

FUTURE MOBILITY IN SOUTH DAKOTA:

Meeting the State's Need for Safe and Efficient Mobility
and the Role of the Federal Transportation Program
in Providing Mobility in South Dakota

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Founded in 1971, TRIP® of Washington, DC is a nonprofit organization that researches, evaluates and distributes economic and technical data on highway transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway engineering, construction and finance; labor unions; and organizations concerned with an efficient and safe highway transportation network.

Executive Summary

South Dakota's extensive system of roads, highways and bridges provide the state's residents, visitors and businesses with a high level of mobility. As the backbone that supports the Mount Rushmore State's economy, South Dakota's surface transportation system enables the state's residents and visitors to travel to work and school, visit family and friends, and frequent tourist and recreation attractions while providing its businesses with reliable access for customers, suppliers and employees.

As the nation looks to rebound from the current economic downturn, the U.S. will need to modernize its surface transportation system by improving the physical condition of its transportation network and enhancing the system's ability to provide efficient and reliable mobility for motorists and businesses. Making needed improvements to South Dakota's roads, highways and bridges could provide a significant boost to the state's economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access.

The federal government is an essential source of funding for the ongoing modernization of South Dakota's roads, highways and bridges. But recent declines in federal transportation revenues and significant increases in construction costs are making it more difficult for the state to maintain and improve its transportation system. State and municipal transportation funding is stagnant and insufficient, and federal funding levels are uncertain.

The U.S. Senate and House recently approved economic stimulus packages, which would provide a significant, short-term boost in transportation funding in South Dakota. Increased federal transportation funding in the stimulus package would allow the state to address the high rate of deficiencies on its roads, highways and bridges, but will not allow the state to proceed with numerous projects needed to modernize its transportation system.

In 2009, Congress will also deliberate over a long-range federal surface transportation program. The current legislation, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), expires on September 30, 2009. The level of funding and the provisions of a future federal surface transportation program will have a significant impact on future highway and bridge conditions as well as safety in South Dakota, which, in turn, will affect the state's ability to improve its residents' quality of life and enhance economic development opportunities.

Without a substantial boost in federal, state and local highway funding, numerous projects to improve the condition and expand the capacity of South Dakota's roads, bridges and highways will not be able to proceed, hampering the state's ability to improve the condition of its transportation system and enhance economic development opportunities in the state.

- Major projects to preserve priority bridges and roadways and new projects to prepare for economic growth and development in South Dakota cannot proceed without a significant boost in transportation funding at the state, federal and local level.
- Needed resurfacing or reconstruction of pavement surfaces on many sections of South Dakota's major highways cannot proceed without a boost in funding, including portions of I-29, I-90, and South Dakota routes 11 and 44. The report includes a list of the 50 most deteriorated sections of the state's highway system in need of resurfacing or reconstruction, for which repairs are not currently scheduled.
- Unfunded projects to expand highway capacity to enhance economic development opportunities include improvements to: SD-34 from Madison to I-29, a new I-29 interchange near Summit, the Teddy Roosevelt Expressway (U.S. 85 Belle Fourche to North Dakota), U.S. 12 from Mobridge to Aberdeen and U.S. 81 from Yankton to I-90.
- Transportation funding at the state level is currently \$120 million short of the estimated needs. These needs are primarily in maintenance and operations, including snow plow fuel and operation, general maintenance and highway striping.
- South Dakota's cities, counties and townships have \$117 million in construction needs and maintenance that are currently unmet and can not be covered with federal funding.
- The U.S. Senate and House recently approved economic stimulus packages, which would provide a significant, short-term boost in transportation funding in South Dakota. Increased federal transportation funding in the stimulus package would allow the state to address the high rate of deficiencies on its roads, highways and bridges, but will not allow the state to proceed with numerous projects needed to modernize its transportation system.
- A 2007 analysis by the Federal Highway Administration found that every \$1 billion invested in highway construction would support approximately 27,800 jobs, including approximately 9,500 in the construction sector, approximately 4,300 jobs in industries supporting the construction sector, and approximately 14,000 other jobs induced in non-construction related sectors of the economy.
- To ensure that federal funding for highways and bridges in South Dakota and throughout the nation continues beyond the expiration of SAFETEA-LU, Congress needs to approve a new long-term federal surface transportation program by September 30, 2009.

Population and economic growth in the Mount Rushmore State have resulted in increased demands on the state's major roads and highways.

- South Dakota's population reached 804,000 in 2008, an increase of 16 percent since 1990.
- Vehicle travel in South Dakota increased by 29 percent from 1990 to 2007 – jumping from 7 billion vehicle miles traveled (VMT) in 1990 to 9 billion VMT in 2007.
- By 2025, vehicle travel in South Dakota is projected to increase by another 25 percent.
- From 1990 to 2007, South Dakota's gross domestic product, a measure of the state's economic output, increased by 67 percent, when adjusted for inflation.

In 2007, 34 percent of major roads in South Dakota were in poor or mediocre condition, providing motorists with a rough ride.

- In 2007 (the latest year for which data is available), 15 percent of South Dakota's roads were rated in poor condition and 19 percent were rated in mediocre condition.
- Roads rated in poor condition may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed. Roads rated in mediocre condition may show signs of significant wear and may also have some visible pavement distress. Most pavements in mediocre condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition.
- Roads in need of repair cost each South Dakota motorist an average of \$319 annually in extra vehicle operating costs – \$180 million state-wide. Costs include accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear.
- A desirable goal for state and local organizations that are responsible for road maintenance is to have 75 percent of major roads in good condition. Fifty-one percent of South Dakota's major roads were in good condition in 2007.

A quarter - 25 percent - of bridges in South Dakota show significant deterioration or do not meet current design standards. This includes all bridges that are 20 feet or more in length and are maintained by state, local and federal agencies.

- Twenty-one percent of South Dakota's bridges were structurally deficient in 2008 (the latest year for which data is available). A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Structurally deficient bridges are often posted for lower weight or closed to traffic, restricting or redirecting large vehicles, including commercial trucks and emergency services vehicles.

- Four percent of South Dakota's bridges were functionally obsolete in 2008. Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.

Improving safety features on South Dakota's roads and highways would likely result in a decrease in traffic fatalities in the state. Roadway design is an important factor in approximately one-third of all fatal and serious traffic accidents.

- Between 2004 and 2008, 839 people were killed in traffic accidents in South Dakota, an average of 168 fatalities per year
- The number of traffic fatalities in South Dakota decreased from 146 in 2007 to 119 in 2008.
- Several factors are associated with vehicle accidents that result in fatalities, including driver behavior, vehicle characteristics and roadway design. It is estimated that roadway design is an important factor in one-third of fatal traffic accidents.
- Highway improvements such as removing or shielding obstacles, adding or improving medians, adding rumble strips, wider lanes, wider and paved shoulders, upgrading roads from two lanes to four lanes, and better road markings and traffic signals, where appropriate, can reduce traffic fatalities and accidents while improving traffic flow to help relieve congestion.

Recent declines in federal surface transportation revenues, as well as significant increases in the cost of transportation construction materials will make it more difficult for Congress to authorize new federal surface transportation legislation that adequately funds needed improvements to the nation's roads, highways, bridges and public transit systems. Congress recently transferred general fund revenues into the Federal Highway Trust Fund to meet current funding commitments to compensate for decreased trust fund revenues, which are based largely on federal motor fuel taxes.

- In September 2008, Congress approved transferring \$8 billion from the U.S. General Fund to the Highway Account of the Federal Highway Trust Fund, to ensure that the federal government was able to meet the funding commitments of the final year of SAFETEA-LU.
- The \$8 billion transfer into the Federal Highway Trust Fund restored funding that had been removed from the trust fund in 1998 and placed in the U.S. General Fund as part of a budget resolution.
- While the transfer of \$8 billion in general fund revenues is expected to allow the Highway Account of the Federal Highway Trust Fund to remain solvent through the expiration of SAFETEA-LU on September 30, 2009, it will not address anticipated future shortfalls in trust fund revenues needed to maintain the current level of federal highway investment.

- The transfer of the funds was necessitated by an approximately seven percent drop in revenues into the highway account of the Federal Highway Trust Fund 2008. This decrease was the result of a drop in driving levels nationally, largely in response to increased motor fuel prices.
- Over the five-year period from November 2003 to November 2008, the average cost of materials used for highway construction – including asphalt, concrete, steel, lumber and diesel – increased by 55 percent, even with a dip in prices in 2008.

The federal surface transportation program is an essential source of funding for the construction, maintenance and improvement of South Dakota’s system of roads, highways and bridges.

- South Dakota receives federal funding for its highways, bridges and public transit systems from the Federal Highway Trust Fund, under funding levels and formulas determined by Congress.
- Federal spending levels for highways and public transit are based on the current federal surface transportation program, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), which was approved by Congress in 2005. The SAFETEA-LU program expires on September 30, 2009.
- From 1998 to 2007, South Dakota has been able to complete numerous highway and bridge projects that have improved safety and enhanced mobility and economic productivity largely due to federal transportation funds.
- From 1998 to 2007, South Dakota received approximately \$2.43 billion in federal funding for road, highway and bridge improvements.
- Federal funds provide 55 percent of revenues used annually by the South Dakota Department of Transportation to pay for road, highway and bridge construction, repairs, and maintenance.
- South Dakota receives federal funding at a rate 2.3 times higher than its contribution to the Highway Trust Fund.

A congressionally appointed commission recently recommended a broad overhaul of the Federal Surface Transportation Program that would significantly boost funding, consolidate the program into fewer funding categories, speed up the project delivery process, require greater accountability in project selection and expand the use of alternate funding sources.

- The National Surface Transportation Policy and Revenue Study Commission (NSTPRSC) was created by Congress to examine the current condition and future funding needs of the nation's surface transportation program, develop a plan to insure the nation's surface transportation system meets America's future mobility needs and examine funding alternatives for adequately funding the nation's future highway and transit needs.
- The Commission concluded that it is critical to the future quality of life of Americans that the nation create and sustain the preeminent surface transportation system in the world, one that is well-maintained, safe and reliable.

Key recommendations by the Commission include:

- Allocate funding through outcome-based, performance-driven programs supported by cost/benefit evaluations rather than political earmarking.
- Consolidate the more than 100 current transportation funding programs into 10 programs focused on key areas of national interest, including congestion relief, preservation of roads and bridges, improved freight transportation, improved roadway safety, improved rural access, improved environmental stewardship, and the development of environmentally-friendly energy sources.
- Speed up project development processes to reduce the excessive time required to move projects from initiation to completion by better coordinating the development and review process for transportation projects.
- Significantly boost federal funding for surface transportation. Options for increasing federal surface transportation revenues include reduced evasion of federal motor fuel taxes, moving costs of exemptions from motor fuel fees to the general fund, indexing the motor fuel tax, increasing the motor fuel tax, increased use of tolling and congestion pricing, increased use of public-private partnerships, and the imposition of freight fees.

The efficiency of South Dakota's transportation system, particularly its highways, is critical to the health of the state's economy. Businesses are increasingly reliant on an efficient and reliable transportation system to move products and services. A key component in business efficiency and success is the level and ease of access to customers, markets, materials and workers.

- Annually, \$26 billion in goods are shipped from sites in South Dakota and another \$20 billion in goods are shipped annually to sites in South Dakota, mostly by truck.

- Sixty percent of the goods shipped annually from sites in South Dakota are carried by trucks and another 13 percent are carried by courier services, which use trucks for part of the deliveries. Similarly, 70 percent of the goods shipped to sites in South Dakota are carried by trucks and another 11.5 percent are carried by courier services, which use trucks for part of their deliveries.
- Commercial trucking in South Dakota is projected to increase 29 percent by 2020.
- Businesses have responded to improved communications and greater competition by moving from a push-style distribution system, which relies on low-cost movement of bulk commodities and large-scale warehousing, to a pull-style distribution system, which relies on smaller, more strategic and time-sensitive movement of goods.
- Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient and more modern transportation system.

Sources of information for this study include the South Dakota Department of Transportation (SDDOT), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the National Surface Transportation Policy and Revenue Study Commission (NSTPRSC), the U.S. Census Bureau, the National Highway Traffic Safety Administration (NHTSA), the Reason Foundation and the Texas Transportation Institute (TTI).

Introduction

South Dakota's roads, highways and bridges form vital transportation links for the state's residents, visitors and businesses, providing daily access to homes, jobs, shopping and recreation, as well as to farms, packing houses, distribution centers, shipping hubs, and manufacturing plants. Today, with the state hoping to foster quality of life improvements and economic diversification, the modernization of South Dakota's transportation system is crucial.

As the nation looks to rebound from the economic downturn, the modernization of South Dakota's transportation system could play an important role in improving the state's economic well being by providing critically needed jobs in the short term and by improving the productivity and competitiveness of the state's businesses in the long term.

While state and local governments are responsible for maintaining most of the state's roadways and bridges, the federal government plays a significant role in funding the repairs and improvements of many of the state's most heavily used roads, highways and bridges. As South Dakota faces the challenge of preserving and modernizing its surface transportation system, the future level of federal, state and local highway funding will be a critical factor in whether the state's residents and visitors continue to enjoy access to a safe and efficient transportation network.

This report examines the condition, use and safety of South Dakota's roads, highways and bridges, the role of federal funding in the maintenance and improvement of the state's surface transportation system, and the future mobility needs of the state. Sources of information for this study include the South Dakota Department of Transportation (SDDOT), the Federal Highway Administration (FHWA), the National Surface Transportation Policy and Revenue Study Commission (NSTPRSC), the U.S. Census Bureau, the National Highway Traffic Safety

Administration (NHTSA), the Reason Foundation and the Texas Transportation Institute (TTI).

Population, Travel and Economic Trends in South Dakota

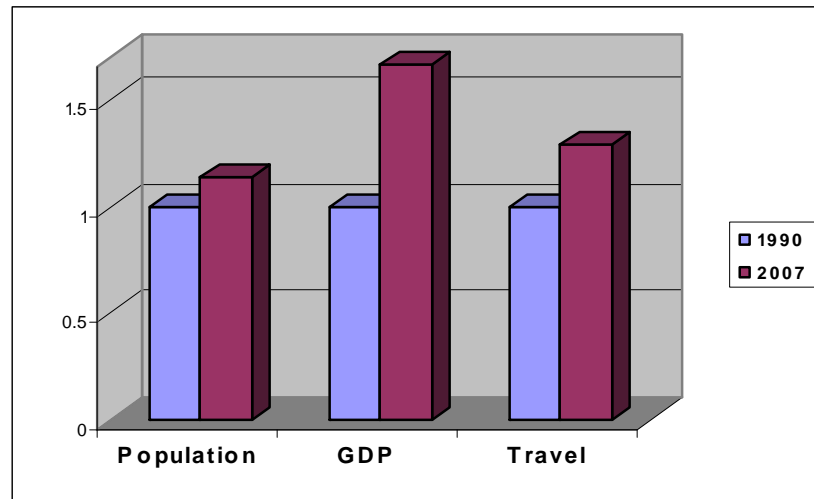
South Dakota residents and businesses require a high level of personal and commercial mobility. Population and economic growth in the Mount Rushmore State has resulted in a significant increase in the demand for mobility as well as an increase in vehicle miles of travel (VMT). To foster a high quality of life in South Dakota, it will be critical that the state provide a safe and modern transportation system that can accommodate future growth in population, tourism, recreation and vehicle travel, as well as economic development and future changes in types and locations of industry within the state.

South Dakota's population grew 16 percent between 1990 and 2008, increasing from 696,000 in 1990 to approximately 804,000 residents in 2008.¹

South Dakota also has experienced significant economic growth since 1990. From 1990 to 2007, South Dakota's gross domestic product (GDP), a measure of the state's economic output, increased by 67 percent, when adjusted for inflation. That places the state's economic growth above the U.S. average of 53 percent, and ahead of 36 other states.

Population and economic growth in South Dakota have resulted in an increase in vehicle travel in the state. From 1990 to 2007, annual vehicle miles of travel in South Dakota increased by 29 percent, from 7 billion miles traveled annually to 9 billion miles traveled annually.² Based on population and other lifestyle trends, TRIP estimates that travel on South Dakota's roads and highways will increase 25 percent by 2025.³

Chart 1: South Dakota's population, GDP and Vehicle Travel increase 1990-2007 (1 = 1990 level).



Source: TRIP analysis of federal data

Condition of South Dakota's Roads

The life cycle of South Dakota's roads is greatly affected by the state's ability to perform timely maintenance and upgrades to ensure that road and highway surfaces last as long as possible. The pavement condition of the state's major roads is evaluated and classified as being in poor, mediocre, fair or good condition.

In 2007 (the latest year for which data is available), 34 percent of South Dakota's major roads were rated in poor or mediocre condition, providing motorists with a rough ride.⁴ Fifteen percent of South Dakota's major roads were rated in poor condition and 19 percent were rated in mediocre condition.⁵ Roads rated poor may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced but often are too deteriorated and must be reconstructed. Roads rated in mediocre condition may show signs of significant wear and may also have some visible pavement distress. Most pavements in mediocre condition can

be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition.

A desirable goal for state and local organizations that are responsible for road maintenance is to keep 75 percent of major roads in good condition.⁶ In South Dakota, 51 percent of the state's major roads were in good condition in 2007.⁷

Chart 2. Pavement conditions in South Dakota.

<i>Pavement Rating</i>	<i>Percentages</i>
Poor	15%
Mediocre	19%
Fair	15%
Good	51%

Source: Federal Highway Administration.

Pavement failure is caused by a combination of traffic, moisture and climate. Moisture often works its way into road surfaces and the materials that form the road's foundation. Road surfaces at intersections are even more prone to deterioration because the slow-moving or standing loads occurring at these sites subject the pavement to higher levels of stress. It is critical that roads are fixed before they require major repairs because reconstructing roads costs approximately four times more than resurfacing them.⁸

As roads and highways continue to age, they will reach a point of deterioration where routine paving and maintenance will not be adequate to keep pavement surfaces in good condition and costly reconstruction of the roadway and its underlying surfaces will become necessary.

The Costs to Motorists of Roads in Inadequate Condition

TRIP has calculated the additional cost to motorists of driving on roads in poor or unacceptable condition. When roads are in poor condition – which may include potholes, rutting or rough surfaces – the cost to operate and maintain a vehicle increases. These additional vehicle operating costs include accelerated vehicle depreciation, additional vehicle repair costs, increased fuel consumption and increased tire wear. TRIP estimates that additional vehicle operating costs borne by South Dakota motorists as a result of poor road conditions is \$180 million annually, or \$319 per motorist.

Additional vehicle operating costs have been calculated in the Highway Development and Management Model (HDM), which is recognized by the U.S. Department of Transportation and more than 100 other countries as the definitive analysis of the impact of road conditions on vehicle operating costs. The HDM report is based on numerous studies that have measured the impact of various factors, including road conditions, on vehicle operating costs.⁹

The HDM study found that road deterioration increases ownership, repair, fuel and tire costs. The report found that deteriorated roads accelerate the pace of depreciation of vehicles and the need for repairs because the stress on the vehicle increases in proportion to the level of roughness of the pavement surface. Similarly, tire wear and fuel consumption increase as roads deteriorate since there is less efficient transfer of power to the drive train and additional friction between the road and the tires.

TRIP's additional vehicle operating cost estimate is based on taking the average number of miles driven annually by a motorist, calculating current vehicle operating costs based on AAA's 2007 vehicle operating costs and then using the HDM model to estimate the additional vehicle operating costs paid by drivers as a result of substandard roads.¹⁰ Additional research on

the impact of road conditions on fuel consumption by the Texas Transportation Institute (TTI) is also factored into TRIP's vehicle operating cost methodology.

Bridge Conditions in South Dakota

South Dakota's bridges form key links in the state's highway system, providing communities and individuals access to employment, schools, shopping and medical facilities, and facilitating commerce and access for emergency vehicles.

In 2008, a total of 25 percent of South Dakota's bridges (20 feet or longer) were rated as structurally deficient or functionally obsolete. Twenty-one percent of South Dakota's bridges (20 feet or longer) were rated as structurally deficient (ten percent of state system bridges and 32 percent of local government bridges are structurally deficient).¹¹ This is the fifth highest percentage of structurally deficient bridges in the nation (nationally, five percent of state system bridges and 28 percent of local government bridges are structurally deficient).¹²

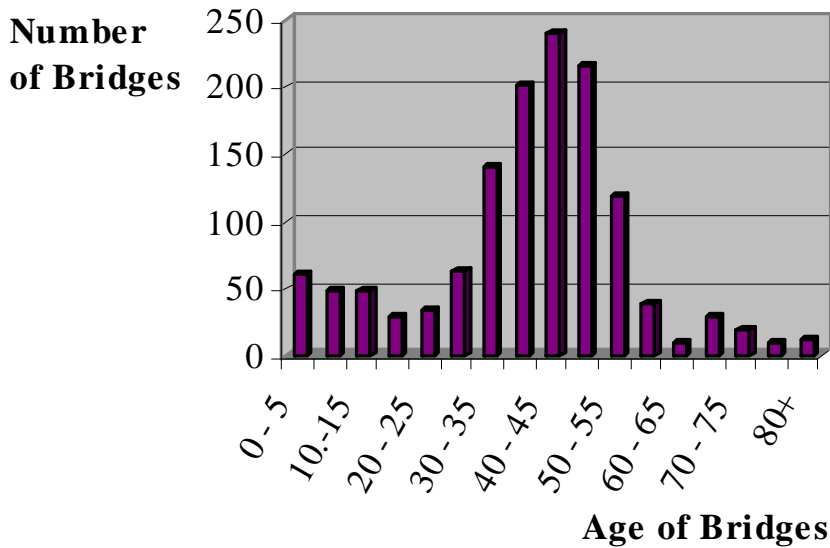
A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid posted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

Four percent of South Dakota's bridges were rated functionally obsolete in 2008.¹³ Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment with the approaching roadway.

The service life of bridges can be extended by performing routine maintenance such as resurfacing decks, painting surfaces, insuring that a facility has good drainage and replacing deteriorating components. But, most bridges will eventually require more costly reconstruction or major rehabilitation to remain operable.

South Dakota’s bridges are aging. The majority of the bridges in the state-maintained network are 30 to 55 years old, and many are more than 80 years old.¹⁴ The following chart shows the age of bridges in the state-maintained network.

Chart 3. State Bridge Age on South Dakota’s state-maintained network.



Source: SDDOT slideshow presentation, September 24, 2008.

Some of the oldest bridges, however, are county bridges. Nearly 1,200 county bridges in South Dakota are 60 to 110 years old, and funding for local bridges has steadily been declining since 1999.¹⁵

Traffic Safety in South Dakota

A total of 839 people were killed in motor vehicle accidents in South Dakota from 2004 through 2008, an average of 168 fatalities per year.¹⁶

Although there were significantly fewer fatalities in the state in 2007 than during the previous three years, South Dakota's traffic fatality rate of 1.62 fatalities per 100 million vehicle miles of travel in 2007 (the latest year for which vehicle travel data is available) was higher than the national average of 1.36. But this rate will likely be closer to the national average in 2008 as a result of a significant drop in traffic fatalities in South Dakota in 2008.

Chart 4. Traffic fatalities in South Dakota from 2004 – 2008.

<i>Year</i>	<i>Fatalities</i>
2004	197
2005	186
2006	191
2007	146
2008	119
Total	839

Source: National Highway Traffic Safety Administration

South Dakota's rural, non-Interstate roads have a fatality rate significantly higher than other roads in the state. The traffic fatality rate in 2007 (the latest year for which data is available) on South Dakota's non-Interstate rural roads was 2.36 traffic fatalities per 100 million vehicle miles of travel, which is two-and-a-half times greater than the .90 traffic fatalities per 100 million vehicle miles of travel on all other roads and highways in the state.¹⁷

A disproportionate share of highway fatalities occur on South Dakota's rural, non-Interstate roads. In 2006, 72 percent of traffic fatalities in South Dakota occurred on rural, non-Interstate routes, while 50 percent of vehicle travel in South Dakota occurred on these roads.¹⁸

Three major factors are associated with fatal vehicle accidents: driver behavior, vehicle characteristics and roadway design. It is estimated that roadway design is an important factor in one-third of all fatal and serious traffic accidents. Improving safety on South Dakota’s roadways can be achieved through further improvements in vehicle safety; improvements in driver, pedestrian, and bicyclist behavior; and a variety of improvements in roadway safety features.

The severity of serious traffic crashes could be reduced through roadway improvements such as adding turn lanes, removing or shielding obstacles, adding or improving medians, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals where appropriate.

Roads with poor geometry, with insufficient clear distances, without turn lanes, inadequate shoulders for the posted speed limits, or poorly laid out intersections or interchanges, pose greater risks to motorists, pedestrians and bicyclists.

The following chart shows the correlation between specific needed road improvements and the reduction of fatal accident rates nationally.¹⁹

Chart 5. Reduction in fatal accident rates after roadway improvements.

Type of Improvement	Reduction in Fatal Accident Rates after Improvements
New Traffic Signals	53%
Turning Lanes and Traffic Signalization	47%
Widen or Modify Bridge	49%
Construct Median for Traffic Separation	73%
Realign Roadway	66%
Remove Roadside Obstacles	66%
Widen or Improve Shoulder	22%

Source: TRIP analysis of U.S. Department of Transportation data

Importance of Transportation to Economic Growth

Agriculture, financial services and manufacturing still drive South Dakota's economy, but professional and technical services industries, knowledge-based industries such as biotech and nanotech, and business processes are growing. This combination of old and new has boosted the state's gross domestic product by 67 percent since 1990. All businesses, in different ways, are dependent on an efficient, safe, and modern transportation system, one that will foster continued diversification and opportunity.

The new culture of business demands that an area have well-maintained and efficient roads, highways and bridges if it is to remain economically competitive. The advent of modern national and global communications and the impact of free trade in North America and elsewhere have resulted in a significant increase in freight movement. Consequently, the quality of a region's transportation system has become a key component in a business's ability to compete locally, nationally and internationally.

Businesses have responded to improved communications and the need to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and by accepting customer orders through the Internet. The result of these changes has been a significant improvement in logistics efficiency as firms move from a push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system, which relies on smaller, more strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

Highways are vitally important to continued economic development in South Dakota. As the economy expands, creating more jobs and increasing consumer confidence, the demand for consumer and business products grows. In turn, manufacturers ship greater quantities of goods to

market to meet this demand, a process that adds to truck traffic on the state's highways and major arterial roads.

Every year, \$26.4 billion in goods are shipped from sites in South Dakota and another \$20.1 billion in goods are shipped to sites in South Dakota, mostly by trucks.²⁰ Sixty percent of the goods shipped annually from sites in South Dakota are carried by trucks and another 13 percent are carried by courier services, which use trucks for part of their deliveries. Similarly, 70 percent of the goods shipped to sites in South Dakota are carried by trucks and another 11.5 percent are carried by courier services, which use trucks for part of their deliveries.²¹

Trucking is a crucial part of South Dakota's economy, as commercial trucks move goods from sites across the state to markets inside and outside the state. Commercial truck travel in South Dakota is expected to increase significantly over the next two decades. Based on federal projections, TRIP estimates that commercial trucking will increase by 29 percent in South Dakota by 2020.²²

The Funding of South Dakota's Surface Transportation System

The construction, repair and upkeep of South Dakota's roads, bridges and highways are paid for by local, state and federal governments, and the system is maintained largely by state and local governments.

Federal funding for South Dakota's highways and bridges comes from the Federal Highway Trust Fund, under funding levels and formulas determined by Congress. Federal spending levels for highways are based on the current federal surface transportation program, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), which was approved by Congress in 2005. The SAFETEA-LU program expires on September 30, 2009.

From 1998 to 2007, South Dakota received approximately \$2.43 billion in federal funding for road, highway and bridge improvements.²³

Federal funding is a critical source of revenue for South Dakota's roadways and bridges. South Dakota is one of the nation's rural states that receives more money from the Federal Highway Trust Fund than it contributes in federal gasoline taxes. The state receives 2.3 times its contribution to the Highway Trust Fund and is one of three states (along with Alabama and South Carolina) in which more than half its transportation funds come from the Highway Trust Fund.²⁴ Federal funds provide 55 percent of all revenues used by the South Dakota Department of Transportation to pay for road, highway and bridge construction, repairs, and maintenance.²⁵

As a result of this level of federal support, from 1998 to 2007, South Dakota has been able to complete numerous projects to reconstruct and modernize sections of the state's highway system, rehabilitate deteriorated roadways and bridges, add retaining walls and other elements to improve traffic safety, relieve traffic congestion and enhance economic development opportunities.

State funding for highways and bridges is based almost entirely on the state gasoline tax, which is 22-cents per gallon (and 20 cents per gallon for gasohol). This user fee was last raised in 1999. Revenues have remained flat for several years while the costs of preserving and modernizing the system have mushroomed.

Transportation funding at the state level is currently \$120 million short of the estimated needs. These needs are primarily in maintenance and operations, including snow plow fuel and operation, general maintenance and highway striping. In addition to the shortfall in state transportation funding, South Dakota's cities, counties and townships have \$117 million in

construction needs and maintenance that are currently unmet. Funding gaps at the state and local level can not be covered with federal funding.

A 2007 analysis by the Federal Highway Administration found that every \$1 billion invested in highway construction would support approximately 27,800 jobs, including approximately 9,500 in the construction sector, approximately 4,300 jobs in industries supporting the construction sector, and approximately 14,000 other jobs induced in non-construction related sectors of the economy.²⁶

Future Projects Needed In South Dakota

The South Dakota Department of Transportation (SDDOT) acknowledges that state dollars are stretched thin, and federal funding is insufficient to meet current construction needs across the state. According to the Department, “Highway needs greatly exceed existing funding availability, resulting in the continued deterioration of highways and bridges.”²⁷

SDDOT has made significant budgetary cuts, including delaying important projects in the five-year (2009-2013) Statewide Transportation Improvement Program (STIP).²⁸ SDDOT notes that delaying projects in the current year will result in many projects in future years being postponed in favor of the currently deferred, priority projects.

Preservation of the existing system has become SDDOT’s priority. The state’s highway system totals 7,848 miles of roadway, detailed in the following chart.

Chart 6. South Dakota's State Highway System.

Category	Miles
Interstate	679
Major Arterial	2,819
Minor Arterial	2,909
State Secondary	1,123
State Highway: Urban	153
State Highway: Municipal	165
Total Miles	7,848

Source: SDDOT, Statewide Transportation improvement Program 2009-2013

SDDOT estimates that 69 percent of vehicle miles traveled is on the state system of highways, which also carries 76 percent of all heavy truck traffic.²⁹ The workhorses of the system are the Interstate highways: I-90, I-29, I-229, and I-190. SDDOT estimates that 28 percent of the state's 679 miles of Interstate highways are in need of repair or replacement. Other state routes need significant work as well.

Included in the Statewide Transportation Improvement Program are plans for \$500 million in improvements and additions. Among improvements are the I-29/I-229 system interchange, the I-29/U.S. 18 (Canton) interchange, the I-90/I-229 interchange, and improvements to U.S. 16 Hell Canyon, SD-47 north of Hoven, SD-34 in Sturgis, SF-44 in Rapid City, U.S. 14 in Brookings.

While many critical projects will proceed, others have been delayed due to lack of funding. The following chart lists the 50 most deteriorated sections of roadway in the state highway system that need resurfacing or reconstruction that are not scheduled for repairs. Many of these projects are on high-priority corridors designated by SDDOT, including I-29, I-35, I-90, and South Dakota routes 11 and 44.

Chart 7. The 50 most deteriorated sections of roadway in South Dakota’s state highway system.

	Route Name	County or Closest City	From	To	Length in Miles	Work needed	Average Daily Traffic	Surface Condition Index (SCI)
1	SD44	Rapid City	042.15 +0.000	043.42 +0.000	1.243	Restoration	21,987	0.57
2	SD37	Huron	127.70 +0.000	129.70 +0.000	2.031	Reconstruct	4,230	0.74
3	I229 S	Sioux Falls	000.00 +0.000	000.84 +0.424	1.697	Resurface	11,255	0.96
4	SD44	Rapid City	040.95 +0.020	042.15 +0.000	1.210	Restoration	11,248	1.13
5	US81	Watertown	155.40 +0.322	157.04 +0.048	1.385	Restoration	12,925	1.16
6	I29 S	Watertown	179.00 +0.383	181.00 +0.039	1.674	Resurface	3,092	1.25
7	I29 S	Sioux Falls	073.38 +0.618	076.19 +0.080	2.239	Resurface	14,133	1.26
8	I29 N	Watertown	181.31 +0.663	188.00 +0.116	6.136	Resurface	3,176	1.43
9	I29 N	Sioux Falls	073.38 +0.618	076.19 +0.061	2.227	Resurface	14,115	1.64
10	US16	Custer	026.96 +0.000	028.09 +0.156	1.358	Reconstruct	5,726	1.72
11	I29 S	Watertown	181.00 +0.039	182.00 +0.052	0.997	Reconstruct	3,155	1.83
12	I90 W	Jackson County	142.00 +0.881	146.26 +0.477	3.858	Resurface	2,847	1.90
13	SD11	Sioux Falls	069.20 +0.000	070.20 +0.623	2.082	Reconstruct	4,608	2.01
14	I29 N	Watertown	180.70 +0.296	181.31 +0.663	0.994	Resurface	3,155	2.11
15	I90 L, I90 EL & I90WL	Mitchell	332.25 +0.000	333.53 +0.000	2.004	Restoration	8,800	2.13
16	SD34	Madison	387.14 +0.013	388.33 +0.000	2.119	Restoration	7,399	2.14
17	I90 W	Jones County	198.00 +0.126	210.14 +0.000	12.029	Resurface	3,275	2.17
18	I90 W	Jackson County	148.00 +0.437	151.00 +0.765	3.327	Resurface	2,877	2.18
19	SD11	Sioux Falls	064.00 +0.425	067.00 +0.115	2.672	Resurface	3,330	2.25
20	SD34	Sturgis	034.23 +0.012	035.55 +0.005	1.253	Reconstruct	11,410	2.31
21	US14 E & W	Huron	343.00 +0.427	347.65 +0.341	8.071	Resurface	2,198	2.32
22	US18	Hot Springs	045.85 +0.000	047.00 +0.312	1.458	Resurface	3,195	2.33
23	US14 E & W	Brookings	421.47 +0.000	422.44 +0.000	1.917	Reconstruct	4,362	2.47
24	I90 W	Meade	044.10 +0.196	049.87 +0.110	5.777	Restoration	9,355	2.50
25	SD11	Sioux Falls	067.00 +0.315	069.20 +0.000	1.817	Resurface	3,603	2.52
26	I29 S	Union County	004.64 +0.191	017.00 +0.950	13.115	Resurface	5,676	2.54
27	SD115	Dell Rapids	104.89 +0.000	107.51 +0.000	2.792	Resurface	2,900	2.58
28	SD115	Dell Rapids	103.75 +0.000	104.44 +0.061	2.447	Restoration	3,895	2.60

29	I29 S	Watertown	182.00 +0.052	193.32 +0.128	11.399	Restoration	3,188	2.64
30	I29 N	Sioux Falls	076.19 +0.061	078.00 +0.009	1.763	Restoration	14,834	2.66
31	SD445	Rapid City	074.27 +0.000	076.62 +0.000	2.343	Restoration	15,664	2.66
32	I90 W	Davison County	316.42 +0.000	319.14 +0.296	3.005	Restoration	4,025	2.67
33	I29 N	Watertown	179.00 +0.341	180.70 +0.296	1.656	Resurface	3,090	2.69
34	I90 W	Aurora County	297.00 +0.641	306.15 +0.000	8.499	Resurface	3,855	2.70
35	I190 N & S	Rapid City	000.00 +0.000	001.00 +0.044	2.062	Restoration	8,888	2.73
36	I90 E	Jackson County	131.59 +0.365	133.00 +0.277	1.328	Resurface	2,695	2.77
37	US12 W	Brown County	298.00 +0.087	305.00 +0.609	7.516	Resurface	2,910	2.77
38	I29 N	Roberts County	215.79 +0.119	225.00 +0.016	9.069	Restoration	2,279	2.81
39	I29 S	Brookings	121.83 +0.000	134.00 +0.118	12.430	Resurface	5,483	2.81
40	I90 W	Meade	040.31 +0.000	044.10 +0.196	3.933	Restoration	7,840	2.81
41	SD50 WL	Vermillion	406.17 +0.000	407.30 +0.000	0.971	Resurface	2,275	2.81
42	SD50 E	Yankton County	390.05 +0.087	392.00 +0.860	2.666	Reconstruct	2,400	2.86
43	SD11	Brandon	077.09 +0.085	078.20 +0.324	1.348	Restoration	3,717	2.90
44	US18	Fall River	051.00 +0.349	052.00 +0.495	1.130	Resurface	2,780	2.92
45	I90 W	Mitchell	319.14 +0.296	333.00 +0.945	14.504	Restoration	4,346	2.95
46	SD10	Sisseton	358.37 +0.000	359.31 +0.016	0.959	Reconstruct	2,730	2.97
47	I90 E	Jackson County	133.00 +0.404	140.00 +0.167	6.763	Resurface	2,695	2.98
48	I29 N	Codington County	188.17 +0.000	193.33 +0.117	5.227	Resurface	3,202	2.99
49	I90 W	Aurora County	306.15 +0.000	316.42 +0.000	10.247	Resurface	3,946	3.01
50	I29 S	Union County	021.00 +0.291	027.00 +0.128	5.855	Restoration	5,199	3.02

Source: STIP meeting testimony

South Dakota's state system includes many bridges that were built in the 1950s and 1960s that need a substantial investment in order to preserve the bridge's structural integrity, function and safety. The following chart lists bridges that carry at least 2,000 vehicles a day for which significant repairs are not scheduled.

Chart 8. The most traveled structurally deficient bridges in the state for which significant repairs are not scheduled through the end of 2009.

	Route Carried	Feature Intersected	County	Location	Average Daily Traffic	Deck Rating (0-9)	Super-structure Rating (0-9)	Sub-structure Rating (0-9)	Year Built	Sufficiency Rating
1	SD44	RAPID CK	PENNINGTON	1.9 SW JCT SD 79	14810	4	5	7	1962	68.3
2	US35	HAY CK	BUTTE	0.8 N JCT SD 34	11200	4	5	7	1963	52.8
3	I-90 W	DEER VIEW RD	MEADE	N PIEDMONT INTERCHANGE	7910	3	6	6	1957	56.7
4	I-90 W	LITTLE ELK CK	MEADE	0.5 NW PIEDMONT INTERCH	7910	4	6	6	1957	72.6
5	I-90 E	SPLIT ROCK CK	MINNEHAHA	0.4 E SD 11 INTERCH	7160	4	6	6	1960	77.6
6	I-90 W	300 AVE	LYMAN	7.5 E US 83 N INTERCHANGE	3260	2	6	7	1970	91.4
7	I-29 S	149 ST (FAS 6266)	GRANT	6.2 S US 12 INTERCHANGE	3115	4	5	7	1976	84

Source: SDDOT response to TRIP survey

At current funding levels, South Dakota faces a significant challenge just in maintaining the condition of all its highways and bridges while making needed improvements to accommodate the state’s growing demand for safe and reliable transportation. But, providing a well-maintained transportation system in South Dakota that will improve safety and mobility and enhance economic development opportunities will require constructing some new highway routes and bypasses, reconstructing and widening some key highways, and replacing some aging bridges.

The state has not allocated any funds for system expansion. Unfunded priority system additions total \$1 billion and include: SD-34 from Madison to I-29, a new I-29 interchange near Summit, the Teddy Roosevelt Expressway (U.S. 85 Belle Fourche to North Dakota), U.S. 12 from Mobridge to Aberdeen and U.S. 81 from Yankton to I-90.³⁰

In addition to these projects, the state sees the need for new transportation infrastructure to foster economic development in such areas as research facilities, refineries and other new businesses. Providing many of these needed improvements will require significant federal funds.

During public meetings held to discuss the 2009 to 2013 STIP, planners noted that because of inadequate funding, the state would be unable to move forward with the following projects without significant federal funding.

Chart 9. Needed roadway projects in South Dakota that cannot proceed without significant federal funding

Route	Location	County or Closest City
SD 15	From Milbank south to SD 28	Milbank
SD 28	From US 281 to 3 miles E. of Hitchcock	Hitchcock
US 281	Through Wolsley	Huron
SD 34	From 1-29 to the Minnesota border	Flandreau
SD 34	East of Madison to 1-29	Madison
SD 100	From Tea exit east	Tea
SD 52	Intersection at 8th St./Summit	Yankton
SD 73	Bennet/Jackson County line north to 1-90	Kadoka
SD 53	From I-90 south	Vivian
US 85	Through Belle Fourche	Belle Fourche

Source: STIP meeting testimony.

Future Federal Surface Transportation Program

To ensure that federal funding for highways and public transit in South Dakota and throughout the nation continues beyond the expiration of SAFETEA-LU, Congress will need to approve new long-term federal surface transportation legislation by September 30, 2009.

The crafting of a new federal highway and transit program will occur during a time when the nation’s surface transportation program faces numerous challenges, including significant levels of deterioration, increasing traffic congestion, a high number of traffic deaths, increasing construction costs and a decline in revenues going into the federal Highway Trust Fund.

Recent declines in federal surface transportation revenues as well as significant increases in the cost of transportation construction materials will likely make it more difficult for Congress to authorize a new federal surface transportation program that adequately funds needed improvements to the nation's roads, highways, bridges and public transit systems.

In September 2008, Congress approved transferring \$8 billion from the U.S. General Fund to the Highway Account of the U.S. Highway Trust Fund to enable the federal government to meet its funding commitments during the final year of SAFETEA-LU. Transfer of the \$8 billion into the Federal Highway Trust Fund restored funding that had been removed from the trust fund in 1998 and placed in the U.S. General Fund as part of a budget resolution. Transfer of the funds was necessitated by an approximately seven percent drop in revenues into the account during 2008 as a result of a decrease in driving levels nationally, largely in response to increased motor fuel prices.

While the \$8 billion transfer is expected to allow the Highway Account of the Federal Highway Trust Fund to remain solvent through the expiration of SAFETEA-LU, it will not address anticipated future shortfalls in trust fund revenues needed to maintain the current level of federal highway investment.

A significant increase in the cost of highway construction materials will also make it more difficult to adequately maintain the nation's roads, highways and bridges and make needed improvements to relieve traffic congestion and improve roadway safety. Over the five-year period from November 2003 to November 2008, the average cost of materials used for highway construction – including asphalt, concrete, steel, lumber and diesel – increased by 55 percent.

National Surface Transportation Policy and Revenue Study Commission

When Congress approved SAFETEA-LU in 2005, it recognized the tremendous challenge the nation would continue to face in maintaining and improving its highway and transit systems in order to meet the country's future mobility needs. The 2005 legislation stipulated that a national commission be created to examine the condition of the nation's surface transportation system and its future needs, and to make recommendations about the future of the nation's surface transportation program.

The National Surface Transportation Policy and Revenue Study Commission (NSTPRSC) was created by Congress to examine the current condition and future funding needs of America's surface transportation program, develop a plan to ensure the nation's surface transportation system meets the nation's future mobility needs and examine funding alternatives for adequately funding the nation's future highway and transit needs.

Comprised of transportation officials, business leaders and members of academia, the Commission held numerous field hearings, was advised by a panel of transportation experts, commissioned numerous reports and held 12 executive sessions in preparing its report.

In January, 2008 the NSTPRSC released its findings. The Commission found that at the current level of investment in surface transportation in the U.S., the nation's highways and bridges would further deteriorate, traffic casualties would increase and traffic congestion would increase, jeopardizing the nation's economic leadership due to an erosion of transportation reliability.³¹ The Commission concluded that it is critical to the future quality of life of Americans that the nation create and sustain the preeminent surface transportation system in the world, one that is well-maintained, safe and reliable.³²

The Commission recommended a broad overhaul of the Federal Surface Transportation Program that would significantly boost funding, consolidate the program into fewer funding categories, speed up the project delivery process, require greater accountability in project selection and expand the use of alternate funding sources.

Key recommendations by the Commission include:

- ✓ Allocate funding through outcome-based, performance-driven programs supported by cost/benefit evaluations rather than political earmarking.
- ✓ Consolidate the more than 100 current transportation funding programs into 10 programs focused on key areas of national interest, including congestion relief, preservation of roads and bridges, improved freight transportation, improved roadway safety, improved rural access, improved environmental stewardship and the development of environmentally-friendly energy sources.
- ✓ Speed up project development processes to reduce the excessive time required to move projects from initiation to completion by better coordinating the development and review process for transportation projects.
- ✓ Significantly boost federal funding for surface transportation. Options for increasing federal surface transportation revenues include reduced evasion of federal motor fuel taxes, moving costs of exemptions from motor fuel fees to the general fund, indexing the motor fuel tax, increasing the motor fuel tax, additional tolling, congestion pricing, increased use of public-private partnerships and freight fees.

Conclusion

As South Dakota looks to enhance and build a thriving, growing and dynamic state, it will be critical that it is able to provide a 21st century network of roads, highways and bridges that can accommodate the mobility demands of a modern society.

Without the federal surface transportation program, South Dakota would not have been able to fund critical projects on the state's major roads, highways and bridges that have supported the state's economic development and created new opportunities for the state's residents.

As South Dakota looks to meet the challenges of preserving its investment in transportation infrastructure and providing a 21st century transportation system, the future provisions and funding levels of the next federal surface transportation program will be a critical factor in whether South Dakota is able to reap the benefits of a modern surface transportation system.

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Endnotes

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- ¹ Governor's Office of Economic Development.
- ² U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2007. www.fhwa.dot.gov.
- ³ TRIP calculation based on U.S. Census and Federal Highway Administration data.
- ⁴ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2007. www.fhwa.dot.gov.
- ⁵ Ibid.
- ⁶ Why We Must Preserve our Pavements, D. Jackson, J. Mahoney, G. Hicks, 1996 International Symposium on Asphalt Emulsion Technology.
- ⁷ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2007. www.fhwa.dot.gov.
- ⁸ Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
- ⁹ Highway Development and Management: Volume Seven. Modeling Road User and Environmental Effects in HDM-4. Bennett, C. and Greenwood, I. 2000.
- ¹⁰ Your Driving Costs. American Automobile Association. 2007.
- ¹¹ U.S. Department of Transportation - Federal Highway Administration: National Bridge Inventory 2007 and South Dakota Department of Transportation.
- ¹² Ibid.
- ¹³ Ibid.
- ¹⁴ SDDOT slideshow presentation, September 24, 2008.
- ¹⁵ 2008 Interim Study on Highway Needs & Financing. SDDOT, November 12, 2008.
- ¹⁶ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2004-2007 www.fhwa.dot.gov and www-fars.nhtsa.dot.gov.
- ¹⁷ TRIP analysis of 2006 NHTSA and FHWA data; Highway Statistics 2006.
- ¹⁸ Ibid.
- ¹⁹ Highway Safety Evaluation System; 1996 Annual Report on Highway Safety Improvement Programs; U.S. Department of Transportation
- ²⁰ Bureau of Transportation Statistics, U.S. Department of Transportation. 2002 Commodity Flow Survey, State Summaries.
- ²¹ Ibid.
- ²² U.S. Department of Transportation: Office of Freight Management and Operations. www.fhwa.dot.gov.
- ²³ TRIP analysis based on data obtained from the Federal Highway Administration and the Federal Transit Administration.
- ²⁴ 2008 Interim Study on Highway Needs and Financing, September 25, 2008.
- ²⁵ TRIP analysis of Highway Statistics 2006, Table SF-1. Federal Highway Administration.
- ²⁶ Federal Highway Administration, 2008. Employment Impacts of Highway Infrastructure Investment.
- ²⁷ SDDOT slideshow presentation, September 24, 2008.
- ²⁸ South Dakota Department of Transportation. Statewide Transportation Improvement Program 2009-2013.
- ²⁹ SDDOT slideshow presentation, September 24, 2008.
- ³⁰ Ibid.
- ³¹ National Surface Transportation Policy and Revenue Study Commission. Transportation for Tomorrow, December 2007. P. 3.
- ³² Ibid. P. 7.