# Introduction

The maintenance and construction of highways and bridges are essential government functions. In today's increasingly mobile society, highways carry over 90 percent of personal travel. Per capita highway travel in the United States exceeds that in other major countries and is growing. In Minnesota, highway travel increased 35 percent from 1985 to 1995, while population increased only about 10 percent.

Concerns have been raised, however, about whether highway funding has kept pace with infrastructure needs. In 1995, the United States Department of Transportation estimated that the annual capital cost to maintain current highway and bridge conditions and performance over the 20-year period from 1994 through 2013 would significantly exceed current annual capital expenditures. While an estimated $55 billion would be required annually to maintain the current condition and performance of the nation's highways and bridges, only $39 billion per year was spent in 1993. The department estimated that an additional $15 billion in annual spending would be desirable from an economic perspective, considering the benefits and costs of highway improvements, and another $4 billion per year would be required to eliminate all current bridge deficiencies.[1]

In Minnesota, highway spending has generally kept pace with inflation and population growth but not with the growth in traffic. Highway spending has also not kept pace with the growth in personal income or other government spending. Minnesota's state and local government spending on transportation declined from about 3.0 to 2.2 percent of personal income from 1972 to 1992. The share of state and local government spending devoted to highway spending has fallen from 13 to 8 percent.

It remains to be seen whether highway spending in Minnesota has been sufficient to maintain the current highway system in good condition and respond adequately to increased traffic levels. Highway spending does not necessarily have to grow as fast as other government spending or personal income in order to be adequate. Furthermore, highway spending has not always needed to grow as fast as traffic, especially when there was excess capacity in the highway system.

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*1* United States Department of Transportation,*1995 Status of the Nation's Surface Transportation System: Conditions and Performance, Report to Congress* (October 27, 1995), 190. The department's estimates of future needs are in 1994 dollars.

In this report, we focus on the State Trunk Highway (STH) System, which is the responsibility of the Minnesota Department of Transportation (Mn/DOT). The trunk highway system carries about 59 percent of Minnesota's traffic and accounts for roughly 40 percent of all highway spending but includes only about 9 percent of the street and highway miles in Minnesota.

The report addresses the following questions:

- **How does Minnesota's road system and level of road spending compare with those in other states, and how does our trunk highway system compare with other state-administered systems?**
- **How have trunk highway revenues and expenditures changed over time?**
- **In what condition are state trunk highway pavements and bridges?**
- **How has the condition of trunk highway pavements and bridges changed since the mid-1980s?**
- **Given funding projections, how well will Mn/DOT be able to respond in the future to pavement and bridge deterioration, growing traffic, and other needs?**
- **To what extent does Mn/DOT perform adequate preventive maintenance on trunk highway pavements and bridges?**
- **Is Mn/DOT appropriately reassessing its lane and shoulder width standards for low volume rural trunk highways and state-aid roads?**

During our research, we interviewed numerous Mn/DOT employees throughout the organization. In addition to contacts with various central office staff, we visited each of the seven outstate Mn/DOT districts, as well as the Metropolitan Division. We discussed the challenges faced by and the resources available to each organization with the district (or division) management teams. We also interviewed transportation planning officials at the Metropolitan Council.

We analyzed a variety of data from Mn/DOT information systems, particularly the pavement and bridge management systems, and collected data from district personnel about preventive maintenance practices. Our research also included a review of relevant literature on a variety of transportation topics.

Chapter 1 of this report provides background information on Minnesota's highways and the Minnesota Department of Transportation and compares Minnesota's highways, and the trunk highway system, with those in other states. Chapter 2 reviews the condition of Minnesota's trunk highways and bridges and analyzes the trends affecting the trunk highway system. In Chapter 3, we examine Mn/DOT's ability to address pavement and bridge needs, given revenue projections based on current law. Chapter 4 evaluates Mn/DOT's preventive maintenance practices in

light of studies of preventive maintenance and comments from Mn/DOT managers located throughout the state. Finally, Chapter 5 reviews Mn/DOT's recent efforts to reexamine highway standards for rural trunk highways and state-aid highways. We evaluate the work of the Mn/DOT-sponsored task force, which reviewed existing lane and shoulder width standards for rural highways with low traffic volumes.