

SOUTH CAROLINA TRANSPORTATION BY THE NUMBERS:

Meeting the State's Need for Safe and Efficient Mobility

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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 surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

Ten Key Transportation Numbers in South Carolina

\$3 Billion	TRIP estimates that South Carolina roadways that lack some desirable safety features, have inadequate capacity to meet travel demands or have poor pavement conditions cost the state's residents approximately \$3 Billion annually in the form of additional vehicle operating costs, lost time and wasted fuel due to traffic congestion and Traffic Crashes.
Charleston - \$1,168 Columbia - \$1,250 Greenville - \$1,248	The annual costs per motorist of driving on roads that are congested, deteriorated and that lack some desirable safety features in South Carolina's largest urban areas are: Charleston - \$1,168; Columbia - \$1,250; Greenville (including Spartanburg and Anderson) - \$1,248.
Charleston – 37% Columbia – 36% Greenville – 48%	In the Charleston area, 37 percent of major urban roads are in poor or mediocre condition, Thirty-six percent of major urban roads in the Columbia area are in poor or mediocre condition and 48 percent of major urban roads in the Greenville metro area (including Spartanburg and Anderson) are in poor or mediocre condition.
863 deaths annually 4,315 deaths 2008 - 2012	From 2008 to 2012, an average of 863 people were killed annually in South Carolina traffic crashes, a total of 4,315 fatalities over the five year period.
Tied for 1st	The fatality rate on South Carolina's routes is tied for the highest in the nation. South Carolina's rural fatality rate is also 61 percent higher than the national average (2.99 fatalities per 100 million vehicle miles of travel vs. a 1.86 national average).
21 %	As of November, 2014, 21 percent of South Carolina bridges are in need of repair, improvement or replacement. Eleven percent of the state's bridges are structurally deficient and ten percent are functionally obsolete.
\$1.12 return on \$1.00	From 2008 to 2012, the federal government provided \$1.12 for road improvements in South Carolina for every one dollar paid in federal motor fuel fees.
84 %	Eighty-four percent of goods shipped annually from sites in South Carolina travel by truck.
3,455,931	There are 3,455,931 licensed drivers in South Carolina.
46% 32%	Forty-six percent of South Carolina's major roads and highways (state-maintained Interstate, primary and secondary routes) were rated in poor condition in 2014, a significant increase since 2008 when 32 percent of the state's major roads and highways were in poor condition.

Executive Summary

South Carolina's extensive system of roads, highways and bridges provides the state's residents, visitors and businesses with a high level of mobility. This transportation system forms the backbone that supports the Palmetto State's economy. South Carolina'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 to customers, materials, suppliers and employees.

As part of its efforts to retain business, maintain its level of economic competitiveness and achieve further economic growth, South Carolina will need to maintain and modernize its roads, highways and bridges 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 Carolina's roads, highways and bridges could also 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.

South Carolina must improve its system of roads, highways and bridges to foster economic growth and keep businesses in the state. In addition to economic growth, transportation improvements are needed to ensure safe, reliable mobility and quality of life for all South Carolinians. Meeting South Carolina's need to modernize and maintain its system of roads, highways and bridges will require a significant boost in local, state and federal funding.

Signed into law in July 2012, MAP-21 (Moving Ahead for Progress in the 21st Century Act), has improved several procedures that in the past had delayed projects, MAP-21 does not address long-term funding challenges facing the federal surface transportation program. Congress recently approved the Highway and Transportation Funding Act of 2014, an eight-month extension of the federal surface transportation program, on which states rely for road, highway, bridge and transit funding. The program, initially set to expire on September 30, 2014, will now run through May 31, 2015. In addition to extending the current authorization of the highway and public transportation programs, the legislation will transfer nearly \$11 billion into the Highway Trust Fund (HTF) to preserve existing levels of highway and public transportation investment through the end of May 2015.

Congress will need to pass new legislation prior to the May 31 extension expiration to ensure prompt federal reimbursements to states for road, highway, bridge and transit repairs and improvements.

An inadequate transportation system costs South Carolina residents a total of \$3 billion every year in the form of additional vehicle operating costs (VOC), congestion-related delays and traffic crashes.

- TRIP estimates that South Carolina roadways that lack some desirable safety features, have inadequate capacity to meet travel demands or have poor pavement conditions cost the state's residents approximately \$3 billion annually in the form of additional vehicle operating costs, the cost of lost time and wasted fuel due to traffic congestion and traffic crashes.

- TRIP has calculated the annual cost to South Carolina residents of driving on roads that are deteriorated, congested and lack some desirable safety features both statewide and in the state’s largest urban area. The following chart shows the cost breakdown for these areas.

Location	VOC	Congestion	Safety	TOTAL
Charleston	\$ 294	\$ 647	\$ 227	\$ 1,168
Columbia	\$ 362	\$ 663	\$ 225	\$ 1,250
Greenville - Spartanburg- Anderson	\$ 405	\$ 590	\$ 253	\$ 1,248
South Carolina - Statewide Total	\$1.1 Billion	\$775 Million	\$1.1 Billion	\$3 Billion

Population and economic growth in South Carolina have resulted in increased demands on the state’s major roads and highways, leading to increased wear and tear on the transportation system.

- South Carolina’s population reached 4.7 million in 2012, a 35 percent increase since 1990. South Carolina had 3,455,931 licensed drivers in 2012.
- Vehicle miles traveled (VMT) in South Carolina increased by 43 percent from 1990 to 2012 – jumping from 34.4 billion VMT in 1990 to 49 billion VMT in 2012.
- By 2030, vehicle travel in South Carolina is projected to increase by another 25 percent.
- From 1990 to 2012, South Carolina’s gross domestic product, a measure of the state’s economic output, increased by 53 percent, when adjusted for inflation.

Nearly half of major roads and highways in South Carolina have pavement surfaces in poor condition, providing a rough ride and costing motorists in the form of additional vehicle operating costs. The share of the state’s major roads in poor condition has increased significantly since 2008.

- Forty-six percent of South Carolina’s major roads and highways (state-maintained Interstate, primary and secondary routes) have pavements that were rated in 2014 as being in poor condition, while an additional 38 percent were in fair condition and 16 percent were in good condition.
- In 2008, 32 percent of South Carolina’s major roads and highways (state-maintained Interstate, primary and secondary routes) had pavements in poor condition, while an additional 49 percent were in fair condition and 19 percent were in good condition.
- In the Charleston urban area, 37 percent of major locally and state-maintained roads are rated in poor or mediocre condition. Twenty-three percent of Charleston’s major urban roads are rated in fair condition and 40 percent are rated in good condition.
- Thirty-six percent of major urban roads in the Columbia urban area are rated in poor or mediocre condition. Twenty-two percent of Columbia’s major urban roads are rated in fair condition and 42 percent are rated in good condition.

- In the Greenville urban area (which includes Spartanburg and Anderson) 48 percent of major locally and state-maintained roads are rated in poor or mediocre condition. Nineteen percent of Greenville's major urban roads are rated in fair condition and 33 percent are rated in good 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.
- Driving on rough roads costs South Carolina motorists a total of \$1.1 billion annually in extra vehicle operating costs. Costs include accelerated vehicle depreciation, additional repair costs, and increased fuel consumption and tire wear.
- Driving on rough roads costs the average Charleston motorist \$294 annually in extra vehicle operating costs, while the average driver in the Columbia urban area loses \$362 each year as a result of driving on deteriorated roads. The average Greenville area motorist spends an extra \$405 annually due to driving on rough roads.

As of November 2014, 21 percent of locally and state-maintained bridges in South Carolina show significant deterioration or do not meet current design standards often because of narrow lanes, inadequate clearances or poor alignment. This includes all bridges that are 20 feet or more in length.

- Eleven percent of South Carolina's bridges are structurally deficient. 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.
- Ten percent of South Carolina's bridges are functionally obsolete. Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.
- In the Charleston urban area, 10 percent of bridges are structurally deficient and 29 percent are functionally obsolete. Fourteen percent of bridges in the Columbia area are structurally deficient, while 10 percent are functionally obsolete. In the Greenville area (which includes Spartanburg and Anderson), eight percent of bridges are structurally deficient and 14 percent are functionally obsolete.

Significant levels of traffic congestion cause significant delays in South Carolina, particularly in its larger urban areas, choking commuting and commerce.

- According to the Texas Transportation Institute (TTI), the average driver in the Charleston urban area loses \$647 each year in the cost of lost time and wasted fuel as a result of traffic congestion. The average commuter in the Charleston urban area loses 30 hours each year stuck in traffic.
- TTI estimates that the average Columbia-area driver loses \$663 annually in the cost of lost time and wasted fuel due to congestion. The average Columbia commuter loses 30 hours to traffic congestion every year.
- According to TTI calculations, the average Greenville-area motorists loses \$590 each year in the form of lost time and wasted fuel due to congestion. The average Greenville area driver loses 27 hours annually in traffic congestion.

South Carolina shares the highest overall traffic fatality rate in the nation with West Virginia. South Carolina’s traffic fatality rate on rural routes is the second highest in the nation behind Florida. Improving safety features on South Carolina’s roads and highways would likely result in a decrease in the state’s traffic fatalities and serious crashes. Roadway features are likely a contributing factor in approximately one-third of all fatal and serious traffic crashes.

- Between 2008 and 2012 a total of 4,315 people were killed in traffic crashes in South Carolina, an average of 863 fatalities per year.
- South Carolina’s overall traffic fatality rate of 1.76 fatalities per 100 million vehicle miles of travel in 2012 is the highest rate in the nation (along with West Virginia) and is significantly higher than the national average of 1.13.
- The fatality rate on South Carolina’s rural roads was 2.99 fatalities per 100 million vehicle miles of travel in 2012, which is 61 percent higher than the national rural road average of 1.86 fatalities per 100 million miles.
- The cost of serious traffic crashes in South Carolina in 2012, in which roadway features were likely a contributing factor, was approximately \$1.1 billion.
- The chart below details the average number of fatalities in each of South Carolina’s largest urban areas from 2010 to 2012 as well as the annual cost of traffic crashes to the average motorist in each area.

Location	Ave. Fatalities	Safety Cost
Charleston	50	\$227
Columbia	45	\$225
Greenville-Spartanburg-Anderson	151	\$253

- Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design. The cost of serious crashes includes lost productivity, lost earnings, medical costs and emergency services.
- Several factors are associated with vehicle crashes that result in fatalities, including driver behavior, vehicle characteristics and roadway features. TRIP estimates that roadway features are likely a contributing factor in approximately one-third of fatal traffic crashes.
- Where appropriate, highway improvements can reduce traffic fatalities and crashes while improving traffic flow to help relieve congestion. Such improvements include removing or shielding obstacles; adding or improving medians; improved lighting; adding rumble strips, wider lanes, wider and paved shoulders; upgrading roads from two lanes to four lanes; and better road markings and traffic signals.
- Investments in rural traffic safety have been found to result in significant reductions in serious traffic crashes. A 2012 report by the [Texas Transportation Institute](#) (TTI) found that improvements completed recently by the Texas Department of Transportation that widened lanes, improved shoulders and made other safety improvements on 1,159 miles of rural state roadways resulted in 133 fewer fatalities on these roads in the first three years after the improvements were completed (as compared to the three years prior). TTI estimates that the improvements on these roads are likely to save 880 lives over the next 20 years.

The efficiency of South Carolina’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. South Carolina is heavily reliant on federal dollars to fund its transportation system.

- Annually, \$156 billion in goods are shipped from sites in South Carolina and another \$168 billion in goods are shipped to sites in South Carolina, mostly by truck.
- Eighty-four percent of the goods shipped annually from sites in South Carolina are carried by trucks and another ten percent are carried by courier services or multiple mode deliveries, which include trucking.
- 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.
- Highway accessibility was ranked the number one site selection factor in a 2011 survey of corporate executives by [Area Development Magazine](#).

- The [Federal Highway Administration](#) estimates that each dollar spent on road, highway and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.

The federal government is a critical source of funding for South Carolina’s roads, highways and bridges and provides a significant return to South Carolina in road and bridge funding based on the revenue generated in the state by the federal motor fuel tax.

- Signed into law in July 2012, MAP-21 (Moving Ahead for Progress in the 21st Century Act), has improved several procedures that in the past had delayed projects, MAP-21 does not address long-term funding challenges facing the federal surface transportation program.
- Congress recently approved the Highway and Transportation Funding Act of 2014, an eight-month extension of the federal surface transportation program, on which states rely for road, highway, bridge and transit funding. The program, initially set to expire on September 30, 2014, will now run through May 31, 2015. In addition to extending the current authorization of the highway and public transportation programs, the legislation will transfer nearly \$11 billion into the Highway Trust Fund (HTF) to preserve existing levels of highway and public transportation investment through the end of May 2015.
- If Congress decides to provide additional revenues into the federal Highway Trust Fund in tandem with authorizing a new federal surface transportation program, a number of technically feasible revenue options have been identified by the [American Association of State Highway and Transportation Officials](#).
- A significant boost in investment on the nation’s roads, highways, bridges and public transit systems is needed to improve their condition and to meet the nation’s transportation needs, concluded a new report from the American Association of State Highway and Transportation Officials.
- The [2015 AASHTO Transportation Bottom Line Report](#) found that annual investment in the nation’s roads, highways and bridges needs to increase from \$88 billion to \$120 billion and from \$17 billion to \$43 billion in the nation’s public transit systems, to improve conditions and meet the nation’s mobility needs.
- The [2015 AASHTO Transportation Bottom Line Report](#) also found that the current backlog in needed road, highway and bridge improvements is \$740 billion.

Sources of information for this report include the South Carolina Department of Transportation (SCDOT), the Federal Highway Administration (FHWA), the Bureau of Transportation Statistics (BTS), the U.S. Census Bureau, the Texas Transportation Institute (TTI) and the National Highway Traffic Safety Administration (NHTSA).

Introduction

South Carolina's roads, highways and bridges form vital transportation links for the state's residents, visitors and businesses, providing daily access to homes, jobs, shopping, natural resources and recreation. Today, with the state working to foster quality of life improvements and economic competitiveness, the modernization of South Carolina's transportation system is crucial, particularly to critical areas of the state's economy including tourism, agriculture and manufacturing.

As the U.S. and South Carolina rebound from the recession, the preservation and modernization of the state's transportation system could play an important role in enhancing South Carolina's economic competitiveness and improving 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. As South Carolina faces the challenge of preserving and modernizing its transportation system, the future level of federal, state and local transportation funding will be a critical factor in whether the Palmetto State's residents and visitors continue to enjoy access to a safe and efficient transportation network. South Carolina is heavily reliant on federal dollars to fund its transportation system. Meeting South Carolina's need to modernize and maintain its system of roads, highways and bridges will require a significant boost in local, state and federal funding.

Signed into law in July 2012, MAP-21 (Moving Ahead for Progress in the 21st Century Act), has improved several procedures that in the past had delayed projects, MAP-21 does not address long-term funding challenges facing the federal surface transportation program. Congress recently approved the Highway and Transportation Funding Act of 2014, an eight-month extension of the federal surface transportation program on which states rely for road,

highway, bridge and transit funding. The program, initially set to expire on September 30, 2014, will now run through May 31, 2015. In addition to extending the current authorization of the highway and public transportation programs, the legislation will transfer nearly \$11 billion into the Highway Trust Fund (HTF) to preserve existing levels of highway and public transportation investment through the end of May 2015.

Congress will need to pass new legislation prior to the May 31 extension expiration to ensure prompt federal reimbursements to states for road, highway, bridge and transit repairs and improvements.

The level of funding and the provisions of the federal surface transportation program have a significant impact on highway and bridge conditions, roadway safety, transit service, quality of life and economic development opportunities in all of the states.

This report examines the condition, use and safety of South Carolina's roads, highways and bridges, and the future mobility needs of the state. Sources of information for this report include the South Carolina Department of Transportation (SCDOT), the Federal Highway Administration (FHWA), the U.S. Census Bureau, the Texas Transportation Institute (TTI), the Bureau of Transportation Statistics (BTS), and the National Highway Traffic Safety Administration (NHTSA).

Population, Travel and Economic Trends in South Carolina

South Carolina residents and businesses require a high level of personal and commercial mobility. Population increases and economic growth in the state have resulted in an increase in the demand for mobility as well as an increase in vehicle miles of travel (VMT). To foster a high quality of life and spur economic growth in South Carolina, 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.

South Carolina's population grew to 4.7 million residents in 2012, a 35 percent increase since 1990.¹ South Carolina has 3,455,931 licensed drivers.² From 1990 to 2012, South Carolina's gross domestic product (GDP), a measure of the state's economic output, increased by 53 percent, when adjusted for inflation.³

From 1990 to 2012, annual vehicle miles of travel in South Carolina increased by 43 percent, from 34.4 billion miles traveled annually to 49 billion miles traveled annually.⁴ Based on population and other lifestyle trends, TRIP estimates that travel on South Carolina's roads and highways will increase by another 25 percent by 2030.⁵

Condition of South Carolina's Roads

The life cycle of South Carolina'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 – generally roads other than neighborhood roads or minor local roads --is evaluated and classified as being in poor, mediocre, fair or good condition.

Throughout the state, nearly half of major roads and highways (state-maintained Interstate, primary and secondary routes) have deficient pavements, providing motorists with a rough ride.⁶ Forty-six percent of South Carolina's major roads and highways in 2014 were in poor condition.⁷ Another 38 percent of South Carolina's major urban roads were in fair condition, while the remaining 16 percent were rated in good condition.⁸

The share of South Carolina's major routes in poor condition has increased significantly over the last six years. Thirty-two percent of South Carolina's major roads and highways were rated in poor condition in 2008.⁹ Another 49 percent of South Carolina's major urban roads were in fair condition in 2008, while the remaining 19 percent were rated in good condition.¹⁰

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

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.¹¹ 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.

In the Charleston urban area, 37 percent of major locally and state-maintained roads are rated in poor or mediocre condition.¹² Twenty-three percent of Charleston's major urban roads are rated in fair condition and 40 percent are rated in good condition.¹³ Thirty-six percent of major urban roads in the Columbia urban area are rated in poor or mediocre condition.¹⁴ Twenty-two percent of Columbia's major urban roads are rated in fair condition and 42 percent

are rated in good condition.¹⁵ In the Greenville urban area (including Spartanburg and Anderson), 48 percent of major locally and state-maintained roads are rated in poor or mediocre condition.¹⁶ Nineteen percent of major urban roads in the Greenville area are rated in fair condition and 33 percent are rated in good condition.¹⁷

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 Carolina motorists as a result of poor road conditions total \$1.1 billion statewide, annually.¹⁸

Driving on rough roads costs the average Charleston motorist \$294 annually in extra vehicle operating costs, while the average driver in the Columbia urban area loses \$362 each year as a result of driving on deteriorated roads. The average Greenville area motorist spends an extra \$405 annually due to driving on rough roads.¹⁹

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.²⁰

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 2012 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.²¹ 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 Carolina

South Carolina'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.

Twenty-one percent of South Carolina's locally and state-maintained bridges (20 feet or longer) were rated as structurally deficient or functionally obsolete in 2014.²²

Eleven percent of South Carolina's locally and state-maintained bridges are rated as structurally deficient.²³ 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.

Ten percent of South Carolina’s locally and state-maintained bridges are rated functionally obsolete.²⁴ 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.

In the Charleston urban area, ten percent of bridges are structurally deficient and 29 percent are functionally obsolete.²⁵ Fourteen percent of bridges in the Columbia area are structurally deficient, while ten percent are functionally obsolete.²⁶ In the Greenville area, eight percent of bridges are structurally deficient and 14 percent are functionally obsolete.²⁷

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.

Traffic Congestion in South Carolina

Commuting and commerce in South Carolina are constrained by growing traffic congestion, which will increase in the future unless additional highway and transit capacity is provided. Vehicle travel in South Carolina has increased dramatically in recent years, without a

corresponding increase in roadway lane miles. As a result, the state’s roads have become increasingly congested, choking commuting and commerce.

According to the [Texas Transportation Institute](#) (TTI), the average driver in the Charleston urban area loses \$647 each year in the cost of lost time and wasted fuel as a result of traffic congestion.²⁸ The average commuter in the Charleston urban area loses 30 hours each year stuck in traffic.²⁹ In the Columbia urban area, the average driver loses \$663 annually in the cost of lost time and wasted fuel due to congestion, while losing 30 hours each year in congestion.³⁰ Based on TTI calculations, the average Greenville motorist loses \$590 each year in the cost of lost time and wasted fuel as a result of traffic congestion.³¹ The average commuter in the Greenville urban area loses 27 hours each year stuck in traffic.³²

The total cost of traffic congestion annually in South Carolina is \$775 million in lost time and wasted fuel.³³

Traffic Safety in South Carolina

A total of 4,315 people were killed in motor vehicle crashes in South Carolina from 2008 through 2012, an average of 863 fatalities per year.³⁴

Chart 1. Traffic fatalities in South Carolina from 2008 – 2012.

<i>Year</i>	<i>Fatalities</i>
2008	920
2009	894
2010	810
2011	828
2012	863
Total	4,315

Source: National Highway Traffic Safety Administration

Three major factors are associated with fatal vehicle crashes: driver behavior, vehicle characteristics and roadway features. It is estimated that roadway features are likely a contributing factor in approximately one-third of fatal traffic crashes. Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design.

South Carolina’s overall traffic fatality rate of 1.76 fatalities per 100 million vehicle miles of travel in 2012 is the highest rate in the nation (along with West Virginia) and is significantly higher than the national average of 1.13.³⁵ South Carolina’s traffic fatality rate on rural, non-Interstate routes is also the highest in the nation. The fatality rate on South Carolina’s rural roads was 2.99 fatalities per 100 million vehicle miles of travel in 2012, which is 61 percent higher than the national rural average of 1.86 fatalities per 100 million miles.³⁶

The cost of serious traffic crashes in South Carolina, in which roadway features were likely a contributing factor, was approximately \$1.1 billion in 2012.³⁷

The chart below details the average number of fatalities in each of South Carolina’s largest urban areas from 2010 to 2012 as well as the annual cost of traffic crashes to the average motorist in each area.

Chart 2. Average annual fatalities from 2010-2012 and per-driver annual cost of traffic crashes.

Location	Ave. Fatalities	Safety Cost
Charleston	50	\$227
Columbia	45	\$225
Greenville-Spartanburg-Anderson	151	\$253

Source: National Highway Traffic Safety Administration.

Improving safety on South Carolina'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.

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

Investments in rural traffic safety have been found to result in significant reductions in serious traffic crashes. A 2012 report by the [Texas Transportation Institute](#) (TTI) found that improvements completed recently by the Texas Department of Transportation that widened lanes, improved shoulders and made other safety improvements on 1,159 miles of rural state roadways resulted in 133 fewer fatalities on these roads in the first three years after the improvements were completed (as compared to the three years prior). TTI estimates that the improvements on these roads are likely to save 880 lives over the next 20 years.³⁸

Transportation Funding

Investment in South Carolina's roads, highways and bridges is funded by local, state and federal governments. The federal government provides funding for the state's transportation

system largely as part MAP-21(Moving Ahead for Progress in the 21st Century Act), the current two-year federal surface transportation program, which expires on May 31, 2015.

The federal government is a critical source of funding for South Carolina's roads, highways and bridges and provides a significant return to South Carolina in road and bridge funding based on the revenue generated in the state by the federal motor fuel tax. From 2008 to 2012, the federal government provided \$1.12 for road improvements in South Carolina for every one dollar paid in federal motor fuel fees.³⁹

Federal funds for highway and transit improvements in South Carolina are provided through the federal Highway Trust Fund, which raises revenue through federal user fees, largely an 18.4 cents-per-gallon tax on gasoline and a 24.4 cents-per-gallon tax on diesel fuel. Since 2008 revenue into the federal Highway Trust Fund has been inadequate to support legislatively set funding levels so Congress has transferred approximately \$53 billion in general funds and an additional \$2 billion from a related trust fund into the federal Highway Trust Fund.⁴⁰

Signed into law in July 2012, MAP-21 (Moving Ahead for Progress in the 21st Century Act), has improved several procedures that in the past had delayed projects, MAP-21 does not address long-term funding challenges facing the federal surface transportation program. Congress recently approved the Highway and Transportation Funding Act of 2014, an eight-month extension of the federal surface transportation program on which states rely for road, highway, bridge and transit funding. The program, initially set to expire on September 30, 2014, will now run through May 31, 2015. In addition to extending the current authorization of the highway and public transportation programs, the legislation will transfer nearly \$11 billion into the Highway Trust Fund (HTF) to preserve existing levels of highway and public transportation investment through the end of May 2015.

If Congress decides to provide additional revenues into the federal Highway Trust Fund in tandem with authorizing a new federal surface transportation program, a number of technically feasible revenue options have been identified by the [American Association of State Highway and Transportation Officials](#).

A significant boost in investment on the nation's roads, highways, bridges and public transit systems is needed to improve their condition and to meet the nation's transportation needs, concluded a new report from the American Association of State Highway and Transportation Officials.

The [2015 AASHTO Transportation Bottom Line Report](#) found that annual investment in the nation's roads, highways and bridges needs to increase from \$88 billion to \$120 billion and from \$17 billion to \$43 billion in the nation's public transit systems, to improve conditions and meet the nation's mobility needs.⁴¹

The [2015 AASHTO Transportation Bottom Line Report](#) also found that the current backlog in needed road, highway and bridge improvements is \$740 billion.⁴² The backlog includes a \$392 billion backlog for road and highway rehabilitation, a \$112 billion backlog in needed bridge rehabilitation and a \$237 billion backlog in needed highway capacity additions.⁴³

Importance of Transportation to Economic Growth

Today's culture of business demands that an area have well-maintained and efficient roads, highways and bridges if it is to remain economically competitive. Global communications and the impact of free trade in North America and elsewhere have resulted in a significant

increase in freight movement, making the quality of a region's transportation system 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 e-commerce. 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 Carolina, particularly to the state's tourism, agriculture and textile sectors. 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, \$156 billion in goods are shipped from sites in South Carolina and another \$168 billion in goods are shipped to sites in South Carolina, mostly by trucks.⁴⁴ Eighty-four percent of the goods shipped annually from sites in South Carolina are carried by trucks and another ten percent are carried by courier services or multiple-mode deliveries, which include trucking.⁴⁵

The cost of road and bridge improvements are more than offset by the reduction of user costs associated with driving on rough roads, the improvement in business productivity, the reduction in delays and the improvement in traffic safety. The [Federal Highway Administration estimates](#) that each dollar spent on road, highway and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel

consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.⁴⁶

Local, regional and state economic performance is improved when a region's surface transportation system is expanded or repaired. This improvement comes as a result of the initial job creation and increased employment created over the long-term because of improved access, reduced transport costs and improved safety Highway accessibility was ranked the number one site selection factor in a [2011 survey](#) of corporate executives by [Area Development Magazine](#).⁴⁷

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.

Conclusion

As South Carolina looks to build and enhance 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.

To fully rebound from the recession, 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 Carolina'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.

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

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Endnotes

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- ⁴¹ 2015 AASHTO Bottom Line Report (2014) AASHTO. P. 2.
- ⁴² 2015 AASHTO Bottom Line Report (2014) AASHTO. P. 3.
- ⁴³ Ibid.
- ⁴⁴ Bureau of Transportation Statistics (2010), U.S. Department of

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⁴⁷ Area Development Magazine (Winter, 2012). 26th Annual Survey of Corporate Executive Results.