, in so doing, generated a total of 3.6 trillion ton-miles. On a typical day in 1993, approximately 33 million tons

COMMODITY FLOW SURVEY

The 1993 Commodity Flow Survey (CFS) is the most comprehensive effort since 1977 to identify where and how goods are shipped in the United States. It measures the value and weight of commodities shipped by manufacturing, mining, wholesale trade, and selected retail and service industries. Prior surveys only measured shipments by manufacturing establishments.

The CFS was conducted through a partnership between the Bureau of Transportation Statistics (BTS) and the Bureau of the Census. BTS provided funding and technical guidance, while the Census Bureau collected data as part of its economic census. The Federal Highway Administration also provided financial support. Subsequent surveys are scheduled for 1997 and every five years thereafter.

The 1993 survey sampled 200,000 domestic establishments with paid employees, located in the 50 states and the District of Columbia, selected by geographic location and industry. Each establishment reported on a sample of individual shipments made during a two-week period in each of the four quarters of 1993. Data on individual shipments included total value and weight, commodity type, modes of transportation, and domestic origin and destination. The survey also reported on whether the commodities were shipped in containers and if they were hazardous materials. In addition, sample firms provided information on the availability of onsite shipping facilities, access to shipping sites, and transportation equipment ownership and leasing.

The survey excluded establishments classified as farms, forestry, fisheries, construction, transportation, governments, households, and most retail and service businesses. It did not cover shipments originating outside the United States. Commodities shipped from a foreign location to another foreign destination, through the United States (e.g., from Canada to Mexico), and from a foreign location to a U.S. location were excluded as well. Petroleum and natural gas shipments were underreported. Consequently, data on commodity flows for pipeline and water transportation modes are missing from the survey. The Oak Ridge National Laboratory has estimated shipment characteristics for these two modes, and where appropriate, these figures are used in this report.

of goods were shipped an average distance of 298 miles. These numbers were derived from the 1993 Commodity Flow Survey (CFS). (The scope of this survey is summarized in the box above.)

Food and kindred products constitute the largest category of shipments by value, and the fourth largest category by weight, accounting for slightly under 15 percent of the total value of shipments in 1993. (This does not include shipments from farms to grain elevators and food processing facilities.) Other major commodity categories by value were transportation equipment; chemicals or allied products; nonelectrical machinery; and electrical machinery, equipment, or supplies. By weight, other major commodity categories include petroleum or coal products; nonmetallic minerals; coal; and clay, concrete, glass, or stone products.

Trucks dominate our nation's freight transportation system, especially for shipping distances under 500 miles (see table 3). Trucks moved nearly three-quarters of the value and just over half of the weight of all shipments.

TABLE 3.
FREIGHT SHIPMENTS BY MODE OF TRANSPORTATION, 1993

	Tons (thousands)	Value (millions)	Ton-miles (millions)
Total	12,157,105	$6,123,832	3,627,919
Truck (for-hire and private)	6,385,915	4,403,495	869,536
Water	2,128,221	251,162	886,085
Rail	1,544,148	247,394	942,561
Pipeline	1,342,948	180,262	592,900
Other and unknown	544,335	242,691	96,972
Other intermodal combinations[a]	148,883	13,382	185,030
Truck and rail	40,624	83,082	37,675
Parcel, postal, courier service	18,892	563,277	13,151
Air (including truck and air)	3,139	139,087	4,009

[a]Includes truck and water, rail and water, and other combinations.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics, Commodity Flow Survey data; and Oak Ridge National Laboratory estimates for water and pipeline shipments not captured by the Commodity Flow Survey

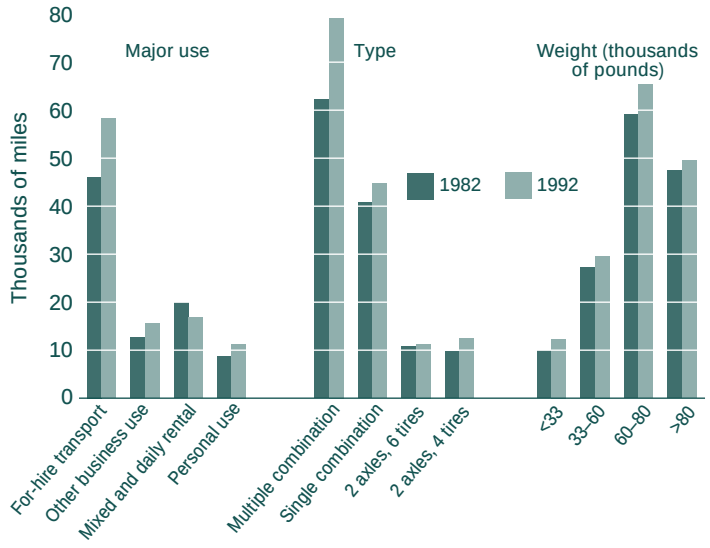
Growth in truck use has been particularly dramatic. According to the Census Bureau's Truck Inventory and Use Survey, the number of trucks used in for-hire transportation increased by 24 percent between 1982 and 1992. Vehicle-miles grew even faster: for-hire trucks traveled approximately 46,000 miles per vehicle in 1982 compared with 58,000 miles in 1992. Multiple-trailer combination trucks, which doubled in number from 1982 to 1992 (to 59,000) traveled the farthest, averaging 79,000 miles per vehicle in 1992. The more numerous single-trailer combination trucks traveled just over 40,000 miles per vehicle in both 1982 and 1992 (see figure 3).

In 1993, the U.S. transportation system carried more than 12 billion tons of goods and generated 3.6 trillion ton-miles.

The truck fleet appears to be getting heavier and traveling farther. Between 1982 and 1992, the number of trucks with operating weights above 80,000 pounds increased by 180 percent from 18,000 to 50,000 (see table 4); the total number of vehicle-miles traveled by this weight class rose by 193 percent. Trucks in the intermediate weight class also increased in number and miles traveled, but their relative growth was less dramatic.

Intermodal freight transportation has become more important in recent years. The largest segment is parcel, postal, and courier services, which carried more than 9 percent of the value of all shipments measured by the CFS. The classic intermodal combination of truck and rail moved about

FIGURE 3. MILES TRAVELED PER TRUCK BY USE, TYPE, AND WEIGHT, 1982 AND 1992



SOURCE: Oak Ridge National Laboratory tabulations from U.S. Department of Commerce, Bureau of the Census, Truck Inventory and Use Survey public use microdata files.

TABLE 4. NUMBER OF TRUCKS BY USE, TYPE, AND WEIGHT, 1982 AND 1992 (IN THOUSANDS)

	1982	1992
Use		
For-hire transport	718	888
Other business use	13,611	15,704
Mixed and daily rental	168	1,524
Personal use	19,214	41,076
Type		
Multiple combination	30	59
Single combination	1,303	1,670
2 axles, 6 tires	6,956	3,363
2 axles, 4 tires	25,433	54,099
Weight		
<33,000 lbs	32,436	57,562
33,000–60,000 lbs	674	798
60,001–80,000 lbs	594	781
>80,000 lbs	18	50

NOTE: Numbers can only be totaled within groups.

SOURCE: Oak Ridge National Laboratory tabulations from U.S. Department of Commerce, Bureau of the Census Truck Inventory and Use Survey public use microdata files.

41 million tons of goods, valued at $83 billion. This combination represents 1.6 million large trucks diverted from our nation's highways for major parts of their trips.[3]

Intermodal shipments tend to be high in value: goods shipped by parcel, postal, and courier services had an average value of $14.91 per pound in 1993, while truck-rail intermodal shipments averaged $1.02 per pound. Although these numbers are far less than the $22.15 per pound average for air and air-truck shipments, they are significantly higher than the 34¢ per pound for truck-only shipments and the under 10¢ per pound for railroads, water transportation, and pipeline modes.

TRANSPORTATION AND THE ECONOMY

Measuring Transportation's Importance

Transportation touches every facet of our economic life. Unfortunately, none of the currently available economic indicators fully captures the rich interplay between transportation and the larger economy, or fully measures the ways transportation enables economic activity.

To date, the most inclusive descriptor of transportation's role in the economy is the share of transportation-related final demand in GDP. Transportation-related final demand is defined as the value of all transportation-related goods and services, regardless of industry origin, delivered to the final customer, and includes consumer and government expenditures, investments, and net exports. By this measure, transportation as a share of GDP has remained slightly under 11 percent since 1989, contributing $777.2 billion to a $7.25 trillion GDP in 1995.

Transportation as a share of GDP has remained just under 11 percent since 1989, contributing $777.2 billion to a $7.25 trillion GDP in 1995.

Transportation's share in GDP has been relatively constant, while transportation activity has increased significantly. In effect, transportation moved more goods and people without consuming more resources.

[3] Assuming 50,000 pounds of payload per truck.

TRANSPORTATION AND THE ECONOMY: KEY POINTS

- Transportation accounted for 10.7 percent of gross domestic product in 1995.
- The average household spent just over $6,000 on transportation in 1994, one-fifth of its total expenditures. This compares with $10,100 for housing, $4,400 for food, $3,000 for insurance (excluding vehicle insurance) and pensions, and $1,800 for health care.
- About 94 percent of household transportation expenditures go to purchase, run, and maintain private vehicles. Airline fares were the second largest category at 4 percent of expenditures, and mass transit ranked third at 1 percent.
- Governments spent $116.5 billion on transportation in 1993. About 31 percent was the federal share, which included grants to state and local governments. Of the total, 60 percent of these expenditures were for highways, 19 percent for mass transit, and 15 percent for aviation.
- Transportation-related revenues of federal, state, and local governments reached $85 billion in 1993. States collected nearly half of all transportation-related revenues, with 32 percent collected by the federal government, and 19 percent by local governments.
- In 1995, approximately 9.9 million people worked in transportation-related activities, about 7 percent of the total civilian labor force.
- Labor productivity in the for-hire transportation industry (as measured by value-added per worker) was 19 percent higher than the average for the economy as a whole in 1992.

SOURCES: U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Statistics Annual Report 1997* (Washington, DC: forthcoming) and *Transportation Statistics Annual Report 1996* (Washington, DC: 1996); U.S. Department of Labor, Bureau of Labor Statistics, "Consumer Expenditure Survey," 1994 and 1996.

Household Expenditures

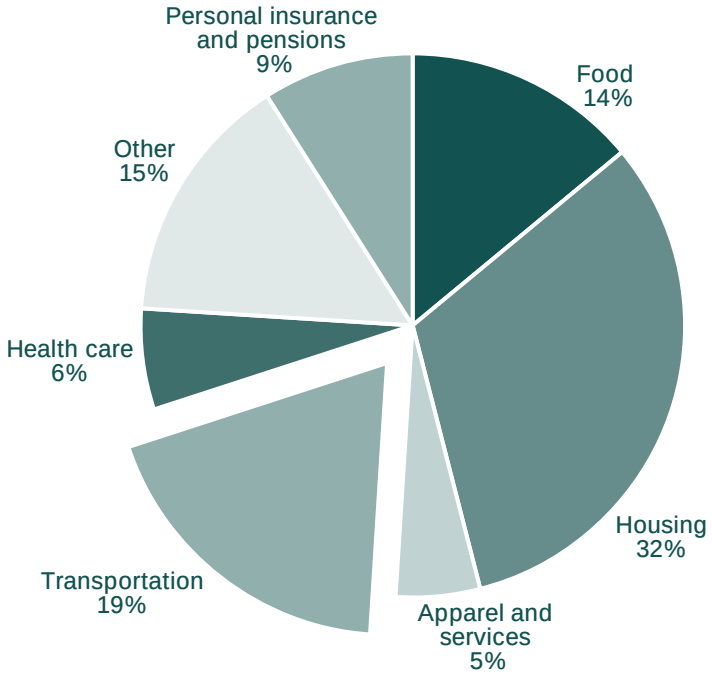
Transportation's share of household expenditures was 19 percent in 1994. The largest share of household expenditures was housing, followed by transportation (see figure 4).

Not surprisingly, transportation expenditures differ between rural and urban areas. For example, rural households spent almost 24 percent of their income on transportation in 1994 compared with about 18 percent for those in urban areas. Also, rural households spent more (both absolutely and proportionately) on vehicle purchases and fuel, but less on insurance and repairs.

Household expenditures on transportation vary significantly by income (see figure 5). In 1994, transportation's share of household expenditures ranged from 14.1 percent for the $5,000 to $10,000 income category to 22.1 percent for the $40,000 to $50,000 income category.

Public Spending

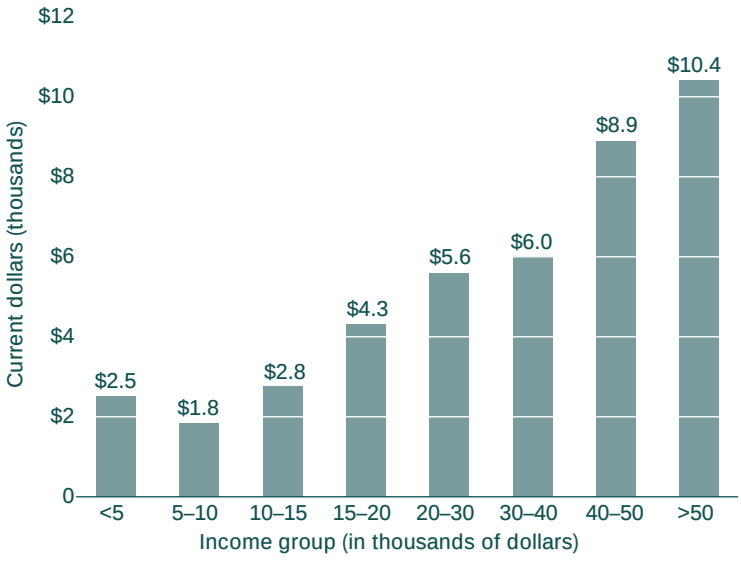
State and local governments carry the lion's share of public spending for transportation (see figure 6). From 1983 to 1993, their share (excluding federal grants) rose by 40 percent in real terms, while federal spending on transportation only



NOTE: Vehicle insurance is included in Transportation.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, "Consumer Expenditure Survey," 1994.

FIGURE 4.
TOTAL CONSUMER SPENDING SHARES BY MAJOR CATEGORY, 1994

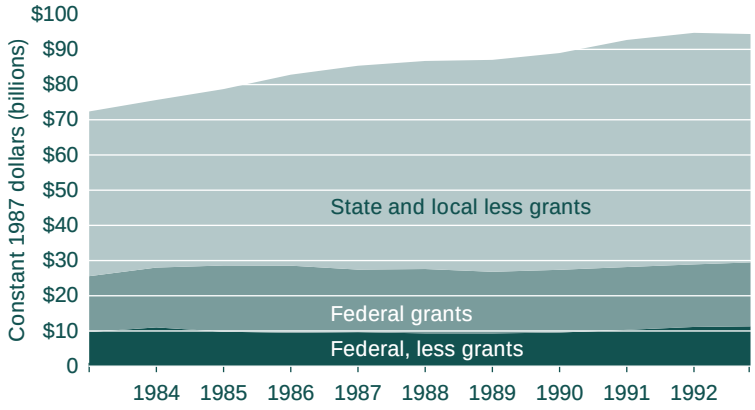


NOTE: Income group refers to before-tax income. Some expenditures may be paid for by borrowing, drawing on savings, relying on student loans, gifts, and other income sources.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, "Consumer Expenditure Survey," 1995.

FIGURE 5.
AVERAGE HOUSEHOLD EXPENDITURES ON TRANSPORTATION BY INCOME GROUP, 1994

FIGURE 6. GOVERNMENT EXPENDITURES FOR TRANSPORTATION, 1983–93



SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics 1997* (Washington, DC: December 1996).

increased by 15 percent. The federal share of government transportation expenditures declined from 35 percent to 31 percent over this period. In 1993, most government funds were spent on highways (about 60 percent), followed by transit (19 percent), and air (15 percent) and water transportation (5 percent). Between 1983 and 1993, the proportion of federal spending on transit, rail, and water transportation decreased, while spending on air transportation and highways increased.

Public Revenues

Government revenues from gasoline taxes and other transportation-related taxes and fees totaled $85 billion, covering 73 percent of transportation expenditures in 1993. State governments collected approximately half of all transportation-related revenues, the federal government collected about one-third, and local governments about one-fifth. By mode, about 70 percent of government transportation-related revenues were generated from highways, 15 percent from air, 10 percent from transit, and 4 percent from water.

In real terms, total transportation-related revenues rose by 50 percent from 1983 to 1993, with federal revenues increasing significantly faster than state or local government revenues. Air transportation revenues increased the fastest (73 percent), followed by water (63 percent), highway (46 percent), and transit (43 percent).

At all levels of government, but particularly at the federal level, transportation-related revenues increased faster than expenditures from 1983 to 1993, raising overall coverage from

64 percent to 73 percent; federal coverage rose from 54 percent to 75 percent. State and local government coverage increased slightly. (Coverage refers to transportation expenditures that are funded by transportation receipts as opposed to general revenue.)

From 1977 to 1994, federal transportation-related budget receipts, including revenue from trust funds (taxes and user fees dedicated to a specific mode), rose from $16 billion to $19.7 billion (in constant 1987 dollars). The two largest sources are the Highway Trust Fund (HTF)—which has highway and transit accounts—and the Airport and Airway Trust Fund. Of these, aviation trust fund revenues increased the most, while HTF transit account revenues grew more slowly and HTF highway account revenues declined slightly. Together, the trust fund balances (unspent money in these accounts at the end of the year) grew substantially from the mid-1980s to the early 1990s, but have declined from the 1992 high point.

Labor Productivity

Labor productivity (measured by output per worker) has been growing faster in transportation industries than in the overall economy. From 1959 to 1994, labor productivity in the business sector grew at an average annual rate of 2 percent. Over the same period, it grew on average 4.6 percent annually for air transportation and 3.8 percent for petroleum pipelines. From 1959 to 1992, available data show that labor productivity rose an average of 5.9 percent annually for railroads; from 1954 to 1989, trucking rose 2.8 percent annually. The trends of outputs and labor inputs in transportation industries since 1960 are presented in figure 7.

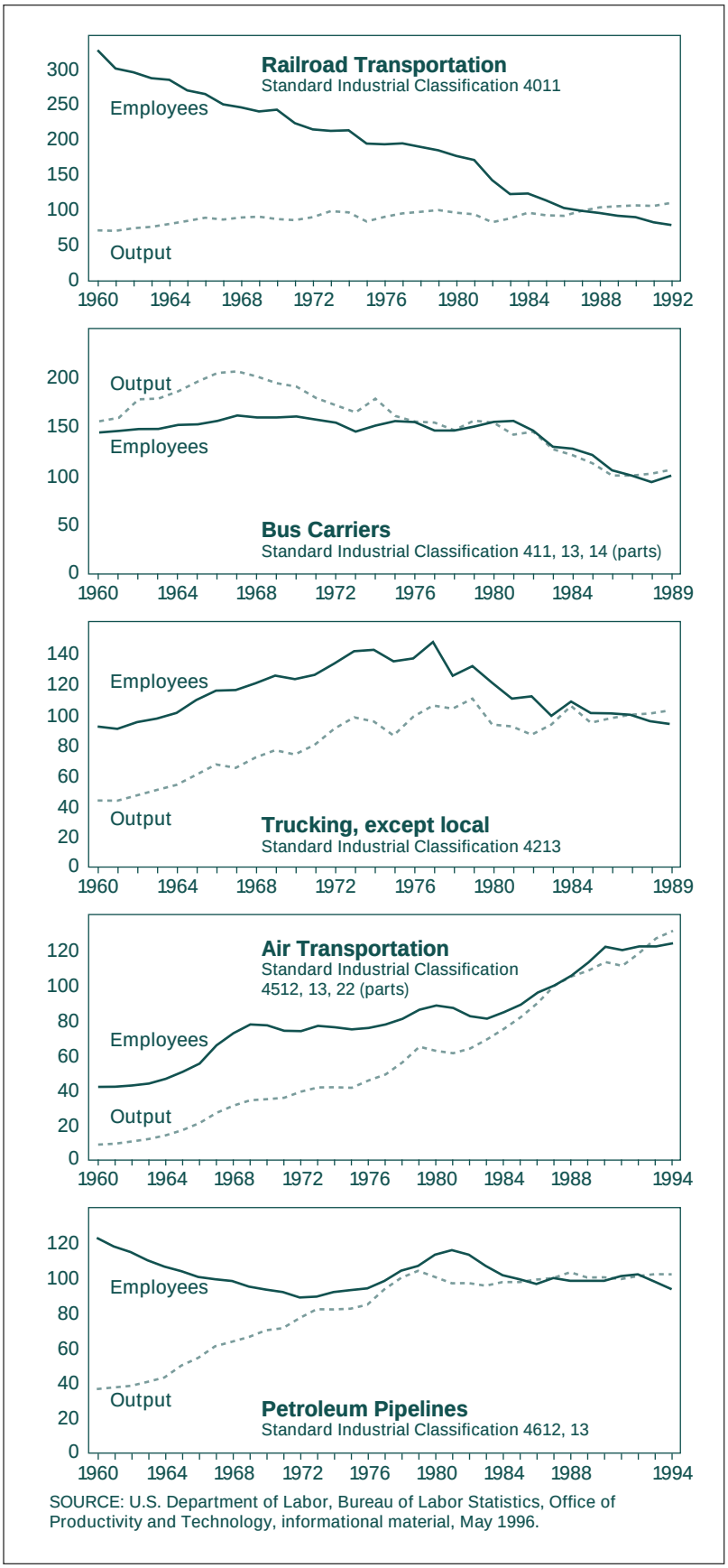
Government revenues from gasoline and other transportation-related taxes and fees totaled $85 billion, covering 73 percent of transportation expenditures in 1993.

Deregulation and technological change are partly responsible for the higher than average productivity levels and growth rates. In particular, some of the increase in labor productivity in air transportation occurred because of the introduction of larger and faster aircraft, the computerization of passenger reservations, the hub-and-spoke flight network, and changes in flight personnel requirements.[4]

Although the transportation sector as a whole, and most transportation modes on their own, outperformed the rest of the economy in labor productivity growth, the picture of

[4] See appendix A of the *Transportation Statistics Annual Report 1996* for an overview of the U.S. commercial airline industry.

FIGURE 7. LABOR PRODUCTIVITY BY MODE (INDEX 1987=100)



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Office of Productivity and Technology, informational material, May 1996.

transportation labor productivity is incomplete. One important factor is the lack of adjustments for quality improvement in output measures. In calculating productivity, transportation outputs are often based on physical measures, such as ton-miles and passenger-miles, without adjustments for timeliness and reliability. One ton-mile of overnight deliveries is treated the same as one ton-mile of time-insensitive cargo. Shifts to just-in-time logistical services may not have caused a significant increase in total ton-miles and passenger-miles, but they undoubtedly have improved the output of transportation services. Thus, the true economic output of transportation may be underestimated.

Return on Public Investment

The relationship between economic growth and transportation infrastructure is reciprocal.[5] Historically, transportation has played an important role in determining the regional structure and spatial character of the U.S. economy and continues to do so today.

Evidence suggests that public investments in highways and other transportation infrastructure reduce the costs of transportation and output, and contribute to economic growth and productivity. At the same time, changes in the economy affect the use of transportation facilities and services by households and businesses.

In recent years, a good deal of research has been conducted on the contribution of public investment in transportation to economic growth and productivity in the United States. A majority of these studies conclude that public investment in highways reduces the costs of transportation and production, and makes a positive contribution to total economic output. Similar studies in Europe and Asia produced comparable results.

Public investment in highways reduces the costs of transportation and production, and makes a positive contribution to total economic output.

A recent study by Nadiri and Mamuneas offers definitive evidence on the many ways highway capital in the United States contributes to the productivity of 35 different industries and the overall economy. In particular, it suggests that the return on the investment of a dollar in highway infrastructure generally has been greater than the return on a dollar of private capital investment (see table 5). As the Interstate Highway System neared completion in the 1980s,

[5] See *Transportation Statistics Annual Report 1995* for an indepth discussion of public investment in transportation.

TABLE 5.
ANNUAL RATE OF RETURN
BY TYPE OF INVESTMENT

	Total highway capital	Private capital
Total 1950–89	28%	13%
1950–59	35%	13%
1960–69	35%	14%
1970–79	16%	12%
1980–89	10%	11%

SOURCE: M.I. Nadri and T.P. Mamuneas, "Contribution of Highway Capital to Industry and National Productivity Growth," prepared for the U.S. Department of Transportation, Federal Highway Administration, Office of Policy Development, September 1996.

the rate of return on highways fell gradually to just under the return on private capital in the economy.

UNINTENDED CONSEQUENCES OF TRANSPORTATION

Injuries and Deaths

Transportation accounts for roughly half of the accidental deaths in the United States, as it has for at least 25 years. Overall, fatality trends show that commercial airlines, bus, and rail continue to be the safest passenger modes.

Had the 1969 death rate persisted, more than 120,000 people would have died from motor vehicle crashes in 1995, compared with 41,798 fatalities that actually occurred.

In recent years, most transportation deaths resulted from crashes involving motor vehicles (see table 6). Yet the reduction of the highway death toll is one of the great success stories of the last quarter century. Had the 1969 death rate persisted, more than 120,000 people would have died from motor vehicle crashes in 1995, compared with 41,798 fatalities that actually occurred. Not only the death rate, but the absolute number of deaths from crashes involving motor vehicles has declined. The worst year was 1972, when 54,589 people were killed in these crashes.

Nevertheless, recent statistics allow little room for complacency. The rate of fatalities from motor vehicle crashes dropped from 5.0 per 100 million vehicle-miles traveled (vmt) in 1969 to 1.7 in 1992; it has shown little improvement since

TABLE 6.
FATALITIES BY TRANSPORTATION MODE, 1970–95

Year	Air carrier[a]	Commuter air[b]	On-demand air taxi[c]	General aviation[d]	Motor vehicles[e]	Railroad[f]	Rail-highway grade crossings[g]	Transit[h]	Waterborne transport[i]	Recreational boating	Gas and hazardous liquid pipelines
1970	146	—	—	1,310	52,627	785	—	—	178	1,418	30**R**
1975	124**R**	28	69	1,252	44,525	575	917**R**	—	243	1,466	25**R**
1980	1	37	105	1,239	51,091	584	833	—	206	1,360	19**R**
1985	526	37	76	955	43,825	454	582	—	131	1,116	33**R**
1990	39	7	50	766	44,599	599	698	339	85	865	9**R**
1991	50	77	70**R**	786**R**	41,508	586	608	300	30	924	14
1992	33	21	68**R**	857**R**	39,250	591	579	273	96**R**	816	15**R**
1993	1	24	42	736**R**	40,150	653	626	281	110**R**	800	17**R**
1994	239	25	63**R**	723**R**	40,716	611	615	320	69**R**	784	22
1995**P**	168	9	52	732	41,798	567	579	274	46	836	21

[a] Large carriers operating under 14 CFR 121, all scheduled and nonscheduled service.
[b] All scheduled service operating under 14 CFR 135 (commuter air carriers).
[c] Nonscheduled service operating under 14 CFR 135 (on-demand air taxis).
[d] All operations other than those operating under 14 CFR 121 and 14 CFR 135.
[e] Includes passenger cars, light trucks, heavy trucks, buses, motorcycles, other or unknown vehicles, and nonoccupants.
[f] Includes fatalities resulting from train accidents, train incidents, and nontrain incidents.
[g] Includes pedestrian fatalities not otherwise counted. Motor vehicle fatalities at grade crossings are also counted in the motor vehicle column.
[h] Includes motor bus, heavy rail, light rail, demand response, van pool, and automated guideway. Some fatalities may have been double counted. Reporting criteria and source of data changed between 1989 and 1990. Starting in 1990, fatality figures include those occurring throughout the transit station, including nonpatrons.
[i] Vessel casualties only.

KEY: **R** = revised; **P** = preliminary.

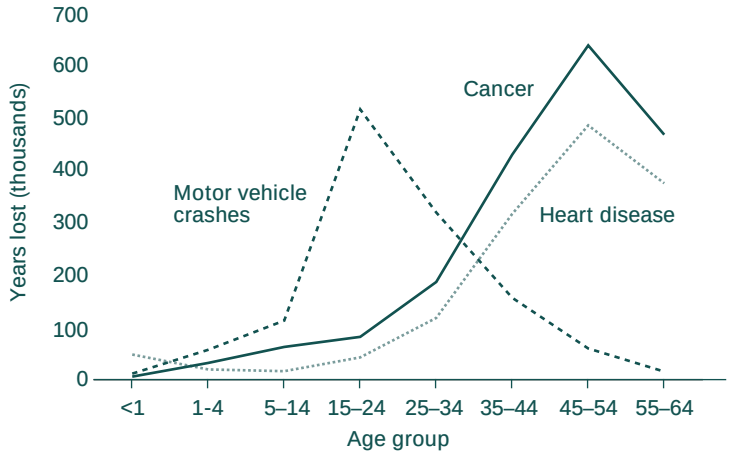
SOURCES: Various sources, as compiled and cited in U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics 1997* (Washington, DC: December 1996).

then. Moreover, the absolute number of deaths increased for three years in a row following the 1992 low of 39,250, and in 1995 stood at 41,798, or one death every 13 minutes. (Preliminary estimates for 1996 show a slight reduction over 1995 figures.) Motor vehicle crashes remain the leading cause of death for Americans until their mid-thirties, except for the very youngest children. Figure 8 shows the pre-retirement years of life lost due to the three major killers: motor vehicle crashes, cancer, and heart disease.

Alcohol-related crashes took a dreadful toll in 1995: 17,274 deaths (41 percent of all people killed in highway accidents). Here, too, however, there has been progress. In 1982, 25,165 people were killed in alcohol-related highway crashes, 57 percent of total highway fatalities that year.

For the nearly 3.4 million people injured in crashes involving motor vehicles in 1995, of which 428,000 were incapacitated, the costs can extend beyond immediate pain and suffering and direct economic costs to include a lower standard of living or quality of life. Economic effects include

FIGURE 8. PRE-RETIREMENT YEARS OF LIFE LOST BY AGE, 1992



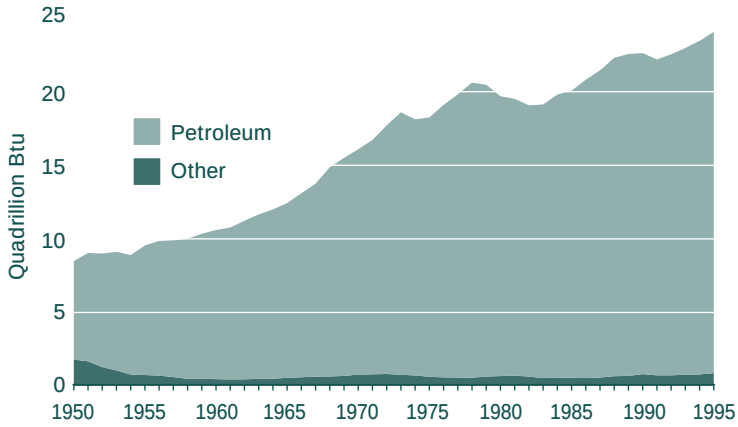
SOURCE: Calculated based on a method and data in U.S. Department of Health and Human Services, *Health, United States, 1994,* DHHS Pub. No. (PHS) 95-1232 (Hyattsville, MD: 1995).

direct costs to insurers, and to society at large, health care costs not borne by victims or insurers, lost productivity and associated lost tax revenues, and public assistance for the injured. The National Highway Traffic Safety Administration estimates that such economic costs over the lifetime of those injured and killed in transportation-related accidents in 1994 will be $150.5 billion. This amount does not attempt to estimate the dollar value of the loss of quality of life.

Dependence on Imported Oil and Energy Use

U.S. dependence on imported oil has grown over the last decade. Imported oil as a share of total U.S. consumption increased from 27 percent in 1985 to 44.5 percent in 1995. Because transportation energy use is increasing and domestic oil production continues to decline, U.S. reliance on imports is likely to continue. The Energy Information Administration estimates that imported oil will supply about 60 percent of U.S. oil demand by 2005.

While other sectors have shifted away from oil over the past two decades, transportation still depends almost entirely on petroleum (see figure 9). Transportation accounts for about two-thirds of the country's total oil consumption; highway vehicles account for the largest share, followed distantly by air transportation. In 1994, automobiles used 39 percent of transportation energy, light trucks (including minivans and sport utility vehicles) used 20 percent, and heavier trucks used 16 percent.

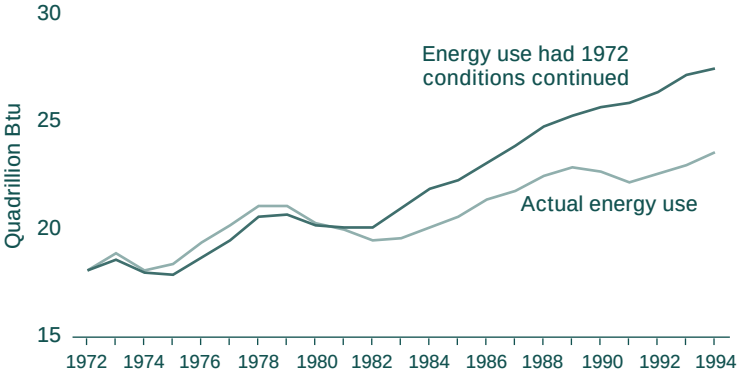


SOURCE: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1995,* DOE/EIA-0384(94) (Washington, DC: July 1996).

FIGURE 9. TRANSPORTATION ENERGY USE, 1950–95

Improvements in energy efficiency have altered this situation: transportation's use of energy in the last two decades increased only about half as much as would have been expected, considering the growth in passenger travel and freight movement. Most of the efficiency gains stemmed from reduced energy use per vehicle-mile for passenger cars, light trucks, and aircraft. Overall energy use for transportation would have been 17 percent higher in 1994 had 1972 trends continued (see figure 10).

Changes in modal composition also affected energy use. For highways, declining vehicle occupancy rates worked against efficiency gains, although these were partly offset by smaller, more fuel-efficient vehicles. Improved load factors were key to enormous efficiency gains in rail freight and com-



SOURCE: S.C. Davis and D.N. McFarlin, *Transportation Energy Data Book, Edition 16,* ORNL-6898 (Oak Ridge, TN: Oak Ridge National Laboratory, 1996). Methodology found in David L. Greene, and Yuehui Fan, *Transportation Energy Efficiency Trends, 1972–1992, (*Oak Ridge, TN: Oak Ridge National Laboratory, December 1994).

FIGURE 10. CHANGES IN TRANSPORTATION ENERGY USE, 1972–94

mercial air passenger traffic. Without technological improvements, larger aircraft, and higher load factors, energy use for air passenger travel would have been more than twice what it was in 1994.

Transportation accounts for about two-thirds of the total oil consumption in the United States.

Government energy efficiency regulations, technological change, and the turnover of transportation capital stock improved efficiency for several years after the fall in oil prices, until the early 1990s, when energy efficiency improvements slowed. Recently, highway energy efficiency improvements (based on energy use per passenger- and ton-mile) have tapered off. Gains from fuel economy standards and corporate initiatives have nearly reached their full effect. Also, the collapse of oil prices in 1986 negatively affected efficiency gains: lower prices and stable supplies greatly weakened the market incentives to reduce consumption.

Concerns about the transportation sector's dependence on imported oil and the environmental impacts of fossil fuel combustion spurred interest in alternative fuels and vehicles, resulting in the Alternative Motor Fuels Act of 1989, the Clean Air Act Amendments of 1990, and the Energy Policy Act of 1992. The number of alternative fuel vehicles on America's highways grew from more than 251,400 vehicles in 1992 to a projected 421,300 vehicles in 1996. (This amounts to two-tenths of 1 percent of the total of all light-duty vehicles.) Liquefied petroleum gas (LPG) vehicles are the most prevalent. The consumption of alternative fuels (mainly LPG) has grown in proportion to the expansion of the vehicle fleet, increasing from about 230 million gallons of gasoline equivalent to about 313 million gallons.

Environmental Impacts

Because of its enormous size, the U.S. transportation system inevitably has undesirable environmental impacts. Many, but by no means all, stem from the system's reliance on fossil fuels, especially petroleum. Motor vehicle emissions are a significant source of air pollution. Crude oil and gasoline leaks and spills from tankers, motor vehicles, and above- and below-ground fuel storage tanks pollute surface and groundwater. Old vehicles, tires, and paving materials that are not recycled cause problems for landfills, contaminate water systems, and contribute to air pollution. Transportation infrastructure affects land use, flora and fauna habitats, and may change local water tables and drainage patterns. The extent

of these environmental impacts depends on the interaction of transportation-related emissions with the local geography and climate, and with technology, markets, and public policy.

► *Air Pollution*

Air pollution—the most conspicuous and well-studied environmental impact—has been the subject of monitoring, data collection, and extensive remedial action. Since 1970, much progress has been made in curbing emissions of key air pollutants from highway vehicles, including carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), airborne particulates of less than 10 microns (PM-10), and lead. Airborne lead emissions have been all but eliminated.

BTS analyses show that if emissions rates had continued at their 1970 levels, VOC emissions from transportation would be 4.5 times the 1994 levels, CO would be 3.2 times as great, and NO_x about twice as high. Moreover, because of transportation's large share of these pollutants, emissions from all sources in 1994 would have been 2.4 times as great for CO, twice as great for VOC, and 40 percent greater for NO_x. Federal new-vehicle emissions standards and fuel content requirements can be credited for most of this progress.

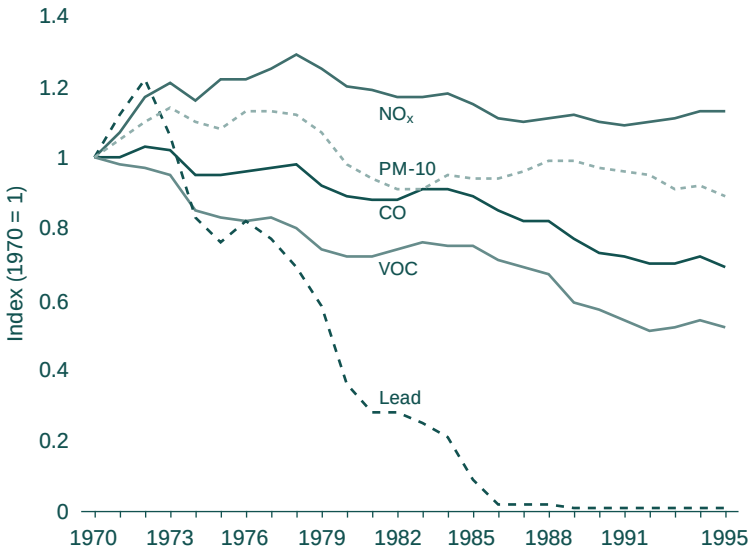
While the effort to control air pollution from highway vehicles has been an environmental success story, some emissions from transportation increased in 1992, 1993, and 1994 (see figure 11). The downward trend resumed in 1995, according to the most recent Environmental Protection Agency (EPA) data. CO emissions decreased significantly—the largest reduction since 1989. VOC emissions decreased for the first time since 1992, and PM-10 emissions were down from 1994 estimates. NO_x emissions remained level.

Since 1970, much progress has been made in curbing highway vehicle emissions of key air pollutants.

Most travel, particularly by automobile, is completed within metropolitan areas. Indeed, urban highway travel doubled in less than 20 years. Despite positive air quality trends resulting from improved automotive technologies, the EPA cites 182 metropolitan regions in noncompliance for at least one of the six criteria air pollutants.

The Bureau of Transportation Statistics analysis of EPA data for 13 major metropolitan areas shows decreases from 1985 to 1994 in highway vehicle emissions of primary pollutants, except for two locales that showed increases in nitrogen oxides. These decreases contributed to improved air quality in many areas. Los Angeles recorded 208 unhealthy

FIGURE 11. CHANGES IN TRANSPORTATION-RELATED EMISSIONS, 1970–95



KEY: NO_x = oxides of nitrogen; PM-10 = airborne particulates of less than 10 microns; CO = carbon monoxide; VOC = volatile organic compounds.

NOTE: Transportation emissions include all on-road mobile sources and the following nonroad mobile sources: recreational vehicles, recreational marine vessels, airport service equipment, aircraft, marine vessels, and railroads. Lead estimates include on-road mobile sources only.

SOURCE: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Pollutant Emission Trends, 1900 to 1995* (Research Triangle Park, NC: October 1996).

days in 1985, but only 136 in 1994. In New York, the number dropped from 65 to 8, in Pittsburgh from 9 to 2, and in Phoenix from 88 to 7. (Unhealthy days are those in which EPA's pollution standards index exceeded 100). Nevertheless, some recent studies suggest that emissions may soon increase even if travel growth is moderate, particularly as the preference for driving alone remains strong.

Finally, the United States continues to be the world's largest producer of greenhouse gases—both absolutely and on a per capita basis—and transportation accounts for 32 percent of U.S. carbon dioxide emissions, the key emission from anthropogenic sources.

► *Water Pollution*

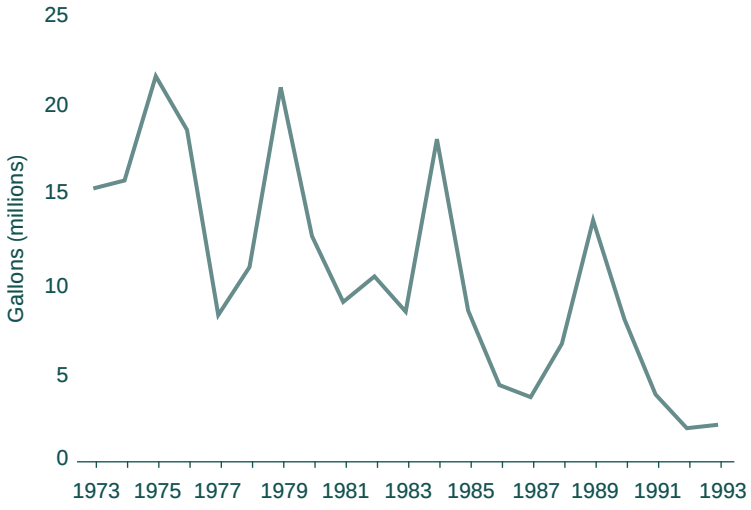
Contamination of surface and groundwater from transportation and from the movement and storage of fuels and other substances used for transportation is extensive. Oil and fuel spills from tankers, filling stations, and storage tanks are major problems. Water is also polluted when oil, fuel, and other chemicals leak from vehicles and run off highways, eventually reaching streams, lakes, or groundwater. Coast Guard data suggest that the amount of oil discharged into

U.S. waters from reported spills has declined over the last 20 years, although analysis is complicated by the unpredictability of major tanker spills (see figure 12). In addition, improper disposal of oil by vehicle owners who change their own oil is a pervasive, but unreported problem.

► *Noise*

Millions of people who live or work near highways, airports, and railyards are exposed to annoying levels of noise. Although this rarely leads to hearing impairment, it can result in sleep loss and related health problems. Policy measures are primarily aimed at reducing noise at the source and shielding or removing people from the source.

The local nature of noise makes it hard to characterize its impacts nationally. Some success, however, has been achieved in mitigating noise impacts. For example, the Federal Aviation Administration (FAA) estimates that the number of people exposed to average aircraft day/night noise levels of 65 decibels or above fell from 7 million in 1975 to 2.7 million in 1990. According to FAA, this number could fall below half a million when current aircraft noise regulations are fully implemented around the year 2000. Also, highway barriers can cut traffic noise in half or more—a reduction of as much as 10 to 15 decibels.



SOURCE: U.S. Department of Transportation, U.S. Coast Guard, *Pollution Incidents in and Around U.S. Waters, A Twenty-Five Year Compendium: 1969–1993,* Comdt. Pub. P16450.1 (Washington, DC: In press).

FIGURE 12. REPORTED VOLUME OF OIL SPILLED IN U.S. WATERS, 1973–93

Recycling and reuse of highway pavement are extensive, and over 9 million automobiles are collected for recycling annually.

► ***Solid Waste***

Transportation vehicles and infrastructure are major sources of solid waste. Recycling and reuse of highway pavement are extensive, and over 9 million automobiles (about 94 percent of all scrapped vehicles) are collected for recycling at one of 12,000 locations annually. During the past two decades, however, cars have become more difficult to recycle as manufacturers increasingly replace steel and other metals with lighter plastic and composite materials. Plastics and composites are often shredded and delivered to landfills. As the materials used in cars continue to change, new challenges are created for recycling and reuse. The data are limited and figures fluctuate from year to year, but well over 90 percent of used car batteries are recycled, while the figure is only 20 percent for tires. According to one estimate, various forms of tire recovery grew rapidly in the 1990s, reaching nearly 69 percent in 1995. About three-quarters of the recovered tires are burned.

► ***Other Environmental Issues***

Transportation has many other consequences. For example, to accommodate large ships in our ports and harbors, navigation channels must be dredged and siltation removed from harbor floors. Some of this material contains contaminants, which require special handling, and thus increase the time involved and costs of dredging. Further, the direct and indirect effects of transportation on biodiversity and wildlife are poorly understood. This is an area for research that will become more important as land for wildlife habitats becomes more scarce. The relationship between transportation and land use and its implications for development need to be better understood.

TOWARD A MORE COMPLETE PICTURE

This snapshot captures a wide range of information on the U.S. transportation system and its influences. It is incomplete because the world it portrays is a moving rather than a static scene. But the picture is improving.

Prior to the passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), up-to-date national data on passenger travel and freight activity were very limited. Major investment decisions were made and policy initiatives and other public actions were taken using data that were often old and incomplete.

Realizing that better information was needed, Congress established the Bureau of Transportation Statistics (BTS) through the ISTEA. An operating administration of the U.S. Department of Transportation, BTS collects, analyzes, and disseminates information on all forms of transportation.

BTS develops a wide range of products and services to meet these goals. Each year, it publishes detailed analyses of transportation in the United States in the *Transportation Statistics Annual Report* and other publications. To fill transportation data gaps, BTS conducts data-collection programs, such as the 1993 Commodity Flow Survey, which tracked the movement of goods throughout the country, and the American Travel Survey (ATS), which will provide detailed information for the first time in 20 years about how, when, where, and why Americans travel. Conducted with the Census Bureau in 1995, the ATS surveyed 80,000 households about domestic and international trips of over 100 miles. ATS data will be published beginning this year.

The Commodity Flow Survey and the American Travel Survey provide the first comprehensive picture of goods movement and travel in two decades.

BTS also identifies areas where better data and measurement approaches are needed. In conjunction with the Bureau of Economic Analysis, BTS is building the Transportation Satellite Account, which will permit a consistent, comprehensive, and reliable assessment of transportation activities and their relationship to other industries and economic activities, and provide useful insights on transportation's impact on the environment and the need for infrastructure.

BTS reports and data are available at www.bts.gov.

Another example is BTS efforts to measure the full social costs and benefits of transportation. As awareness of unintended consequences has grown, the research community has sought ways to measure the direct and indirect costs of transportation and combine those measures into a framework that supports public decisionmaking. Participants in a BTS-sponsored conference on full social costs began to focus as well on improving measures of transportation's benefits. An understanding of both costs and benefits is necessary to enhance the efficiency and effectiveness of the transportation system, to reduce its negative side effects, and to consider equity—the distribution of benefits and burdens among groups in the population—in public decisions.[6]

BTS continues to seek ways to capture a more complete and useful picture of transportation. Suggestions from customers are welcomed. The last page of this report gives information on how to contact us. Key BTS products are also listed, and are available to the public, usually free of charge.

[6] See appendix B of the *Transportation Statistics Annual Report 1996* for a review of the BTS conference on measuring the full social costs and benefits of transportation.

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Federal, State, and Local Transportation Financial Statistics, 1982–1992
1993 Commodity Flow Survey
National Transportation Atlas Databases CD-ROM
1990 Census Transportation Planning Package (Statewide and Urban) CD-ROMS
Traffic Safety Data CD-ROM
United States Waterway Data CD-ROM
Rail Waybill Data CD-ROM
Nationwide Personal Transportation Survey (NPTS) 1983 and 1990 CD-ROM
Worldwide Transportation Directory
Implications of Continuous Measurement for the Uses of Census Data in Transportation Planning
American Travel Survey—coming in 1997
Journal of Transportation and Statistics—coming in 1997

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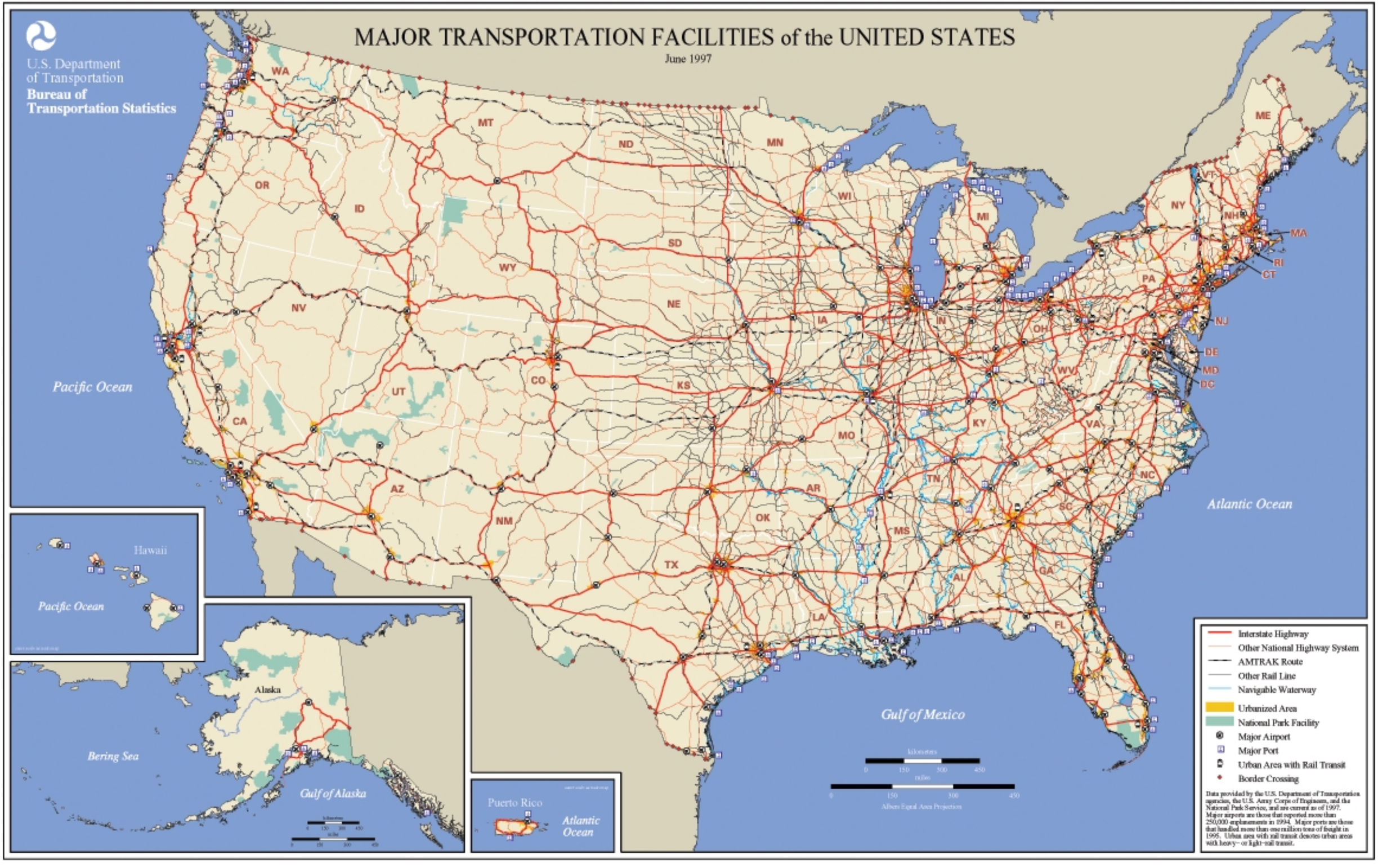
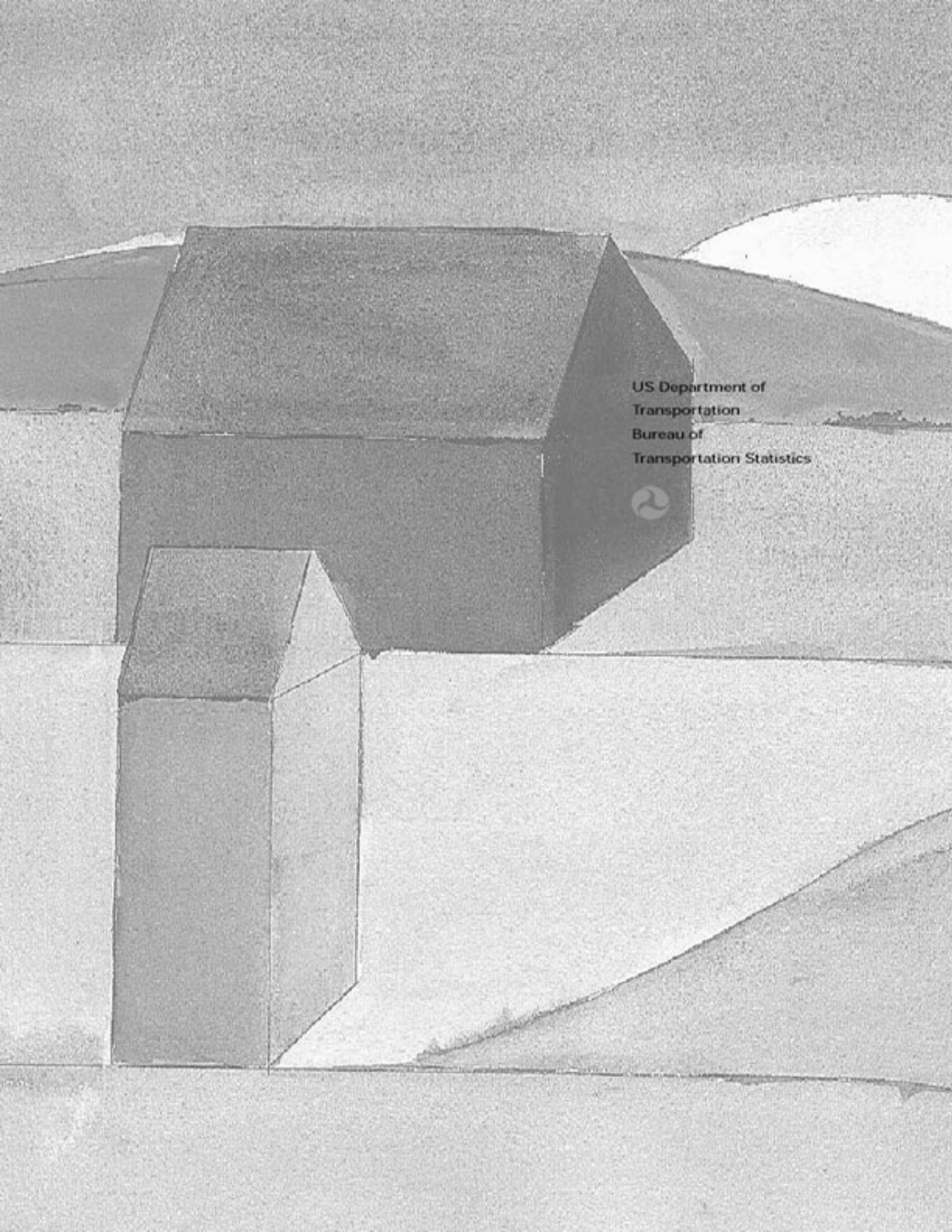
MAJOR TRANSPORTATION FACILITIES of the UNITED STATES

June 1997

U.S. Department of Transportation
Bureau of Transportation Statistics



Data provided by the U.S. Department of Transportation agencies, the U.S. Army Corps of Engineers, and the National Park Service, and are current as of 1997. Major airports are those that reported more than 250,000 emplanements in 1994. Major ports are those that handled more than one million tons of freight in 1995. Urban area with rail transit denotes urban areas with heavy- or light-rail transit.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