

***MISSISSIPPI TRANSPORTATION BY THE
NUMBERS:***

Meeting the State's Need for Safe and Efficient Mobility

MARCH 2016



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 Mississippi

\$2.25 billion	Driving on deficient roads costs Mississippi motorists a total of \$2.25 billion annually in the form of additional vehicle operating costs (VOC), congestion-related delays and traffic crashes.
\$1,061 \$1,080 \$1,879	TRIP has calculated the cost to the average motorist in Mississippi's major urban areas in the form of additional VOC, congestion-related delays and traffic crashes. The average Gulfport-Biloxi-Pascagoula area driver loses \$1,061 annually, while each Hattiesburg area driver loses \$1,080, and the average Jackson area motorist loses \$1,879 annually.
\$640	If the condition, efficiency and safety of Mississippi's transportation system are not improved, the annual cost to the average Mississippi driver will increase by \$640 in the form of additional costs due to increased wear and tear on vehicles, traffic crashes and delays due to traffic congestion.
4.5 X	The fatality rate on Mississippi's non-interstate rural roads is nearly four and a half times that on all other roads in the state (2.58 fatalities per 100 million vehicle miles of travel vs. 0.58).
22% 19% 28% 44%	Statewide, 22 percent of Mississippi's major roads are in poor condition. Nineteen percent of major roads in the Gulfport-Biloxi-Pascagoula urban area are in poor condition, while in the Hattiesburg urban area, 28 percent of major roads are in poor condition. Forty-four percent of major urban roads in Jackson are in poor condition.
\$91 billion \$104 billion	Annually, \$91 billion in goods are shipped from sites in Mississippi and another \$104 billion in goods are shipped to sites in Mississippi, mostly by truck.
20 %	A total of 20 percent of Mississippi bridges are in need of repair, improvement or replacement. Thirteen percent of the state's bridges are structurally deficient and seven percent are functionally obsolete.
19 hours 13 hours 38 hours	The average driver in the Gulfport-Biloxi-Pascagoula area loses 19 hours to congestion annually, while each driver in the Hattiesburg urban area loses 13 hours each year. The average Jackson area driver loses 38 hours annually as a result of traffic congestion.
\$6.6 Billion	The state currently faces a backlog of \$6.6 billion in funds need to address needed repairs and improvements to Mississippi's roads, bridges and highways.
\$375 Million	According to a recent Mississippi Economic Council (MEC) report, the state needs \$375 million annually in new revenue to address immediate transportation needs. Of the \$375 million, \$300 million is needed for improvements to the state-maintained transportation system, and \$75 million is needed to address the local system.

Executive Summary

Seven years after the nation suffered a significant economic downturn, Mississippi's economy continues to rebound. The rate of economic growth in Mississippi, which will be greatly impacted by the reliability and condition of the state's transportation system, continues to have a significant impact on quality of life in the Magnolia State.

An efficient, safe and well-maintained transportation system provides economic and social benefits by affording individuals access to employment, housing, healthcare, education, goods and services, recreation, entertainment, family, and social activities. It also provides businesses with access to suppliers, markets and employees, all critical to a business' level of productivity and ability to expand. Conversely, reduced accessibility and mobility - as a result of traffic congestion, a lack of adequate capacity, or deteriorated roads, highways, bridges and transit facilities - diminishes a region's quality of life by reducing economic productivity and limiting opportunities for economic, health or social transactions and activities.

With an economy based largely on agriculture, manufacturing, education, tourism, energy and military installations, the quality of Mississippi's transportation system will play a vital role in the state's level of economic growth and in the quality of life in Mississippi.

In this report, TRIP looks at the top transportation issues faced in Mississippi as the state addresses its need to modernize and maintain its system of roads, highways, bridges and transit systems.

In 1987, Mississippi's elected officials and business leaders set in motion the plans for a four-lane highway system that would connect Mississippians to all corners of the state and give Mississippi an economic edge. But, nearly three decades after those improvements were begun, Mississippi faces another critical juncture in enhancing its transportation system to improve quality of life for residents and support economic growth and improved access for businesses. A new [report](#) by the Mississippi Economic Council (MEC) found that the state faces a backlog of \$6.6 billion dollars in funds needed to address needed repairs and improvements to Mississippi's transportation system. Without an additional \$375 million annually in state and local transportation investment, the MEC found that quality of life will deteriorate and Mississippi will miss out on opportunities for economic development and growth.

In December 2015, Congress passed, and the president signed into law, a long-term

federal surface transportation program that includes modest funding increases and allows state and local governments to plan and finance projects with greater certainty through 2020. The Fixing America’s Surface Transportation Act (FAST Act) provides approximately \$305 billion for surface transportation with highway and transit funding slated to increase by approximately 15 and 18 percent, respectively, over the five-year duration of the program. While the modest funding increase and certainty provided by the FAST Act are a step in the right direction, the funding falls far short of the level needed to improve conditions and meet the nation’s mobility needs and fails to deliver a sustainable, long-term source of revenue for the federal Highway Trust Fund.

COST TO MISSISSIPPI MOTORISTS OF DEFICIENT ROADS

An inadequate transportation system costs Mississippi residents a total of \$2.25 billion every year in the form of additional vehicle operating costs (VOC), congestion-related delays and traffic crashes.

- TRIP estimates that Mississippi 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 \$2.25 billion annually in the form of additional vehicle operating costs (including accelerated vehicle depreciation, additional repair costs, and increased fuel consumption and tire wear), the cost of lost time and wasted fuel due to traffic congestion, and the financial cost of traffic crashes.
- TRIP has calculated the average cost to drivers in the state’s largest urban areas as a result of driving on roads that are deteriorated, congested and lack some desirable safety features. The chart below details the costs to drivers in the Gulfport-Biloxi-Pascagoula, Hattiesburg and Jackson urban areas as well as the statewide total.

Location	VOC	Safety	Congestion	TOTAL
Gulfport-Biloxi-Pascagoula	\$453	\$197	\$411	\$1,061
Hattiesburg	\$595	\$187	\$298	\$1,080
Jackson	\$818	\$183	\$878	\$1,879
Mississippi Statewide	\$1.14 Billion	\$577 Million	\$529 Million	\$2.25 Billion

- A recent [report](#) by the Mississippi Economic Council (MEC) found that if the condition, efficiency and safety of Mississippi’s transportation system are not improved, the annual cost to the average Mississippi driver will increase by \$640 in the form of additional costs due to increased wear and tear on vehicles, traffic crashes and delays due to traffic congestion.

POPULATION AND ECONOMIC GROWTH IN MISSISSIPPI

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

- Mississippi's population reached approximately three million residents in 2015, a five percent increase since 2000. Mississippi had approximately two million licensed drivers in 2013.
- Vehicle miles traveled (VMT) in Mississippi increased by 11 percent from 2000 to 2014 – from 35.5 billion VMT in 2000 to 39.5 billion VMT in 2014.
- Vehicle miles of travel in Mississippi for the first ten months of 2015 were 3.3 percent higher than the first ten months of 2014. During the first ten months of 2015, U.S. vehicle miles of travel were 3.4 percent higher than the first ten months of 2014.
- By 2030, vehicle travel in Mississippi is projected to increase by another 30 percent.
- From 2000 to 2014, Mississippi's gross domestic product, a measure of the state's economic output, increased by 13 percent, when adjusted for inflation.

MISSISSIPPI ROAD CONDITIONS

A lack of adequate state and local funding has resulted in 22 percent of major roads and highways in Mississippi having pavement surfaces in poor condition, providing a rough ride and costing motorists in the form of additional vehicle operating costs.

- Twenty-two percent of Mississippi's major roads and highways have pavements in poor condition, while an additional 42 percent of the state's major roads are rated in mediocre or fair condition and the remaining 36 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.
- Driving on rough roads costs Mississippi 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.
- The chart below details pavement conditions in the Gulfport-Biloxi-Pascagoula, Hattiesburg and Jackson urban areas.

Location	Poor	Mediocre	Fair	Good
Gulfport-Biloxi-Pascagoula	19%	16%	15%	50%
Hattiesburg	28%	18%	13%	41%
Jackson	44%	19%	10%	27%

MISSISSIPPI BRIDGE CONDITIONS

One-fifth of locally and state-maintained bridges in Mississippi 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.

- Thirteen percent of Mississippi’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.
- Seven percent of Mississippi’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.
- Currently, approximately 4,000 state and local bridges are in need of repair or replacement. Of those bridges, 2,400 are posted for carrying only lower-weight vehicles, creating detours for school buses and emergency responders and interrupting the flow of commerce.
- The chart below details the share of bridges in the state’s major urban areas that are structurally deficient or functionally obsolete.

Location	Structurally Deficient	Functionally Obsolete
Gulfport-Biloxi-Pascagoula	5%	10%
Hattiesburg	4%	13%
Jackson	7%	15%

HIGHWAY SAFETY AND FATALITY RATES IN MISSISSIPPI

Mississippi’s rural traffic fatality rate is nearly four and a half times higher than the fatality rate on all other roads in the state. Improving safety features on Mississippi’s roads and highways would likely result in a decrease in the state’s traffic fatalities and serious crashes. It is estimated that roadway features are likely a contributing factor in approximately one-third of all fatal and serious traffic crashes.

- Between 2010 and 2014 a total of 3,073 people were killed in traffic crashes in Mississippi, an average of 615 fatalities per year.

- Mississippi's overall traffic fatality rate of 1.54 fatalities per 100 million vehicle miles of travel in 2014 is significantly higher than the national average of 1.08 and the fourth highest fatality rate in the nation.
- The fatality rate on Mississippi's rural non-Interstate roads was 2.58 fatalities per 100 million vehicle miles of travel in 2014, nearly four and a half times higher than the 0.58 fatality rate on all other roads and highways in the state.
- 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.

MISSISSIPPI TRAFFIC CONGESTION

Increasing levels of traffic congestion cause significant delays in Mississippi, particularly in its larger urban areas, choking commuting and commerce. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to the consumer.

- According to the Texas Transportation Institute (TTI), the average Gulfport-Biloxi-Pascagoula urban area driver loses \$411 annually in the cost of lost time and wasted fuel due to congestion. The average Gulfport-Biloxi-Pascagoula urban area commuter loses 19 hours each year in traffic.

- According to TTI, the average Hattiesburg urban area driver loses \$298 annually in the cost of lost time and wasted fuel due to congestion. The average Hattiesburg urban area commuter loses 13 hours each year in traffic.
- According to TTI, the average driver in the Jackson urban area loses \$878 each year in the cost of lost time and wasted fuel as a result of traffic congestion. The average Jackson urban area commuter wastes 38 hours each year stuck in traffic.
- Increasing levels of congestion add significant costs to consumers, transportation companies, manufacturers, distributors and wholesalers and can reduce the attractiveness of a location to a company to consider expansion or even to locate a new facility. Congestion costs can also increase overall operating costs for trucking and shipping companies, leading to revenue losses, lower pay for drivers and employees, and higher consumer costs.

MISSISSIPPI'S TRANSPORTATION FUNDING SHORTFALL

A new [report](#) by the MEC found the state faces a critical juncture in the need to enhance its transportation system to improve quality of life for residents and support growth and ease of access for businesses. However, the state faces a significant shortfall in needed transportation funds to make critical improvements to its roads and bridges.

- The state currently faces a backlog of \$6.6 billion dollars in funds needed to address needed repairs and improvements to Mississippi's transportation system.
- The [MEC report](#) found that Mississippi will need \$375 million annually in new revenue to address immediate transportation needs. Of the \$375 million, \$300 million is needed for improvements to the state-maintained system, and \$75 million is needed to address the local system.
- The [MEC report](#) found that an additional \$375 million in annual transportation investment would generate nearly 4,000 new direct and indirect jobs in the construction industry, additional state and local tax revenue of \$15 million annually, and an overall annual economic benefit of more than \$440 million.
- Improving the conditions of Mississippi's transportation system could save the average driver \$534 annually over the next ten years in the cost of driving on roads that are deteriorated, congested and that lack some safety features.
- Without an additional investment in Mississippi's transportation system, the state is projected to lose 10,161 jobs annually in all sectors over the next ten years. However, with adequate transportation investment, Mississippi would add 7,673 jobs annually across all sectors.

TRANSPORTATION AND ECONOMIC GROWTH IN MISSISSIPPI

The efficiency of Mississippi's transportation system, particularly its highways, is critical to the health of the state's economy. Businesses rely on an efficient and dependable 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, \$91 billion in goods are shipped from sites in Mississippi and another \$104 billion in goods are shipped to sites in Mississippi, mostly by truck.
- Seventy-seven percent of the goods shipped annually from sites in Mississippi are carried by trucks and another four percent are carried by courier services or multiple mode deliveries, which include trucking.
- 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.
- Highway accessibility was ranked the number two site selection factor behind only the availability of skilled labor in a 2013 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.

FEDERAL TRANSPORTATION FUNDING IN MISSISSIPPI

Investment in Mississippi's roads, highways and bridges is funded by local, state and federal governments. The recently approved five-year federal surface transportation program includes modest funding increases and provides states with greater funding certainty, but falls far short of providing the level of funding needed to meet the nation's highway and transit needs. The bill does not include a long-term and sustainable revenue source.

- From 2009 to 2013, the federal government provided \$1.24 for road improvements in Mississippi for every dollar the state paid in federal motor fuel fees.
- Signed into law in December 2015, the Fixing America's Surface Transportation Act (FAST Act), provides modest increases in federal highway and transit spending, allows

states greater long-term funding certainty and streamlines the federal project approval process. But the FAST Act does not provide adequate funding to meet the nation's need for highway and transit improvements and does not include a long-term and sustainable funding source.

- The five-year, \$305 billion FAST Act will provide approximately a 15 percent boost in highway funding and an 18 percent boost in transit funding over the duration of the program, which expires in 2020.
- In addition to federal motor fuel tax revenues, the FAST Act will also be funded by \$70 billion in U.S. general funds, which will rely on offsets from several unrelated federal programs including the Strategic Petroleum Reserve, the Federal Reserve and U.S. Customs.
- According to the 2015 AASHTO Transportation Bottom Line Report, a significant boost in investment in the nation's roads, highways, bridges and public transit systems is needed to improve their condition and to meet the nation's transportation needs.
- AASHTO's report found that based on an annual one percent increase in VMT annual investment in the nation's roads, highways and bridges needs to increase 36 percent, from \$88 billion to \$120 billion, to improve conditions and meet the nation's mobility needs. Investment in the nation's public transit system needs to increase from \$17 billion to \$43 billion.
- The [2015 AASHTO Transportation Bottom Line Report](#) found that if the national rate of vehicle travel increased by 1.4 percent per year, the needed annual investment in the nation's roads, highways and bridges would need to increase by 64 percent to \$144 billion. If vehicle travel grows by 1.6 percent annually the needed annual investment in the nation's roads, highways and bridges would need to increase by 77 percent to \$156 billion.

Sources of information for this report include the Mississippi Department of Transportation (MDOT), the Mississippi Economic Council (MEC), the Federal Highway Administration (FHWA), the Bureau of Transportation Statistics (BTS), the U.S. Census Bureau, the American Association of State Highway and Transportation Officials (AASHTO), the Texas Transportation Institute (TTI) and the National Highway Traffic Safety Administration (NHTSA).

Introduction

Mississippi'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. Modernizing Mississippi's transportation system is critical to fostering quality of life improvements and economic competitiveness in the Magnolia State.

Supporting quality of life and a robust economy in Mississippi requires that the state provide a safe, efficient and well-maintained transportation system. Inadequate transportation investment, which will result in deteriorated transportation facilities and diminished access, will negatively affect economic competitiveness and quality of life in Mississippi.

To accommodate population and economic growth, maintain its level of economic competitiveness and achieve further economic growth, Mississippi 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, reliable and safe mobility for residents, visitors and businesses. Making needed improvements to Mississippi's roads, highways, bridges and transit systems 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.

This report examines the condition, use and safety of Mississippi's roads, highways and bridges, federal, state and local funding needs, and the future mobility needs of the state. Sources of information for this study include the Mississippi Department of Transportation (MDOT), the Mississippi Economic Council (MEC), the Federal Highway Administration (FHWA), the U.S. Census Bureau, the American Association of State Highway and Transportation Officials (AASHTO), 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 Mississippi

Mississippi 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 quality of life and spur economic growth in Mississippi, 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.

Mississippi's population grew to approximately three million residents in 2015, a five percent increase since 2000.¹ Mississippi had approximately two million licensed drivers in 2013.² From 2000 to 2014, Mississippi's gross domestic product (GDP), a measure of the state's economic output, increased by 13 percent, when adjusted for inflation.³

From 2000 to 2014, annual VMT in Mississippi increased by 11 percent, from 35.5 billion miles traveled annually to 39.5 billion miles traveled annually.⁴ During the first ten months of 2015, vehicle miles of travel in Mississippi were 3.3 percent higher than the first ten months of 2014.⁵ Similarly, U.S. vehicle miles of travel were 3.4 percent higher during the first ten months of 2015 than the first ten months of 2014.⁶

Based on population and other lifestyle trends, TRIP estimates that travel on Mississippi's roads and highways will increase by another 30 percent by 2030.⁷

Condition of Mississippi's Roads

The life cycle of Mississippi's roads is greatly affected by the state and local government's ability to perform timely maintenance and upgrades to ensure that road and highway surfaces last as long as possible.

Twenty-two percent of Mississippi's major roads and highways have pavements rated in poor condition.⁸ Another 42 percent of Mississippi's major roads are rated in mediocre or fair condition and the remaining 36 percent are rated in good condition.⁹

The chart below details pavement conditions on major urban roads in Gulfport-Biloxi-Pascagoula, Hattiesburg and Jackson.¹⁰

Chart 1. Pavement conditions on major urban roads.

Location	Poor	Mediocre	Fair	Good
Gulfport-Biloxi-Pascagoula	19%	16%	15%	50%
Hattiesburg	28%	18%	13%	41%
Jackson	44%	19%	10%	27%

Source: Federal Highway Administration.

The pavement data in this report for all arterial roads and highways is provided by the Federal Highway Administration, based on data submitted annually by the Mississippi Department of Transportation (MDOT) on the condition of major state and locally maintained roads and highways in the state.

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.

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 Mississippi motorists as a result of poor road conditions is \$1.1 billion annually.¹²

The chart below details per-driver, additional vehicle operating costs in the Gulfport-Biloxi-Pascagoula, Hattiesburg, Jackson urban areas as well as statewide.

Chart 2. Vehicle operating costs due to rough roads.

Location	VOC
Gulfport-Biloxi-Pascagoula	\$453
Hattiesburg	\$595
Jackson	\$818
Mississippi Statewide	\$1.14 Billion

Source: TRIP estimate.

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.¹³

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 2014 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.¹⁴ 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 Mississippi

Mississippi'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 percent of Mississippi's locally and state-maintained bridges (20 feet or longer) are currently rated as structurally deficient or functionally obsolete.

Thirteen percent of Mississippi's locally and state-maintained bridges are rated as structurally deficient.¹⁵ 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.

Seven percent of Mississippi’s locally and state maintained bridges are rated functionally obsolete.¹⁶ 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.

Currently, approximately 4,000 state and local bridges are in need of repair or replacement. Of those bridges, 2,400 are posted for only lower-weight vehicles, creating detours for school buses and emergency responders and interrupting the flow of commerce.¹⁷

The chart below details the share of bridges in Mississippi’s major urban areas that are structurally deficient or functionally obsolete.

Chart 3: Bridge conditions in Mississippi’s major urban areas.

Location	Structurally Deficient	Functionally Obsolete
Gulfport-Biloxi-Pascagoula	5%	10%
Hattiesburg	4%	13%
Jackson	7%	15%

Source: Federal Highway Administration National Bridge Inventory.

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 Safety in Mississippi

A total of 3,073 people were killed in motor vehicle crashes in Mississippi from 2010 through 2014, an average of 615 fatalities per year.¹⁸

Chart 4. Traffic fatalities in Mississippi from 2010 – 2014.

<i>Year</i>	<i>Fatalities</i>
2010	641
2011	630
2012	582
2013	613
2014	607
TOTAL	3,073

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.

Mississippi's overall traffic fatality rate of 1.54 fatalities per 100 million vehicle miles of travel in 2014 is significantly higher than the national average of 1.08 and the fourth highest traffic fatality rate in the nation.¹⁹ The fatality rate on Mississippi's non-Interstate rural roads was 2.58 fatalities per 100 million vehicle miles of travel in 2014, nearly four and a half times the fatality rate of 0.58 on all other roads and highways in the state.²⁰

Improving safety on Mississippi'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, where appropriate, 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.²¹

Traffic Congestion in Mississippi

Increasing levels of traffic congestion cause significant delays in Mississippi, particularly in its larger urban areas, choking commuting and commerce. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to the consumer.

According to the Texas Transportation Institute (TTI), the average Gulfport-Biloxi-Pascagoula urban area driver loses \$411 annually in the cost of lost time and wasted fuel due to congestion.²² The average Gulfport-Biloxi-Pascagoula commuter loses 19 hours each year in traffic.²³ Based on TTI methodology, TRIP estimates that the average Hattiesburg urban area driver loses \$298 annually in the cost of lost time and wasted fuel due to congestion.²⁴ The average Hattiesburg commuter loses 13 hours each year in traffic.²⁵ According to the Texas Transportation Institute, the average driver in the Jackson urban area loses \$878 each year in the cost of lost time and wasted fuel as a result of traffic congestion.²⁶ The average commuter in the Jackson urban area wastes 38 hours each year stuck in traffic.²⁷

Increasing levels of congestion add significant costs to consumers, transportation companies, manufacturers, distributors and wholesalers. The increased levels of congestion can reduce the attractiveness of a location to a company to consider expansion or even to locate a new facility. Congestion costs can also increase overall operating costs for trucking and shipping companies, leading to revenue losses, lower pay for employees, and higher consumer costs.

Mississippi's Transportation Funding Shortfall

In a 2015 report the MEC found that Mississippi faces a critical juncture in the need to enhance its transportation system to improve quality of life for residents and support growth and ease of access for businesses. However, the report [“Ramping Up Mississippi’s Economy Through Transportation”](#) found that the state faces a significant shortfall in needed transportation funds to make critical improvements to its roads and bridges.

The state currently faces a backlog of \$6.6 billion dollars in funds needed to address needed repairs and improvements to Mississippi's transportation system.²⁸

The MEC [report](#) found that the state will need \$375 million annually in new revenue to address Mississippi's immediate transportation needs.²⁹ Of the \$375 million, \$300 million is needed for improvements to the state-maintained system, and \$75 million is needed to address the local system.³⁰

The MEC [report](#) found that an additional \$375 million in annual transportation investment would generate nearly 4,000 new direct and indirect jobs in the construction industry, additional state and local tax revenue of \$15 million annually, and an overall annual economic benefit of more than \$440 million.³¹

Without an additional investment in Mississippi's transportation system, the state is projected to lose 10,161 jobs annually in all sectors over the next ten years.³² However, with adequate transportation investment, Mississippi would add 7,673 jobs annually across all sectors.³³

The MEC [report](#) found that without an additional investment to make Mississippi's roads smoother, more efficient and safer, the cost to the average Mississippi driver would increase \$640 annually over what they are paying today.³⁴ The report also found that improving the conditions of Mississippi's transportation system could save drivers an average of \$534 annually over the next ten years.³⁵

Federal Transportation Funding

Investment in Mississippi's roads, highways and bridges is funded by local, state and federal governments. A lack of sufficient funding at all levels will make it difficult to adequately maintain and improve the existing transportation system.

The federal government is a critical source of funding for Mississippi's roads, highways, bridges and transit systems and provides a significant return to Mississippi in road and bridge funding based on the revenue generated in the state by the federal motor fuel tax. From 2009 to 2013, the federal government provided \$1.24 for road improvements in Mississippi for every dollar motorists in the state paid in federal motor fuel fees.³⁶

Most federal funds for highway and transit improvements in Mississippi are provided by federal highway 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.³⁷

Signed into law in December 2015, the Fixing America's Surface Transportation Act (FAST Act), provides modest increases in federal highway and transit spending. The five-year bill also provides states with greater funding certainty and streamlines the federal project approval process. But the FAST Act does not provide adequate funding to meet the nation's need for highway and transit improvements and does not include a long-term and sustainable funding source.

The five-year, \$305 billion FAST Act will provide approximately a 15 percent boost in highway funding and an 18 percent boost in transit funding over the duration of the program, which expires in 2020.³⁸ In addition to federal motor fuel tax revenues, the FAST Act will also be funded by \$70 billion in U.S. general funds, which will rely on offsets from several unrelated federal programs including the Strategic Petroleum Reserve, the Federal Reserve and U.S. Customs.

According to the [2015 AASHTO Transportation Bottom Line Report](#), a significant boost in investment in the nation's roads, highways, bridges and public transit systems is needed to improve their condition and to meet the nation's transportation needs. The AASHTO report found that based on an annual one percent increase in VMT annual investment in the nation's roads, highways and bridges needs to increase by 36 percent, from \$88 billion to \$120 billion to improve conditions and meet the nation's mobility needs.³⁹ Investment in the nation's public transit system needs to increase from \$17 billion to \$43 billion.⁴⁰

The [2015 AASHTO Transportation Bottom Line Report](#) found that if the rate of vehicle travel increased by 1.4 percent per year, the needed annual investment in the nation's roads, highways and bridges would need to increase by 64 percent, to \$144 billion. If vehicle travel grows by 1.6 percent annually the needed annual investment in the nation's roads, highways and bridges would need to increase by 77 percent, to \$156 billion.⁴¹

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 Mississippi, particularly to the state's manufacturing, mineral extraction and tourism industries. 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, \$91 billion in goods are shipped from sites in Mississippi and another \$104 billion in goods are shipped to sites in Mississippi, mostly by trucks.⁴² Seventy-seven percent of the goods shipped annually from sites in Mississippi are carried by trucks and another four percent are carried by courier services or multiple-mode deliveries, which include trucking.⁴³

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.⁴⁴

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. In fact, highway accessibility was ranked the number two site selection factor behind only the availability of skilled labor in a 2013 survey of corporate executives by [Area Development Magazine](#).⁴⁵

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 Mississippi works 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.

Mississippi 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 residents, visitors and businesses. Making needed improvements to the state's roads, highways and bridges could provide a significant boost to the

economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access.

While the modest funding increase provided by the FAST Act will be helpful, numerous projects to improve the condition and expand the capacity of Mississippi's roads, highways and bridges will not be able to proceed without a substantial boost in state or local transportation funding. If Mississippi is unable to complete needed transportation projects it will hamper the state's ability to improve the condition and efficiency of its transportation system and to enhance economic development opportunities and quality of life.

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Endnotes

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