MISSISSIPPI TRANSPORTATION BY THE NUMBERS:

Meeting the State's Need for Safe and Efficient Mobility

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TRIP
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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 Mississippi

$2.9 billion	Driving on deficient roads costs Mississippi motorists a total of $2.9 billion annually in the form of additional vehicle operating costs (VOC), congestion-related delays and traffic crashes.
Gulfport-Biloxi-Pascagoula - $1,267 Hattiesburg - $1,293 Jackson - $2,046 Southaven-DeSoto County- $1,870	TRIP has calculated the cost to the average motorist in the state's largest urban areas in the form of additional VOC, congestion-related delays and traffic crashes. Drivers in the state's largest urban areas incur annual costs as a result of driving on deficient roads as follows: Gulfport-Biloxi-Pascagoula - $1,267; Hattiesburg- $1,293; Jackson - $2,046, Southaven-DeSoto County- $1,870.
2 of 3 miles	Nearly two of every three miles of Mississippi's major urban roads are in either poor or mediocre condition, with 43 percent rated in poor condition and 21 percent rated in mediocre condition.
Gulfport-Biloxi-Pascagoula – 41% Hattiesburg – 51% Jackson – 63% Southaven-DeSoto County-44%	The share of major urban roads in poor or mediocre condition in the state's largest urban areas is as follows: Gulfport-Biloxi-Pascagoula, 41 percent; Hattiesburg, 51 percent; Jackson, 63 percent; and Southaven-DeSoto County 44 percent.
4X	The fatality rate on Mississippi's rural roads is more than four times the fatality rate on all other roads in the state (2.93 fatalities per 100 million VMT vs. 0.70).
12% 2,098 bridges	Twelve percent of Mississippi's bridges (2,098 out of 17,068) are structurally deficient, the 12th highest rate in the nation. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components.
3rd	Mississippi's traffic fatality rate of 1.70 fatalities per 100 million vehicle miles of travel is the third highest in the nation.
Gulfport-Biloxi-Pascagoula – 19 hours Hattiesburg – 13 hours Jackson – 38 hours Southaven-DeSoto County-43 hours	Increasing congestion, particularly in the state's urban areas, is causing significant delays for residents and businesses. The average Gulfport-Biloxi-Pascagoula driver loses 19 hours annually to congestion, Hattiesburg drivers lose 13 hours each year, Jackson drivers lose 38 hours, and Southaven-DeSoto County drivers lose 43 hours.
$1 = $4 to $5	Every $1 of deferred maintenance on roads and bridges has been found to cost an additional $4 to $5 in needed future repairs.
$1.00 = $5.20	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.

Executive Summary

Quality of life and economic progress are riding on Mississippi's transportation system. The rate of economic growth in Mississippi, which is greatly impacted by the reliability and condition of the state's transportation system, has 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 access to suppliers, markets and employees, all critical to a business' level of productivity and ability to expand. 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, tourism and manufacturing, the quality of Mississippi's transportation system plays a vital role in the state's economic growth and quality of life.

In this report, TRIP looks at the top transportation numbers in Mississippi as the state addresses modernizing and maintaining its system of roads, highways, bridges and transit.

COST TO MISSISSIPPI MOTORISTS OF DEFICIENT ROADS

An inadequate transportation system costs Mississippi motorists a total of $2.9 billion every year in the form of additional vehicle operating costs (VOC), congestion-related delays and traffic crashes.

- Driving on rough roads costs Mississippi motorists a total of $1.4 billion annually in extra vehicle operating costs. Costs include accelerated vehicle depreciation, additional repair costs, and increased fuel consumption and tire wear.

- Traffic crashes in which roadway design was likely a contributing factor cost Mississippi motorists a total of $1 billion each year in the form of lost household and workplace productivity, insurance and other financial costs.

- Traffic congestion costs Mississippi motorists a total of $530 million each year in the form of lost time and wasted fuel.

- The chart below details the average cost per driver in the state's largest urban areas and statewide.

Location	VOC	Safety	Congestion	TOTAL
Gulfport-Biloxi-Pascagoula	$512	$344	$411	$1,267
Hattiesburg	$670	$325	$298	$1,293
Jackson	$823	$345	$878	$2,046
Southaven - DeSoto County	$487	$303	$1,080	$1,870
Mississippi Statewide	**$1.4 Billion**	**$1 Billion**	**$530 Million**	**$2.9 Billion**

POPULATION, TRAVEL AND ECONOMIC TRENDS IN MISSISSIPPI

Population and economic growth result in increased demands on major roads and highways, leading to increased wear and tear on the transportation system.

- Mississippi's population reached approximately 3 million residents in 2016, a five percent increase since 2000. Mississippi had approximately 2 million licensed drivers in 2015.

- Vehicle miles traveled (VMT) in Mississippi increased by 19 percent from 2000 to 2016 –from 35.5 billion VMT in 2000 to 42.3 billion VMT in 2016. VMT in the state increased nine percent just in the last three years (2013-2016).

- From 2000 to 2015, Mississippi's gross domestic product, a measure of the state's economic output, increased by 14 percent, when adjusted for inflation. U.S. GDP increased 27 percent during this time.

MISSISSIPPI ROAD CONDITIONS

A lack of adequate state and local funding has resulted in nearly two of every three miles of major urban roads and highways in Mississippi having pavement surfaces in poor or mediocre condition, providing a rough ride and costing motorists in the form of additional vehicle operating costs.

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

- Pavement data for Interstate highways and other principal arterials is collected for all system mileage, whereas pavement data for minor arterial and all collector roads and highways is based on sampling portions of roadways as prescribed by FHWA to insure that the data collected is adequate to provide an accurate assessment of pavement conditions on these roads and highways.

- Overall, 28 percent of Mississippi's major locally and state-maintained roads and highways have pavements in poor condition and 27 percent are in mediocre condition. Fifteen percent of the state's major roads are rated in fair condition and the remaining 30 percent are rated in good condition.

- Forty-three percent of Mississippi's major locally and state-maintained urban roads and highways have pavements in poor condition and 21 percent are rated in mediocre condition. Twelve percent of major urban roads are in fair condition and the remaining 24 percent are rated in good condition.

- Twenty-five percent of Mississippi's major locally and state-maintained rural roads and highways have pavements in poor condition and 28 percent are rated in mediocre condition. Fifteen percent of major rural roads are in fair condition and the remaining 32 percent are rated in good condition.

- The chart below details the share of pavement in poor, mediocre, fair and good condition in the state's largest urban areas.

Location	Poor	Mediocre	Fair	Good
Gulfport-Biloxi-Pascagoula	22%	19%	15%	45%
Hattiesburg	33%	18%	14%	35%
Jackson	43%	20%	11%	25%
Southaven - DeSoto County	23%	21%	19%	37%

- Roads rated in mediocre to poor condition may show signs of deterioration, including rutting, cracks and potholes. In some cases, these roads can be resurfaced, but often are too deteriorated and must be reconstructed.

- Driving on rough roads costs Mississippi motorists a total of $1.4 billion annually in extra vehicle operating costs. Costs include accelerated vehicle depreciation, additional repair costs, and increased fuel consumption and tire wear.

- Long-term repair costs increase significantly when road and bridge maintenance is deferred, as road and bridge deterioration accelerates later in the service life of a transportation facility and requires more costly repairs. A report on maintaining pavements found that every $1 of deferred maintenance on roads and bridges costs an additional $4 to $5 in needed future repairs.

MISSISSIPPI BRIDGE CONDITIONS

Twelve percent of locally and state-maintained bridges in Mississippi show significant deterioration. This includes all bridges that are 20 feet or more in length.

- Twelve percent of Mississippi's bridges (2,098 out of 17,068) are structurally deficient, the twelfth highest share in the nation. 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.

- The chart below details the share of structurally deficient bridges in the state's largest urban areas.

Location	Number Structurally Deficient	Share Structurally Deficient	Total Bridges
Gulfport-Biloxi-Pascagoula	26	5%	548
Hattiesburg	12	3%	448
Jackson	72	7%	1035
Southaven - DeSoto County	5	2%	228

HIGHWAY SAFETY AND FATALITY RATES IN MISSISSIPPI

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.

- A total of 3,109 people were killed in Mississippi traffic crashes from 2011 to 2015, an average of 622 fatalities per year.

- Mississippi's overall traffic fatality rate of 1.70 fatalities per 100 million vehicle miles of travel in 2015 was significantly higher than the national average of 1.13 and the third highest rate in the nation.

- The fatality rate on Mississippi's non-interstate rural roads in 2015 was more than four times that on all other roads in the state (2.93 fatalities per 100 million vehicle miles of travel vs. 0.70).

- The chart below details the average number of people killed in traffic crashes from 2013 to 2015 in the state's largest urban areas, as well as the cost per motorist of traffic crashes.

Location	Average Fatalities 2013-2016	Safety Cost
Gulfport-Biloxi-Pascagoula	47	$344
Hattiesburg	18	$325
Jackson	54	$345
Southaven - DeSoto County	20	$303

- Traffic crashes in Mississippi imposed a total of $3.1 billion in economic costs in 2015. TRIP estimates that traffic crashes in which roadway features were likely a contributing factor imposed $1 billion in economic costs in 2015.

- According to a 2015 National Highway Traffic Safety Administration (NHTSA) report, the economic costs of traffic crashes includes work and household productivity losses, property damage, medical costs, rehabilitation costs, legal and court costs, congestion costs and emergency services.

- 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 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.

- Based on Texas Transportation Institute (TTI) estimates, the value of lost time and wasted fuel in Mississippi is approximately $530 million per year.

- The chart below details the number of hours lost to congestion by the average driver in the state's largest urban areas, as well as the annual cost of traffic congestion per driver in the form of lost time and wasted fuel.

Location	Hours Lost to Congestion	Annual Cost Per Driver
Gulfport-Biloxi-Pascagoula	19	$411
Hattiesburg	13	$298
Jackson	38	$878
Southaven - DeSoto County	43	$1,080

- 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 when considering expansion or where 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.

TRANSPORTATION FUNDING IN MISSISSIPPI

Investment in Mississippi's roads, highways and bridges is funded by local, state and federal governments. The current 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.

- 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 a boost of approximately 15 percent in national highway funding and 18 percent in national transit funding over the duration of the program, which expires in 2020.

- According to the 2015 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance report submitted by the United States Department of Transportation (USDOT) to Congress, the nation faces an $836 billion backlog in needed repairs and improvements to the nation's roads, highways and bridges.

- The USDOT report found that the nation's current $105 billion investment in roads, highways and bridges by all levels of government should be increased by 35 percent to $142.5 billion annually to improve the conditions of roads, highways and bridges, relieve traffic congestion and improve traffic safety.

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, $277 billion in goods are shipped to and from sites in Mississippi, mostly by truck.

- Seventy-seven percent of the goods shipped annually to and from sites in Mississippi are carried by trucks and another eight 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 two site selection factor behind only the availability of skilled labor in a 2015 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.

Sources of information for this report include the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), 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

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 quality of life 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, funding needs, and the future mobility needs of the state. Sources of information for this report include the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), the Bureau of Transportation Statistics (BTS), the U.S. Census Bureau, the Texas Transportation Institute (TTI), and the National Highway Traffic Safety Administration (NHTSA).

Population, Travel and Economic Trends in Mississippi

Mississippi motorists and businesses require a high level of personal and commercial mobility. To foster quality of life and spur continued 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, business, recreation and vehicle travel.

Mississippi's population grew to approximately 3 million residents in 2016, a five percent increase since 2000.[1] Mississippi had approximately 2 million licensed drivers in 2015.[2] From 2000 to 2015, Mississippi's gross domestic product (GDP), a measure of the state's economic output, increased by 14 percent, when adjusted for inflation.[3] U.S. GDP increased 27 percent during this period.[4]

From 2000 to 2016, annual VMT in Mississippi increased by 19 percent, from 35.5 billion miles traveled annually to 42.3 billion miles traveled annually.[5] Vehicle travel in Mississippi increased nine percent in the last three years (2013-2016).[6]

Condition of Mississippi's Roads

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

The pavement data in this report, which is for all arterial and collector roads and highways, is provided by the Federal Highway Administration (FHWA), based on data submitted

annually by the Mississippi Department of Transportation (MDOT) on the condition of major state and locally maintained roads and highways. Pavement data for Interstate highways and other principal arterials is collected for all system mileage, whereas pavement data for minor arterial and all collector roads and highways is based on sampling portions of roadways as prescribed by FHWA to insure that the data collected is adequate to provide an accurate assessment of pavement conditions on these roads and highways.

Statewide, more than half of Mississippi's major roads are in poor or mediocre condition. Twenty-eight percent of Mississippi's major locally and state-maintained roads are in poor condition and 27 percent are in mediocre condition. Fifteen percent are in fair condition and the remaining 30 percent are in good condition.[7]

Forty-three percent of Mississippi's major locally and state-maintained urban roads and highways have pavements rated in poor condition and 21 percent are in mediocre condition.[8] Twelve percent of Mississippi's major urban roads are rated in fair condition and the remaining 24 percent are rated in good condition.[9]

Twenty-five percent of Mississippi's major locally and state-maintained rural roads and highways have pavements rated in poor condition and 28 percent are in mediocre condition.[10] Fifteen percent of Mississippi's major rural roads are rated in fair condition and the remaining 32 percent are rated in good condition.[11]

The chart below details pavement conditions on major urban roads in the state's largest urban areas.[12]

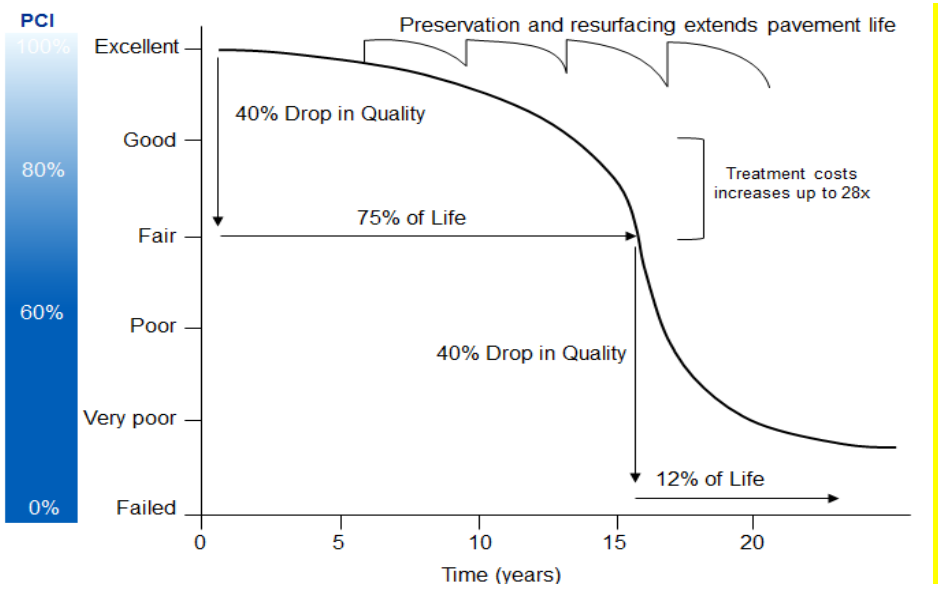
Chart 1. Pavement conditions on major roads in the state's largest urban areas.

Location	Poor	Mediocre	Fair	Good
Gulfport-Biloxi-Pascagoula	22%	19%	15%	45%
Hattiesburg	33%	18%	14%	35%
Jackson	43%	20%	11%	25%
Southaven - DeSoto County	23%	21%	19%	37%

Source: TRIP analysis of Federal Highway Administration data.

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.[13] 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.

Chart 2. Pavement Condition Cycle Time with Treatment and Cost



Source: North Carolina Department of Transportation (2016). 2016 Maintenance Operations and Performance Analysis Report

Long-term repair costs increase significantly when road and bridge maintenance is deferred, as road and bridge deterioration accelerates later in the service life of a transportation facility and requires more costly repairs. A report on maintaining pavements found that every $1 of deferred maintenance on roads and bridges costs an additional $4 to $5 in needed future repairs.[14]

The Costs to Motorists of Roads in Inadequate Condition

TRIP has calculated the additional cost to motorists of driving on roads in poor, mediocre or fair condition. When roads are in poor, mediocre or fair condition – which may include potholes, rutting or rough surfaces – the cost to operate and maintain a vehicle increases. These additional vehicle operating costs (VOC) include accelerated vehicle depreciation, additional - vehicle repair costs, increased fuel consumption and increased tire wear. TRIP estimates that additional VOC borne by Mississippi motorists as a result of deteriorated road conditions is $1.4 billion annually, or $705 per driver.[15] The chart below details additional VOC per motorist in the state's largest urban areas.

Chart 3. Vehicle operating costs per motorist as a result of driving on deteriorated roads.

Location	VOC
Gulfport-Biloxi-Pascagoula	$512
Hattiesburg	$670
Jackson	$823
Southaven - DeSoto County	$487
Mississippi Statewide	**$1.4 Billion**

Source: TRIP estimates.

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.[16]

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 VOC estimate is based on taking the average number of miles driven annually by a motorist, calculating current VOC based on AAA's 2016 VOC and then using the HDM model to estimate the additional VOC paid by drivers as a result of substandard roads.[17] Additional research on the impact of road conditions on fuel consumption by the Texas Transportation Institute (TTI) is also factored in to 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.

Twelve percent of Mississippi's locally and state maintained bridges are rated as structurally deficient, the twelfth highest share in the nation.[18] This includes all bridges that are 20 feet or more in length. 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.

The chart below details the number and share of bridges in the state's largest urban areas that are structurally deficient.

Chart 4. Number and share of structurally deficient bridges in Mississippi's largest urban areas.

Location	Number Structurally Deficient	Share Structurally Deficient	Total Bridges
Gulfport-Biloxi-Pascagoula	26	5%	548
Hattiesburg	12	3%	448
Jackson	72	7%	1035
Southaven - DeSoto County	5	2%	228

Source: TRIP analysis of 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 3,109 people were killed in Mississippi traffic crashes from 2011 to 2015, an average of 622 fatalities per year.[19]

Chart 5. Traffic Fatalities in Mississippi from 2011 – 2015.

Year	*Fatalities*
2011	630
2012	582
2013	613
2014	607
2015	677
Total	**3,109**

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 1.70 fatalities per 100 million vehicle miles of travel in 2015 is significantly higher than the national average of 1.13 and the third highest traffic fatality rate in the nation.[20] The traffic fatality rate on the state's rural roads is disproportionately high. The fatality rate on Mississippi's non-interstate rural roads is more than four times higher than on all other roads in the state (2.93 fatalities per 100 million vehicle miles of travel vs. 0.70).[21]

The chart below details the number of people killed in traffic crashes in the state's largest urban areas between 2013 and 2015, as well as the cost of traffic crashes per driver.

Chart 6. Average fatalities between 2013 and 2015 and crash cost per driver.

Location	Average Fatalities 2013-2016	Safety Cost
Gulfport-Biloxi-Pascagoula	47	$344
Hattiesburg	18	$325
Jackson	54	$345
Southaven - DeSoto County	20	$303

Source: TRIP analysis.

Traffic crashes in Mississippi imposed a total of $3.1 billion in economic costs in 2015.[22] TRIP estimates that traffic crashes in which roadway features were likely a contributing factor imposed $1 billion in economic costs in 2015.[23]

According to a 2015 National Highway Traffic Safety Administration (NHTSA) report, the economic costs of traffic crashes includes work and household productivity losses, property damage, medical costs, rehabilitation costs, legal and court costs, congestion costs and emergency services.[24]

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 TTI found that improvements completed recently by TxDOT 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).[25] TTI estimates that the improvements on these roads are likely to save 880 lives over 20 years.[26]

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.

Based on TTI methodology, TRIP estimates the value of lost time and wasted fuel in Mississippi is approximately $530 million per year. The chart below details the number of hours lost annually for each driver in the state's largest urban areas, as well as the per-driver cost of lost time and wasted fuel due to congestion.

Chart 7. Annual hours lost to congestion and congestion costs per driver.

Location	Hours Lost to Congestion	Annual Cost Per Driver
Gulfport-Biloxi-Pascagoula	19	$411
Hattiesburg	13	$298
Jackson	38	$878
Southaven - DeSoto County	43	$1,080

Source: Texas Transportation Institute Urban Mobility Report.

Increasing levels of congestion add significant costs to consumers, transportation companies, manufacturers, distributors and wholesalers. Increased levels of congestion can reduce the attractiveness of a location to a company when considering expansion or where 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.

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 state's 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 in road and bridge funding based on the revenue generated in the state by the federal motor fuel tax.

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.[27]

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 a boost of approximately 15 percent in highway funding and 18 percent in transit funding over the duration of the program, which expires in 2020.[28] 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 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance report submitted by the United States Department of Transportation (USDOT) to Congress, the nation faces an $836 billion backlog in needed repairs and improvements to the nation's roads, highways and bridges.[29]

The USDOT report found that the nation's current $105 billion investment in roads, highways and bridges by all levels of government should be increased by 35 percent to $142.5 billion annually to improve the conditions of roads, highways and bridges, relieve traffic congestion and improve traffic safety.

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. 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, $277 billion in goods are shipped to and from sites in Mississippi, mostly by trucks.[30] Seventy-seven percent of the goods shipped annually to and from sites in Mississippi are carried by trucks and another eight percent are carried by courier services or multiple-mode deliveries, which include trucking.[31]

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.[32]

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.

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 2015 survey of corporate executives by Area Development Magazine.[33]

Conclusion

As Mississippi works to build and enhance a thriving, growing and dynamic state, it will be critical that it is able to address the state's most significant transportation issues by providing a 21st century network of roads, highways, bridges and transit 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, safe and reliable mobility for residents, visitors and businesses. Making needed improvements to the state's roads, highways, bridges and transit systems 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, bridges and transit systems 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 or enhance economic development opportunities and quality of life.

# # #

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