

CHAPTER 1

The Role of Highways and Transit

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The Role of Highways and Transit

Highways and transit are crucial components of the U.S. public infrastructure and play vital roles in maintaining the vigor of the U.S. economy. By connecting people and places, they provide citizens with access to a wide array of economic, social, and cultural opportunities, thereby strengthening the fabric of our society. This chapter describes some of the roles that these two modes of transportation perform, including the ways that these roles complement one another, and discusses the Federal role in surface transportation in the United States.

The Role of Highway Transportation

Highways form the backbone of America's transportation system, connecting all regions and States to one another. Transporting people and goods across this network is critical to meeting the everyday needs of the Nation's people, and its effectiveness depends on inputs and investment from both public and private sectors. While most highway infrastructure in the United States is funded and maintained by the public sector, with the private sector playing a smaller but increasing role, most of the vehicles used on highways are owned and operated by private individuals and firms. This stands in contrast to freight railroads, where both vehicles and infrastructure are owned and operated by private firms, and to mass transit, which is generally provided by public agencies, either directly or through contracted private operators. Understanding this dual nature of highway travel is important in understanding how public policy affects the efficient use of the highway network.

Personal Mobility

The use of private automobiles on our large highway network provides Americans with a high degree of personal mobility. Automobile transportation allows people to travel where they want, when they want, and with whom they want. The freedom accorded by autos and highways accounts in large part for the enormous popularity of automobile travel. The 2001 National Household Travel Survey (NHTS) found that there is nearly one vehicle (0.97) for every

Q&A

Where can I go for more information on highways?

The Federal Highway Administration (FHWA) has produced or sponsored numerous reports and publications regarding surface transportation in general and Federal transportation programs in particular, including the following:

- *Financing Federal-Aid Highways*
<http://www.fhwa.dot.gov/reports/finfedhy.htm>
- *Highway History Web Site*
<http://www.fhwa.dot.gov/infrastructure/history.htm>
- *Interstate 50th Anniversary Web Site*
<http://www.fhwa.dot.gov/interstate/homepage.cfm>
- *Public Private Partnerships*
<http://www.fhwa.dot.gov/ppp/>
- *Highway Statistics*
<http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>
- *Freight Transportation and Highways*
<http://www.ops/fhwa.dot.gov/freight/index.cfm>
- *The Federal Role in Surface Transportation—A Report of a Public Policy Forum*
ENO Transportation Foundation
December 2002
- *Title 23, United States Code, Highways*
<http://www.access.gpo.gov/uscode/title23/title23.html>
- *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)*
<http://www.fhwa.dot.gov/safetealu/index.htm>

person 16 years and older in the U.S. The NHTS also found that 87 percent of daily trips were taken by personal vehicle.

Freight Movement

Highways are the keystone of the U.S. freight transportation system and the national economy supported by that system. Trucks carried 60 percent of the 19 billion tons of goods shipped in 2002 and accounted for about 70 percent of the value of freight shipments. Trucks provide direct service for both long-distance and local shipments, as well as local pickup and delivery for long-distance shipments by other modes. Trucks are playing an increasingly important role as businesses turn to just-in-time delivery systems to minimize logistics costs and improve responsiveness to customers.

The Role of Transit

Transit plays a vital role in enhancing productivity and the quality of life in the United States. It provides basic mobility and expanded opportunities to people without the use of a car, and broader transportation choices to people with cars. It also facilitates economic growth and development, and helps to support environmentally sustainable communities.

Basic Mobility and Expanded Opportunities

Transit provides basic mobility to people with limited incomes and without cars. The 2001 NHTS found that 43 percent of nationwide transit riders live in households with incomes of less than \$20,000 and that 44 percent come from households without cars. Transit helps people without cars take advantage of a wider range of job and educational opportunities, and access health care and other vital services. It also enables them to be more active members of their communities and to build and maintain social relationships with family and friends.

Broader Transportation Choices

Many of the people who use transit are choice riders. These people come from households that own cars, but use transit because it offers a more convenient, reliable, and less expensive transportation alternative. These people may live in a densely developed area with highly accessible and frequent transit service or in a suburb with a transit system providing a cheaper, more comfortable, or more convenient way of traveling to and from a downtown city center or central business district.

Economic Growth and Development

Transit plays a key role in economic growth and development, connecting workers and employers. Dense business and commercial centers in the Nation's largest cities depend on transit to move large numbers of people during peak travel periods. Corridors with well-functioning transit systems attract business, retailers, restaurants, and theaters and encourage higher-density development.

Q&A

Where can I go for more information on transit?

The Federal Transit Administration (FTA) produces and sponsors numerous reports and publications on transit issues, including the following:

- *Annual Report on New Starts*

http://www.fta.dot.gov/planning/newstarts/planning_environment_2618.html

- *Statistical Summaries-Grants Assistance Programs*

http://www.fta.dot.gov/funding/data/grants_financing_1090.html

- *National Transit Summaries and Trends*

<http://www.ntdprogram.com/ntdprogram/pubs.htm>

- *The Transit Performance Monitoring System*

http://www.fta.dot.gov/publications/reports/publications_5677.html

- *Title 49, United States Code, Section 53, Mass Transportation*

http://www.access.gpo.gov/uscode/title49/subtitleiii_chapter53_.html

The Environment, Security, and Safety

Transit can help to protect the environment and conserve energy. Each trip that is shifted from a car to a transit vehicle in operation helps to reduce automotive emissions and meet local air quality goals. Transit can also play a key role in emergency situations by helping to evacuate people and provide temporary shelters. Transit is a very safe mode of transport so that transit use promotes overall transportation safety.

The Complementary Roles of Highways and Transit

Highways and transit are complementary, serving distinct but overlapping markets in the Nation's transportation system. Transit provides basic mobility to riders for whom car ownership is not a viable option, while highways are vital for people and firms in areas that are not well served by transit. Others may choose between transit and highway travel based on a variety of factors, including cost, travel time, flexibility, and convenience. These choices may vary, even for the same individual, based on the timing or purpose of the trip. It is clear, however, that the needs of all citizens are best served by access to both high-quality transit and high-quality highways.

Investment in highways and transit expands people's travel choices and allows them to use the modes of transportation that best meet their needs. A high-quality transit system gives people who prefer living in a dense, urban environment the opportunity to do so without sacrificing their mobility. An adequate highway network does the same for people who prefer a suburban or rural lifestyle. Highways provide a principal means of intercity passenger travel, particularly on shorter trips that are not well served by air transportation. Transit and highways both provide ground-side access to airports. Since most shipments in the Nation are bound for final destinations that are accessible only by roads, adequate highway transportation to and from ports and intermodal terminals is essential for freight movement, even for many shipments carried primarily by air, water, or rail.

Highway investment benefits both transit operations and auto users. Buses, vanpools, and demand response services typically share roadways with private autos and, hence, are affected by highway pavement and traffic conditions. Conversely, transit improvements can attract private vehicle drivers, freeing up road capacity. Transit can also increase the effectiveness of highways by encouraging and supporting carpooling, and serving as a backup mode for riders in both formal and informal arrangements on occasions when carpools don't meet their needs.

Highway investment can support transit usage and help improve operating efficiency. An area served by both a good road network and good transit service is likely to be more attractive to firms than one served by transit or highways alone, and can thus encourage development served by transit. Good highway access to

Q&A

How are tradeoffs and complementarities between highway and transit handled in the investment analyses found in this report?

While the complementary and alternative roles that highways and transit play in our surface transportation system are relatively easy to identify, they are much more difficult to quantify analytically. The investment analyses presented later in this report are based on separate methodologies for highways and transit. Multimodal analysis issues, and the challenges that FHWA and FTA face in attempting to develop an integrated approach to modeling transit and highway investments, are discussed in the Introduction to Part II and in the Afterword found in Part IV of this report.

Trends in Travel Behavior Observed from the National Household Travel Survey (NHTS) Data Series (1969, 1977, 1983, 1990, 1995, 2001)

The National Household Travel Survey (NHTS) is the nation's inventory of personal travel. The survey collects demographics on households and people, detailed information on daily and long-distance trips for all purposes, use of household vehicles, and public attitudes about various transportation issues.

Trip Making No Longer Growing

Average daily person trips per person grew from 2.0 in 1969 to 4.3 in 1995, but declined slightly to 4.1 in 2001. Daily vehicle trips per driver show a similar pattern.

Trip Lengths Increasing

Average vehicle trip lengths had remained in the 8- to 9-mile range between 1969 and 1995, but increased to 9.9 miles in 2001.

Time Spent Driving on the Rise

The time spent driving increased by just over a minute per year during the last decade. American drivers now spend more than an hour (61 minutes) behind the wheel in an average day. While congestion worsened over that period, some of that additional time was spent in traveling additional miles. While driving time increased 24 percent, average daily miles per driver increased by 15 percent over the same period (1990-2001).

Other Types of Trips Growing Faster than Commuting

Commuting to and from work continues to decrease as a proportion of all travel, not because fewer people are working but because trip-making for other purposes is growing faster. These other types of trips include shopping, family errands, dining out, household maintenance, and social and recreational activities. Because of the long lengths of commutes, however, work trips represent a high percentage of the total miles traveled.

More Midday Trips

While peak periods continue to be congested, and have lengthened as workers leave earlier or later to avoid the most congested times, the biggest change during the week has been the significant increase in midday travel. More vehicle trips are now taken midday on Saturday than during any peak hour during the week (except Friday evening).

Vehicle Ownership on the Rise

In the 1983, 1990, and 1995 surveys, the number of household vehicles and the number of licensed drivers were almost the same. By 2001, almost 9 million households were without a vehicle, but over 22.7 million U.S. households, or 21.2 percent, had more vehicles than drivers, resulting in 12 million more vehicles than licensed drivers.

Vehicle Occupancy Rates Have Stabilized

The huge growth in vehicle ownership and the changes in the mix of trip purposes resulted in a steady decline from 1969 in average vehicle occupancy of 2.2 person miles per vehicle mile. However, the figure remained consistent at 1.6 person miles per vehicle mile in 1995 and 2001.

Transit Principally Serves Those with Easy Access

In 2001, 65 percent of transit passengers using transit as their primary mode of travel were able to access transit within 5 minutes of starting their trip.

Many Transit Trips Made by People Without Cars

In 2001, 44 percent of the people who used transit for their principal mode of travel on their day trip were from households without cars.

Transit's Importance to People with Limited Incomes

In 2001, 43 percent of all transit users lived in households with incomes of less than \$20,000.

The 2001 NHTS report may be found at <http://nhts.ornl.gov/2001/index.shtml>.

transit stations in outlying areas, coupled with sufficient parking capacity, increases the accessibility of transit and expands its use to a broader group of people than would be possible if access were limited to walking, biking, or other transit modes. According to the 2001 NHTS, over 3.4 billion vehicle trips are made annually to access other modes of transportation.

The Evolving Federal Role in Highways and Transit

Well-maintained and functioning highway and transit networks are fundamental to America's economic growth and well-being. Over its history, the United States has demonstrated a long-standing public commitment to highways and transit. State and local governments and businesses are full partners with the Federal government in the development and operation of the Nation's transportation system. The Federal government's role is to balance diverse needs and interests in order for the transportation concerns facing the Nation as a whole to be systematically and cohesively addressed. The Federal government has played a key role in shaping the transportation system, both in regulating interstate commerce and in funding and facilitating transportation improvements. This role has evolved over the years to meet changing needs and priorities. One thing that remains constant, however, is the importance of national leadership—in short-term and long-term transportation decision-making that transcends state boundaries, in ensuring that America's transportation infrastructure supports and enhances our position in the global economy, and in advancing the state-of-the-art technology and practices through high-risk research.

As mandated by law, the Federal-aid highway program is a Federally assisted, State administered program. Federal, State, and local transportation partners work together to deliver the Nation's highway program.

As State and local expertise has developed, Congress has increased statutory authority for States to assume certain Federal-aid highway project oversight responsibilities, where appropriate. This in turn frees up Federal resources for programmatic stewardship, research, and deployment of new technologies and methods. As mandated by law, the Federal transit program is a Federally assisted and administered grant program, operated through a program of formula and discretionary grants to urban areas and, through States, to rural communities. As grantee experience has developed, the focus of the Federal government has shifted from the formula to the discretionary programs. The New Starts Program, providing funds to metropolitan areas for the construction of new fixed guideway systems or extensions to existing systems, is the largest FTA discretionary program. The FTA works closely with grantees to ensure that these projects meet a full range of criteria for both project justification and local financial commitment. The FTA also evaluates projects from their initial consideration to final grant award, and continues to monitor them through construction and operation.

To meet the Nation's increasing, and increasingly complex, transportation infrastructure needs and demands, FHWA and FTA continue to explore innovations in financing and technology. For example, the Highways for LIFE Pilot Program is designed to help States deliver and deploy innovative technologies, manufacturing processes, performance standards, and business practices in the highway construction process to improve quality and safety and to reduce congestion associated with work zones. Financial innovation is increasingly focusing on the potential role of the private sector in transportation infrastructure innovation and investment. Leveraging Federal investments through public-private partnerships (including joint development around transit stations), other innovative financing techniques, value pricing and

high-occupancy toll (HOT) lanes are a few of the initiatives that will expedite project completion, produce cost savings, and improve system performance. These new financing options are discussed in greater detail in Chapter 15 of this report.

The FHWA and FTA provide leadership and expertise to States in transportation planning to ensure that transportation decisions are made in an environmentally sensitive way, using a comprehensive planning process that includes the public and considers land use, development, safety, and security. National leadership is also provided in asset management principles. Asset management is a systematic approach to maintaining, upgrading, and operating physical assets cost-effectively, and provides a framework for handling both short- and long-range planning decisions. The FHWA also provides leadership in establishing national standards for intelligent transportation system (ITS) technology, preventing fuel tax evasion, facilitating the flow of goods at borders and trade gateways, and building and maintaining roads on Federal lands.

The FTA has developed the Lessons Learned Program to increase the effectiveness of transit capital investment by facilitating a way for transit operators to share their experiences in undertaking these projects. This program is part of FTA's Project Management Oversight Program, which actively oversees capital investment projects receiving FTA funds to ensure that they are on time, within budget, conform to the grantee's approved plans and specifications, and are efficiently and effectively implemented.

This report focuses on the infrastructure quality and operating characteristics of highways (and their component bridges) and transit (including buses and urban rail). These two modes are closely linked in their function and funding sources. The FHWA and FTA work closely with each other, other Federal, State, and local agencies, and other partners to maximize the benefits of the public investment in highways and transit, and to prepare to meet America's future transportation needs.