

# **The Interstate Highway System in Mississippi:**

## **Saving Lives, Time and Money**

*A report on the condition, impact, use and future needs of  
Mississippi's Interstate Highway System*

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**TRIP**  
1726 M Street, NW, Suite 401  
Washington, DC 20036  
Phone: (202) 466-6706  
Fax: (202) 785-4722  
[www.tripnet.org](http://www.tripnet.org)

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

## Executive Summary

Fifty years ago the nation embarked on its greatest public works project, the construction of the Interstate Highway System. President Dwight D. Eisenhower provided strong support for the building of an Interstate Highway System that would improve traffic safety, reduce travel times and improve the nation's economic productivity.

Serving as the most critical transportation link in the state's economy, Mississippi's Interstate highways have significantly improved the lives of its residents and visitors. In Mississippi, and throughout the nation, the Interstate system allows for high levels of mobility by greatly reducing travel times and providing a significantly higher level of traffic safety than other routes.

But 50 years after President Eisenhower articulated a vision for the nation's 20<sup>th</sup> Century transportation system, Mississippi and the nation again face a challenge in modernizing the system of aging, increasingly congested Interstate highways. If Mississippi residents are to continue to enjoy their current level of mobility on Interstate highways and bridges, the state will need to make a commitment to providing the public with a 21<sup>st</sup> Century highway system.

In this report, TRIP looks at the history and benefits of Mississippi's Interstate Highway System, its current use and condition and at the future needs of the state's most critical transportation system. Sources of data for this study include the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the National Highway Traffic Safety Administration (NHTSA), the U.S. Census Bureau and the Mississippi Department of Transportation (MDOT). The major findings of the report are:

**The Dwight D. Eisenhower National System of Interstate and Defense Highways, which has been called the most ambitious public works project built since the Roman Empire, is the most critical link in the nation's and Mississippi's transportation system.**

- Mississippi's Interstate system, which includes two percent of all roadway lane miles in the state, carries 18 percent of all vehicle travel in the state.
- Since Interstate construction began in 1956, vehicle miles of travel in Mississippi have increased by 486 percent, the number of vehicles in the state has nearly tripled, increasing by 199 percent, and the state's population has increased by 33 percent.

**The state's Interstate Highway System saves the average Mississippi resident \$1,927 per year in safety benefits, saved time, reduced motor fuel consumption and reduced clothing, food, housing and transportation costs. The total statewide savings is approximately \$5.6 billion.**

- Improved traffic safety provided by the Interstate system saves the state \$380 million annually - \$131 per resident - in reduced healthcare costs and costs associated with lost productivity.
- By reducing travel times, the Interstate system saves each Mississippi resident 57 hours of travel time annually – 165 million hours statewide.
- The Interstate system saves Mississippi residents approximately \$2.7 billion annually in the value of saved time and fuel - \$913 per person (\$845 in saved time and \$68 in reduced fuel costs).
- Mississippi's Interstate system annually reduces statewide motor fuel consumption by 79 million gallons.
- Consumer costs have been significantly lowered by the Interstate Highway System. The cost of transporting goods has been reduced because the time it takes to make trips has been decreased. And increased access between locations has enabled access to cheaper land.
- TRIP estimates that consumer costs in Mississippi for apparel, food, housing and transportation are reduced by \$2.56 billion annually, or \$883 per state resident, as a result of the Interstate Highway System.
- TRIP's estimates of reduced consumer costs are based on consumer expenditure estimates by the U.S. Department of Labor and estimates of the Interstate's impact on consumer costs collected in a survey of transportation economists.

**Today, more than half of Mississippi's urban Interstates are congested during peak travel hours as a result of continued growth in travel.**

- Fifty-three percent of Mississippi's urban Interstates are considered congested because they carry traffic levels that result in significant delays during peak travel hours.
- Congestion is spreading to rural areas: 13 percent of Mississippi's rural Interstate miles are considered congested because they carry high traffic volumes.

- The average annual amount of travel per Interstate lane-mile in Mississippi increased by 40 percent from 1990 to 2004, from an average of approximately 1.8 million miles traveled annually per Interstate lane-mile to approximately 2.5 million.
- The following is a list of the ten most congested sections of Interstate in Mississippi. A full list is included in the report.

Route	County	From	To	Length in Miles	Average Daily Traffic	Number of Lanes
I-55	Hinds	Lakeland	I-220	7	116,000	6
I-55	Hinds	I-20	Lakeland	4	114,700	6
I-20	Hinds	I-55 S	I-55 N	2	114,000	6
I-20	Rankin	I-55 N	MS 468	5	104,000	6
I-20	Hinds	MS 18	I-55 S	2	85,000	6
I-55	Madison	I-220	MS 463	5	66,000	6
I-55	Hinds	Terry	I-20	13	65,000	6
I-20	Hinds	Clinton	MS 18	7	54,000	6
I-55	Desoto	Hernando	TN SL	6	67,000	4
I-20	Rankin	MS 468	Brandon	11	64,000	4

**Mississippi faces a significant challenge over the next 20 years in maintaining the physical condition of its aging Interstate system and expanding Interstate capacity to address growing traffic congestion.**

- Travel on Mississippi’s Interstate highways is expected to increase by 55 percent by the year 2026.
- Large commercial truck travel on Mississippi’s Interstate highways is increasing. By the year 2026, large trucks will account for 19 percent of all Interstate vehicle travel.
- The Mississippi Department of Transportation reports that within 10 years, 52 percent of the state’s Interstate Highway System (356 miles out of 685 miles) will be in need of significant rehabilitation or reconstruction.
- By 2026, 85 of the state’s 768 Interstate bridges will need significant repairs.
- In 20 years, if additional capacity is not added to Mississippi’s Interstate system, 95 percent of urban Interstate’s and 43 percent of rural Interstate’s will be congested.
- By 2026, 95 percent of urban and 57 percent of rural Interstate miles will need additional capacity to enhance mobility and goods movement.
- The Mississippi Department of Transportation estimates it will need to build or upgrade 617 additional miles of Interstate roadway by 2026.

**Mississippi's Interstates provide a network of highways with a variety of safety designs that greatly reduce the likelihood of serious accidents. Travel on Mississippi's Interstate highways is approximately one and a half times safer than travel on all other roadways in the state.**

- Mississippi's Interstate highways have saved approximately 3,000 lives in the state since 1956, based on an estimate of the number of traffic deaths that would have occurred if Mississippi did not have Interstate highways.
- The number of lives saved by the Interstate was calculated by estimating the additional fatalities that would have occurred had Interstate traffic been carried by other major roadways in the state, which often have higher traffic fatality rates and may lack the safety features common to Interstate routes.
- The features that make Interstates safer than other roads include: a separation from other roads and rail lines, a minimum of four-lanes, gentler curves and often paved shoulders, median barriers and rumble strips to warn drivers when they are leaving the roadway.
- Travel on Mississippi's Interstate highways is significantly safer than travel on all other roadways. The fatality rate per 100 million vehicle miles of travel on Mississippi's Interstate system in 2004 was 1.64, while it was 2.42 on non-Interstate routes in Mississippi.

**Overall, current pavement and bridge conditions on most of Mississippi's Interstate system are acceptable, but some deficiencies exist.**

- Two percent of Mississippi's Interstate pavements are in poor condition and an additional nine percent are in mediocre condition. Another 10 percent of Interstate pavements are in fair condition and the remaining 79 percent are in good condition.
- Less than one percent of the state's Interstate bridges are rated structurally deficient but 36 percent are rated functionally obsolete.
- A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.
- The average age of Mississippi's Interstate bridges is 39 years. Older bridges typically need significant repairs, reconstruction or replacement at approximately 50 years.

**Construction of the Interstate system in Mississippi started in 1956 and was completed in 1981, providing the state with four Interstate routes totaling 685 miles, linking the state's largest urban areas and connecting Mississippi to the rest of the nation.**

- The Federal-Aid Highway Act of 1956, signed into law by President Dwight Eisenhower on June 29, 1956, called for the construction of a 41,000 mile system of Interstate highways to be paid for by taxes on motorists, such as the federal motor fuel tax. The federal motor fuel tax was set at three cents-per-gallon and is now 18.4 cents-per-gallon.
- Revenue collected from the 18.4 cents-per-gallon federal motor fuel tax and the 24.4 cents-per-gallon federal diesel fuel tax are the primary sources of funding for the federal Highway Trust Fund, which distributes funds to state and local governments for highway and bridge repairs as well as other surface transportation improvements, including public transit, walking and bicycling facilities.
- The first section of Interstate completed in Mississippi was a section of I-55 in Desoto County, which opened to traffic in 1957.
- The most recent section of Mississippi's Interstate system open to traffic was I-220 in Madison County, a project which includes the I-220/I-55 interchange, which opened in 1981.

**The Interstate system is the backbone of the Mississippi economy and has played a critical role in improving business productivity in the state.**

- The Interstate system carries 44 percent of all large commercial truck travel in Mississippi. Travel by large commercial trucks accounted for 15 percent of all vehicle travel on the state's Interstate system in 2004.
- Every year, \$95 billion in goods are shipped annually from sites in Mississippi and another \$78 billion in goods are shipped annually to sites in Mississippi, mostly by truck.
- Eighty-six percent of the goods shipped annually from sites in Mississippi are carried by trucks and another three percent are carried by courier services, which use trucks for part of the deliveries. Similarly, 76 percent of the goods shipped to sites in Mississippi are carried by trucks and another 8 percent are carried by courier services, which use trucks for part of their deliveries.
- The Interstate system has led to significant increases in economic productivity. Improvements in the highway system have allowed businesses to adopt more efficient logistics practices, which reduce costs for producers and consumers.

- The initial construction of much of the Interstate system provided a tremendous boost to business productivity as a result of more efficient goods shipment. Economists have estimated that from the initial phase of Interstate construction in 1956 to 1970, the annual rate of return for every dollar of public investment in highway construction was 54 cents, which meant that investments recovered their costs in two years.
- The completion of the vast majority of the Interstate system by the 1980s and the deregulation of the U.S. trucking industry resulted in a significant improvement in the competitiveness of U.S. business. In fact, the cost of moving freight, as measured by U.S. business logistics costs, dropped from 16 percent of U.S. Gross Domestic Product (GDP) in 1980 to nine percent in 2002.
- Mississippi's Interstate highways have reduced travel times both within the state and to locations outside of Mississippi. The improved mobility provided by the Interstate system has given Mississippi's residents greater choices about where they live, work, shop and spend their leisure time.

## **Introduction**

The Dwight D. Eisenhower National System of Interstate and Defense Highways has been called the most ambitious public works project built since the age of the Roman Empire and is literally the backbone of America's economy.

Initially conceived in 1939, significant construction of the Interstate system did not start until 1956 when Congress approved the financing of today's Interstate system, largely through collection of the federal motor fuel tax and other taxes on highway users.

With four Interstates running through the state's major urban areas from Louisiana to the northern and eastern borders of the state, Mississippi's Interstate Highway System is the most critical element of the state's transportation system. Fifty years after construction of the Interstate Highway System began, this network of highways has become the most important set of corridors linking Mississippi's citizens to people and businesses within the state and throughout the nation.

Today, the Interstate system continues to provide Mississippi with economic growth, improved traffic safety and convenient access while playing a role in the nation's defense.

In this report, TRIP looks at the history and impact of Mississippi's Interstate Highway System, its current use and condition, the system's benefits and at the future needs of the state's most critical transportation system. Just as 50 years ago, when our leaders made critical decisions on the future of the nation's highway system, Mississippi's political leaders now face the challenge of insuring that the safety and reliability of the Interstate system are maintained by investing adequately in needed repairs and improvements to meet the transportation challenges of the 21<sup>st</sup> Century.

## **Development of the U.S. Interstate System**

In 1919, Lieutenant Dwight D. Eisenhower participated in the U.S. Army's first transcontinental motor convoy, from Washington, DC to San Francisco. During the 62 days it took to cross the country, the convoy experienced numerous difficulties, including roads that were muddy, narrow or otherwise inadequate and bridges that often could not support the vehicles in the convoy.

A generation later, General Eisenhower saw first hand how an efficient, effective highway transportation system benefited a nation, when he noted that the German Autobahn network, opened in 1935, provided a significant military advantage to Germany.

The United States began exploring the feasibility of constructing a series of interregional highways in the late 1930s. In 1938 Congress directed the then Bureau of Public Roads (BPR) to prepare a study on the possibility of building a national system of toll highways. The resulting 1939 BPR report concluded that it would be impossible to finance a national system of highways strictly through charging tolls, but did recommend that the U.S. build a system of approximately 26,700 miles of transcontinental highways. The BPR report also called for many of the design elements found on modern Interstate highways, including limited access, which separates highway traffic from other traffic and from trains. The BPR report also suggested that the nation's highways should connect with the center of large cities, should include beltways around large urban areas and should bypass small towns.

Further attempts to develop a national highway system were interrupted by World War II. But as the Allies gained the upper hand in the war, Congress started to turn its

attention to post-war challenges, including consideration of a modern highway system to support the nation's growing economy and improve safety and mobility. The Federal-Aid Highway Act of 1944 authorized the BPR to designate a system of approximately 40,000 miles of Interstate highways, which proved very similar to the routes approved ultimately as the national Interstate system. But the 1944 highway bill did not specify any additional funds for construction of the highways, other than the small amount of funds currently made available by the federal government for highway construction.

The 1944 Highway Act had identified the need for a national system of interconnected highways, but had left out a key piece of the puzzle – how to fund a uniformly-designed national highway system, which would have significant differences in construction costs and traffic volume, depending on location. Even without significant federal funding available, cities and states began to move forward on their own, with some additional highway networks being built or planned in current Interstate corridors under various financing mechanisms. These early highway projects included toll highways such as the Pennsylvania Turnpike and the New York Thruway and early urban highways including the Los Angeles Freeway System and the Detroit Expressway System.

But for most motorists and businesses, the inadequate roadway system of the late 1940s and early 1950s contributed to growing human and economic losses, as cars and trucks jostled for position on the nation's inadequate, narrow and winding roads and streets.

In 1954 President Eisenhower appointed a committee to draft a proposal to fund a national system of Interstate Highways. Eisenhower noted that the nation's obsolete

highway system penalized Americans through increased traffic deaths, the waste of time caused by traffic delays, the increased cost of freight movement and the inability of the nation's highways to meet the mobility demands that would be caused by a regional catastrophe or national defense emergency.

The initial plan prepared for President Eisenhower called for funding a national Interstate Highway System through bond financing, but Congress dismissed the use of bond revenue as the primary source of Interstate financing. In 1956, Congress overwhelmingly approved the construction of a national Interstate Highway System when the financing was changed to a pay-as-you-go format that would collect a series of user fees -- most notably a 3 cent-per-gallon tax on motor fuel -- into a national Highway Trust Fund.

The Federal-Aid Highway Act of 1956 called for the construction of a 41,000-mile Interstate Highway System, which was to be completed by 1970 at a cost of approximately \$27 billion. The design of the system was very similar to the initial 1944 plan, which called for connecting large urban areas, including routing highways into central cities, largely at the request of mayors and other local politicians who feared that their communities would be left behind without modern highway access. The Interstate system was designated to incorporate approximately 2,000 miles of existing highways, including the Pennsylvania Turnpike and the New York Thruway. The highways were to be built to high design standards that would reduce traffic deaths and increase the amount and speed of traffic that could be carried. These design standards included full access control to limit entrance and exit to on and off ramps, a minimum of four lanes, medians to separate oncoming lanes and moderate curves.

## **The Construction of the Interstate System in Mississippi**

Following the signing of the Federal-Aid Highway Act of 1956 by President Eisenhower on June 29, 1956, Mississippi moved quickly to orient its highway program toward the enormous task of planning and constructing the state's eventual 685-mile Interstate system. The first Interstate construction project in Mississippi was a section of I-55 in Desoto County, started in April 1957.<sup>1</sup> Completed in 1958, this was the first section of Interstate highway opened to traffic in Mississippi.

The most recent section of Mississippi's Interstate system to be completed was I-220 in Madison County, a project which includes the I-220/I-55 interchange. This segment was opened in November, 1981.

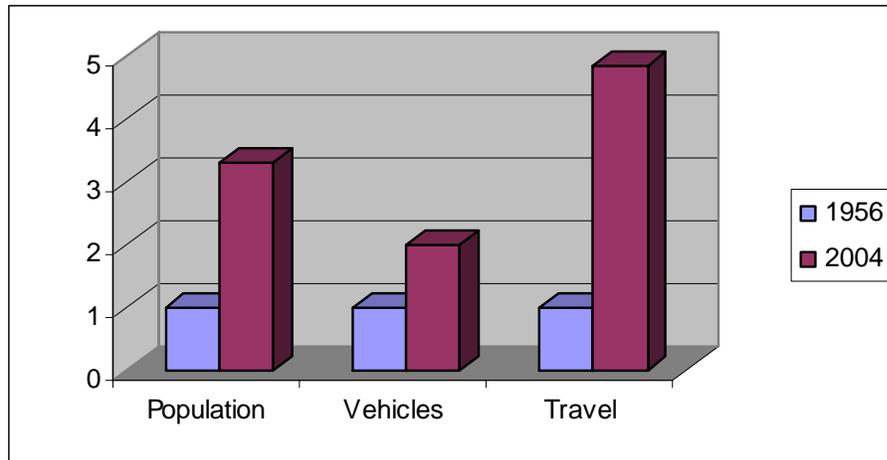
## **Trends in Interstate Travel and Capacity**

Mississippi is served by four Interstate routes, totaling 685 miles. These Interstates include Interstate 20/220, which runs through the center of the state from northern Louisiana east to Alabama; Interstate 59, which runs from southwest corner northeast to central Alabama; Interstate 10, which runs along the Gulf Coast; and Interstate 55, a north-south route through the center of the state from Tennessee to Louisiana.

Since the beginning of the Interstate Era 50 years ago, Mississippi has seen enormous increases in population, the number of motor vehicles and the amount of vehicle travel. From 1956 to 2004 (the latest year for which data is available), the state's population has increased by 33 percent from approximately 2.18 million to 2.9 million.

During that same time, the number of motor vehicles increased by 199 percent from approximately 650,000 to 1.9 million and vehicle travel in Mississippi has increased by 486 percent from approximately 6.7 billion miles driven annually to 39 billion miles.<sup>2</sup>

**Chart 1. Increase since 1956 in Population, Vehicles and Travel in Mississippi (1 = 1956 level)**



Source: TRIP analysis of U.S. Census and Federal Highway Administration data

## **Traffic Congestion on Mississippi's Interstates**

The Interstate Highway System was initially designed largely to provide transportation between the nation's urban areas and to support national defense. But as Interstate highways were ultimately built around and through many cities, they became the nation's most critical transportation corridors both between and within urban areas.

Today, the Interstate Highway System remains the most critical component of Mississippi's transportation system. While Interstate highways account for only two percent of all lane miles of roads in the state, they carry 18 percent of all travel in the

state.<sup>3</sup> Lane miles are the total number of lanes multiplied by the length. Thus a 10-mile segment of four-lane highway equals 10 center-lane miles and 40 lane miles.

Travel on Mississippi's Interstate highways continues to grow at a significant rate. In fact, the average annual amount of travel per Interstate lane-mile in Mississippi increased by 40 percent from 1990 to 2004, from an average of approximately 1.8 million miles traveled annually per Interstate lane-mile to approximately 2.5 million miles traveled annually per Interstate lane-mile.<sup>4</sup>

This increase in traffic on Mississippi's Interstate highways has resulted in a significant increase in traffic congestion levels. More than a half – 53 percent – of Mississippi's urban Interstates are considered congested because they carry traffic levels that result in significant delays during peak travel hours.<sup>5</sup> If additional capacity is not added to Mississippi's Interstate system, 85 percent of the state's urban Interstate system will be congested by 2016, and 95 percent of urban Interstate's will be congested by 2026.

Traffic congestion is now even seen on some rural stretches of Mississippi's Interstate system as travel between urban areas in the state continues to increase. Currently, 13 percent of Mississippi's rural Interstate miles are considered congested because of high volumes of travel.<sup>6</sup> Congestion in rural areas will continue to increase over the next 20 years. If additional capacity is not added to Mississippi's Interstate system, 26 percent of rural Interstates will be classified congested by 2016, and 43 percent of rural interstates will be congested by 2026.<sup>7</sup>

The Federal Highway Administration considers any Interstate highway that carries more than 80 percent of its design capacity to be congested, because at this level

of traffic, drivers experience significant delays in traffic flow. When Interstate traffic reaches 95 percent of the highways’ design capacity the route is rated as being severely congested, because drivers are likely to experience stop and go traffic and any incident can be expected to cause a serious breakdown of traffic flow.

Mississippi’s most congested Interstate is I-55, which has several sections that are among the most congested in the state.<sup>8</sup>

**Chart 2: Congested routes in Mississippi.**

<b>Route</b>	<b>County</b>	<b>From</b>	<b>To</b>	<b>Length in Miles</b>	<b>Average Daily Traffic</b>	<b>Number of Lanes</b>
I-55	Hinds	Lakeland	I-220	7	116,000	6
I-55	Hinds	I-20	Lakeland	4	114,700	6
I-20	Hinds	I-55 S	I-55 N	2	114,000	6
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I-20	Hinds	MS 18	I-55 S	2	85,000	6
I-55	Madison	I-220	MS 463	5	66,000	6
I-55	Hinds	Terry	I-20	13	65,000	6
I-20	Hinds	Clinton	MS 18	7	54,000	6
I-55	Desoto	Hernando	TN SL	6	67,000	4
I-20	Rankin	MS 468	Brandon	11	64,000	4
I-220	Hinds	I-20	I-55	12	60,000	4
I-59	Lauderdale	I-20	MS 39	8	50,000	4
I-110	Harrison	US 90	I-10	4	42,000	4
I-59	Forrest	US 98	US 49	8	35,000	4

**Source: Mississippi Department of Transportation.**

### **Freight Shipment by Large Trucks on Mississippi’s Interstate Highways**

Every year, \$95 billion in goods are shipped from sites in Mississippi and another \$78 billion in goods are shipped to sites in Mississippi, mostly by trucks.<sup>9</sup> Eighty-six percent of the goods shipped annually from sites in Mississippi are carried by trucks and another 3 percent are carried by courier services, which use trucks for part of their

deliveries.<sup>10</sup> Similarly, 76 percent of the goods shipped to sites in Mississippi are carried by trucks and another 8 percent are carried by courier services, which use trucks for part of their deliveries.<sup>11</sup>

Mississippi's Interstate Highway System is the most critical set of highways for goods shipment. In Mississippi, 44 percent of all large commercial truck travel occurs on the state's Interstate highways. In 2004, travel by large commercial trucks accounted for 15 percent of all miles traveled on Mississippi's Interstate system.<sup>12</sup>

### **Traffic Safety on Mississippi's Interstate Highways**

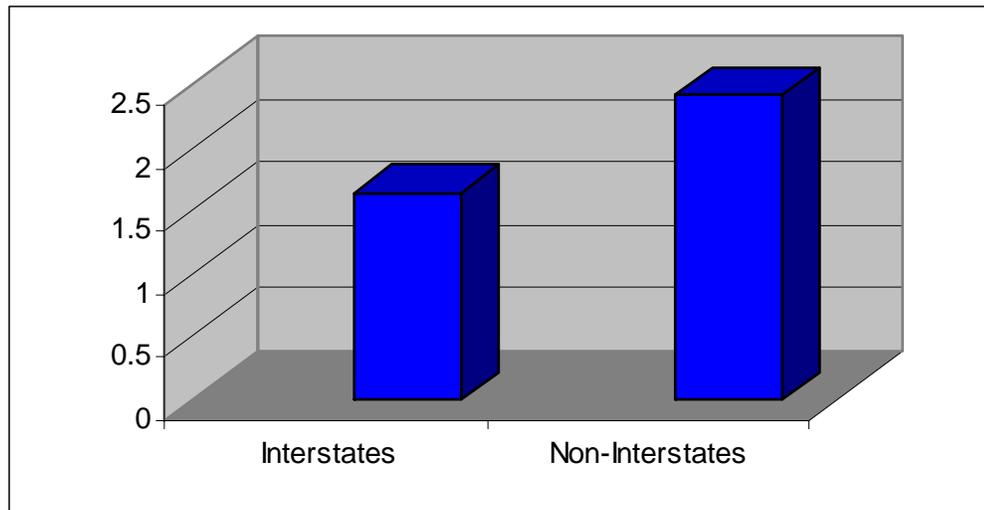
Perhaps the most significant benefit of the Interstate system is that it has greatly improved traffic safety in Mississippi and throughout the U.S. by providing a network of highways with a variety of safety designs that greatly reduce the likelihood of serious accidents.

The safety features that are required on Interstates include a separation from other roads, streets and rail lines, access limited to on and off ramps, a minimum of four-lanes to prevent the need to enter oncoming lanes for passing, and gentler curves. Most Interstate highways also have paved shoulders, and many have median barriers to avoid cross-over accidents and rumble strips to warn drivers if they are leaving the roadway.

The result of the high level of safety design standards on the Interstate is that travel on Mississippi's Interstate highways is much safer than travel on all other roads and highways in the state. The traffic fatality rate per 100 million vehicle miles of travel on Mississippi's Interstate highways was 1.64 in 2004, the latest year for which data is available. The fatality rate per 100 million vehicle miles of travel in 2004 on

Mississippi's non-Interstate routes was 2.42 – approximately one-and-a-half times greater than the rate on the state's Interstates.

**Chart 3. Fatality rate per 100 Million Vehicle Miles of Travel for Mississippi's Interstate and Non-Interstate roadways, 2004**



Source: TRIP analysis of FHWA data

### **Pavement Conditions of Mississippi's Interstate System**

The lifecycle of highway pavements is greatly affected by a transportation agency's ability to perform timely maintenance and upgrades to ensure that surfaces remain smooth for as long as possible. The pavement conditions of a state's major roads are evaluated and classified as being in poor, mediocre, fair or good condition. A desirable goal for state and local organizations that are responsible for road maintenance is to keep 75 percent of major roads in good condition.<sup>13</sup>

In 2004 (the latest year for which data is available), 2 percent of pavements on Mississippi's Interstate highways were rated in poor condition and nine percent were rated in mediocre condition.<sup>14</sup> Roads rated in mediocre condition 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. In Mississippi, 10 percent of Interstate pavements are rated in fair condition and the remaining 79 percent of Interstate pavements are rated in good condition.<sup>15</sup>

Pavement deterioration 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.<sup>16</sup>

### **Bridge Conditions of Mississippi's Interstate Highways**

Mississippi has 768 bridges on its Interstate system. While some are roadway overpasses, others are much more significant structures. The most notable bridge in the state, in terms of engineering, is the Mississippi River Bridge on I-20 in Vicksburg. Completed in 1973, the bridge is 4,200 feet in length (excluding the Louisiana approaches on the opposite side of the levee). The main channel span is 870 feet, with two other segments at 423 feet each. This bridge took four years to construct.

Less than one percent of bridges in Mississippi's Interstate system are rated as structurally deficient and 36 percent are rated as functionally obsolete.<sup>17</sup>

Bridges that are rated structurally deficient show significant signs of deterioration as a result of use and exposure. The FHWA defines a structurally deficient bridge as one

that requires immediate rehabilitation to remain open, is restricted to carrying lighter-weight vehicles or is closed. Bridges that are rated as functionally obsolete do not meet current design standards, which may result in reduced traffic safety, compared to a bridge meeting current standards. Functionally obsolete bridges are defined by the FHWA as those that have deck geometry, load carrying capacity, clearance or approach roadway alignment that no longer meet the criteria for the system of which the bridge is a part.

While more than two-thirds of the state’s Interstate bridges are generally in acceptable condition, a large number of these bridges are reaching an age when they will soon require significant repairs and in some cases replacement. The average lifespan of an older bridge is 50 years.<sup>18</sup> Older bridges often need significant repairs or rehabilitation or may need to be replaced to continue to provide adequate service. The average age of Mississippi’s Interstate bridges is 39 years.<sup>19</sup>

**Chart 4: Interstate bridge construction in Mississippi**

<b>Year built or completely reconstructed</b>	<b>Number</b>
1956-1959:	58
1960-1964:	196
1965-1969:	309
1970-1974:	82
1975-1979:	66
1980-1984:	5
1985-1989	16
1990 to present:	64

**Source: Mississippi Department of Transportation**

## **Benefits of Mississippi's Interstate System**

The construction of Mississippi's Interstate Highway System has had a profound impact on the state's development, impacting the quality of life of the state's residents and visitors in numerous ways including improved safety, expanded lifestyle choices, improved business productivity and an enhanced economic standard of living.

By significantly increasing the number of areas that are within a reasonable driving distance, the Interstate system has greatly increased people's access to jobs, housing, recreation, healthcare, shopping and other amenities.

Similarly, the construction of the Interstate system has benefited the nation's economy by reducing the costs of and increasing the speed of goods movement. The ability to cheaply and quickly ship products to or from Mississippi and many U.S. and international sites has provided lower costs and greater selection to consumers and has opened up new markets to Mississippi businesses. The completion of the vast majority of the Interstate system by the 1980s and the deregulation of the U.S. trucking industry resulted in a significant improvement in the competitiveness of U.S. business. In fact, the cost of moving freight, as measured by U.S. business logistics costs, dropped from 16 percent of U.S. Gross Domestic Product (GDP) in 1980 to nine percent in 2002.<sup>20</sup>

The initial construction of much of the Interstate system provided a tremendous boost to business productivity as a result of more efficient goods shipment. In fact, economists have estimated that through the initial phase of Interstate construction to 1970, the annual rate of return for every dollar of public investment in highway construction was 54 cents, which meant that investments recovered their costs in two years.

The continued tremendous increase in freight deliveries over recent years has been partly fueled by improved communications and the need for greater economic competitiveness. Improved communications provided by the Internet are integrating producers, wholesalers, retailers and consumers. Businesses have responded to improved communications and the necessity to cut costs with a variety of innovations, including just-in-time delivery, increases in small package delivery, demand-side inventory management and accepting customer orders through the Internet.

The result of these changes has been a significant improvement in logistics efficiency as firms move away 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.<sup>21</sup>

### **Interstate Benefits for Individuals in Mississippi**

TRIP has calculated the annual financial benefit of Mississippi's Interstate system both state-wide and to each individual, based on the value of improved traffic safety, reduced travel time, reduced fuel use and reduced consumer costs.

#### **Safety:**

By carrying significant volumes of traffic on roadways with higher safety standards and lower traffic fatality rates, the Interstates save numerous lives annually. Since 1956, TRIP estimates that Interstate highways have saved approximately 3,000 lives in Mississippi.<sup>22</sup> This estimate is based on a comparison of the annual fatality rate

on Mississippi's Interstate highways compared to the fatality rate each year on other major roads in the state. Interstate safety benefits were estimated by calculating the additional fatalities that would have occurred in each year if the travel that occurred on Mississippi's Interstate highways had instead been carried by other major roads in the state, many of which often lack many of the safety features found on Interstate highways and have a significantly higher traffic fatality rate.

TRIP estimates that the improved highway safety provided by Mississippi's Interstates saves the state \$380 million annually in reduced economic costs as a result of the reduction in fatal or serious traffic accidents, saving \$131 per person annually.<sup>23</sup> TRIP's estimate is based on research by the National Highway Traffic Safety Administration (NHTSA), which annually estimates the economic costs of fatal and serious traffic accidents in the U.S. The NHTSA estimates are strictly of the economic consequences of serious and fatal traffic crashes, such as lost productivity and increased healthcare costs.

### **Time and motor fuel:**

Because it features limited access, no stoplights and often more direct routes between major urban areas, the Interstate system has saved travelers time by reducing travel times and making travel more efficient. By reducing travel times, the Interstate Highway System has saved motorists time and has also increased the choices people have of where to live, work, shop and travel for recreation.

TRIP has estimated the additional time that Mississippi residents would spend traveling if the state did not have its network of Interstate highways. These estimates are

based on assuming that if there were no Interstate highways in Mississippi that this traffic would be carried by other major roads in the state, such as other urban freeways and urban and rural arterial roads and highways. Shifting the state's Interstate traffic onto other routes would increase traffic congestion on these other routes and also slow travel times, by shifting travel from faster-moving Interstate highways onto slower-moving roads and highways. TRIP applied traffic speed calculations developed by the Texas Transportation Institute, which annually estimates traffic congestion levels throughout the U.S., to estimate the traffic speeds that would result on other major roads in the state if they had to carry the traffic currently being carried by Mississippi's Interstate system.

TRIP found that without Interstate highways, Mississippi residents would spend an additional 165 million hours annually traveling in vehicles, or 57 hours per person annually.<sup>24</sup> TRIP also found that without Interstate highways, Mississippi motorists would use an additional 79 million gallons of motor fuel annually.<sup>25</sup> The total value of the time and motor fuel that are saved annually in Mississippi by the Interstate Highway System is \$913 per person (\$845 in time and \$68 in fuel), or \$2.6 billion statewide.<sup>26</sup>

### **Reduced Consumer Costs:**

The Interstate system has had a significant impact on consumer costs by reducing the time it takes to complete trips, thereby reducing the cost of transporting goods. It has also reduced costs by increasing access between locations, which has increased access to cheaper land and increased consumer choices for everything from housing and jobs to recreation and shopping.

To calculate the economic impact of the Interstate Highway System on individual consumers in Mississippi, TRIP has gathered data on average consumer expenditures in the state and has estimated the impact of the Interstate Highway System on these costs. Based on data from the U.S. Department of Labor and the Bureau of Economic Analysis, TRIP has calculated the average expenditure per capita in each state on clothing, food, housing and transportation.<sup>27</sup> TRIP then surveyed the nation's leading transportation economists for their estimates of the percentage reduction in consumer expenditures, as a result of the Interstate system, for apparel, food, housing and transportation. TRIP used the average estimated impact in each category to calculate the average amount saved by Mississippi consumers annually in each category.

Apparel and food costs are impacted by reduced logistics costs. Transportation costs, which include the cost of a vehicle, vehicle repairs and maintenance, and the cost of fuel, are similarly impacted by reduced logistics costs. The impact of the Interstate system on housing costs includes its impact on the cost of materials that are used in constructing homes as well as the impact that the Interstate system has had on lowering land prices by increasing consumer access to cheaper land, thus lowering housing costs.

TRIP estimates that the average Mississippi resident saves \$883 per year as a result of the Interstate Highway System. The following chart indicates the annual saving per Mississippi resident for apparel, food, housing and transportation costs as a result of the Interstate Highway System. The total annual statewide savings in Mississippi in reduced consumer costs as a result of the Interstate Highway System is estimated to be \$2.56 billion.

**Chart 5. Annual, per person savings in Mississippi, as a result of the Interstate Highway System.**

	<b>ANNUAL SAVINGS IN MISSISSIPPI</b>
<b>Clothing</b>	<b>\$ 33</b>
<b>Food</b>	<b>\$ 120</b>
<b>Housing</b>	<b>\$ 467</b>
<b>Transportation</b>	<b>\$ 263</b>
<b>Total savings per person</b>	<b>\$ 883</b>

Source: TRIP

The Interstate Highway System provides tremendous benefits every year to the people of Mississippi. The total annual benefit per person in Mississippi of the Interstate system is \$1,927 as a result of additional safety, reduced time and fuel costs, and lower consumer expenses. The total statewide benefit in Mississippi of the Interstate Highway System is nearly \$5.6 billion. The following chart shows the combined annual benefit of the Interstate system per person and statewide in Mississippi.

**Chart 6. Total Annual Interstate Benefit Per Person and statewide in Mississippi**

	<b>Per Person</b>	<b>Statewide (millions)</b>
<b>Safety</b>	<b>\$ 131</b>	<b>\$ 380</b>
<b>Time and Fuel</b>	<b>\$ 913</b>	<b>\$ 2,650</b>
<b>Reduced Consumer Costs</b>	<b>\$ 883</b>	<b>\$ 2,564</b>
<b>Total</b>	<b>\$ 1,927</b>	<b>\$ 5,594</b>

Source: TRIP

## **Meeting Mississippi's Future Interstate Travel Needs**

Mississippi faces a significant challenge in maintaining and rebuilding its aging Interstate Highway System and providing adequate levels of access to meet growing travel demand. The Mississippi Department of Transportation projects that travel on Mississippi's Interstate highways is expected to increase by 55 percent by the year 2026, resulting in congestion of 95 percent of the urban Interstates, unless the state's Interstates are expanded.<sup>28</sup> The Mississippi Department of Transportation also projects that large truck travel on the state's Interstate highways will increase by 48 percent by the year 2026, by which time large trucks will account for 19 percent of all Interstate vehicle travel in Mississippi.<sup>29</sup>

Within ten years (the year 2016), 52 percent of the state's Interstate Highway System will be in need of significant rehabilitation or reconstruction to provide a smooth pavement surface (356 miles out of 685 miles).<sup>30</sup>

In addition, the Missouri Department of Transportation estimates that by 2026, 95 percent of the urban Interstate routes will need additional lanes to increase capacity, and 57 percent of rural Interstates will need additional capacity.<sup>31</sup>

Mississippi Department of Transportation also estimates significant repairs or reconstruction will be required on 85 bridges on the Interstate system between 2006 and 2026.<sup>32</sup>

In addition to reconstruction and maintenance of the existing system, the state has identified the need to build 617 miles of additional Interstate miles, either by building new routes or upgrading existing routes to Interstate standards.

**Chart 7: New Interstate Highway Segments Needed in Mississippi, 2006-2026.**

<b>Route</b>	<b>Length (miles)</b>	<b>County</b>	<b>From</b>	<b>To</b>
I-69	130	Multiple	Arkansas state line	Tennessee state line
MS 601	35	Harrison/Stone	Port of Gulfport	Wiggins
US 78/I-22	140	Multiple	Alabama state line	Tennessee state line
MS 72/I-30	115	Multiple	Alabama state line	Tennessee state line
I-755; Airport Parkway	7	Hinds/Rankin	I-55	I-20/Lakeland
US 84/I-14	190	Multiple	Louisiana state line	Alabama state line

**Source: Missouri Department of Transportation**

## **Conclusion**

Fifty years after construction of the Interstate Highway System began, Mississippi, and all of the U.S., continue to reap tremendous benefits from the nation’s most critical transportation network. Mississippi’s Interstate system has saved approximately 3,000 lives since its inception in 1956 and in addition to saving lives, the Interstate continues to save Mississippi residents time, fuel and money by reducing the costs of goods that improve their quality of life, including the cost of clothing, food, housing and transportation. The state’s Interstate highways also play a critical role in supporting economic growth and increasing personal access to jobs, recreation, health care and housing, enhancing the lifestyle choices of the state’s residents and visitors.

The safe, reliable and timely mobility provided by the state’s Interstate highways has also improved the efficiency of Mississippi’s businesses and is integral to the functioning of the state’s economy.

Prior to the approval of the Interstate system, President Eisenhower noted that inadequate highways resulted in lost time due to traffic delays, reduced economic productivity and reduced traffic safety.

Today, similar challenges are faced in Mississippi, with growing traffic congestion, increasing car and truck travel and aging road surfaces and bridges that will soon need significant repairs and rehabilitation.

As Mississippi's citizens look back on the many benefits that the Interstate Highway System has provided the state, they must also look ahead to meeting the challenge of providing a 21<sup>st</sup> Century Interstate Highway System that will continue to enhance the quality of life of today's and future residents of Mississippi.

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## Endnotes

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- <sup>1</sup> Mississippi County Maps of Projects and Work Order Construction, Mississippi Department of Transportation, 2006. Response to TRIP survey.
- <sup>2</sup> U.S. Census Bureau data, Federal Highway Administration data. See charts MV-1 and VM-2. Additional historical data from Highway Statistics Summary to 1995.
- <sup>3</sup> TRIP analysis of Highway Statistics, 2004, Federal Highway Administration. Data is from charts VM-2 and HM-20.
- <sup>4</sup> Ibid.
- <sup>5</sup> Mississippi Department of Transportation response to TRIP survey, 2006.
- <sup>6</sup> Ibid.
- <sup>7</sup> Ibid.
- <sup>8</sup> Mississippi Department of Transportation response to TRIP survey, 2006.
- <sup>9</sup> Bureau of Transportation Statistics, U.S. Department of Transportation. 2002 Commodity Flow Survey, State Summaries. State Table 13.
- <sup>10</sup> Ibid.
- <sup>11</sup> Ibid. State Table 15.
- <sup>12</sup> Mississippi Department of Transportation response to TRIP survey, 2006.
- <sup>13</sup> Ibid.
- <sup>14</sup> TRIP analysis of 2004 Federal Highway Administration data. See charts HM-63 and HM-64 in Highway Statistics 2004. Additional data from Mississippi Department of Transportation, 2006.
- <sup>15</sup> Ibid.
- <sup>16</sup> Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
- <sup>17</sup> Federal Highway Administration, 2005. National Bridge Inventory data.
- <sup>18</sup> Commonwealth of Pennsylvania. 2005-06 Governor's Executive Budget.
- <sup>19</sup> Mississippi Department of Transportation response to TRIP survey, 2006.
- <sup>20</sup> TRIP analysis of Federal Highway Administration data. See 2004 Federal Highway Statistics, charts HM-60 and VM-2.
- <sup>21</sup> Ibid. P. 7.
- <sup>22</sup> TRIP calculation is based on TRIP analysis of 1997 to 2004 data. Estimates of lives saved by the Interstate system from 1956 to 1996 are based on analysis by Wendell Cox and Jean Love in the 1996 publication "The Best Investment a Nation Ever Made."
- <sup>23</sup> TRIP analysis of National Highway Traffic Safety Administration and Federal Highway Administration data.
- <sup>24</sup> TRIP analysis of 2004 Federal Highway data, using speed factors from the 2005 Urban Mobility Report, which is published by the Texas Transportation Institute.
- <sup>25</sup> Ibid.
- <sup>26</sup> The value of time used for these estimates was \$14.85 per hour, based on the value used by the Texas Transportation Institute in their annual report on urban traffic congestion. The value used to calculate fuel savings is \$2.50 per gallon of motor fuel.
- <sup>27</sup> The U.S. Department of Labor estimates consumer costs per capita for U.S. regions. TRIP then calculated this data for each state by using state income per capita data to estimate cost differences between states.
- <sup>28</sup> Mississippi Department of Transportation response to TRIP survey, 2006.
- <sup>29</sup> Ibid.
- <sup>30</sup> Ibid.
- <sup>31</sup> Ibid.
- <sup>32</sup> Ibid.