

The Interstate Highway System in Arkansas:

Saving Lives, Time and Money

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

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Founded in 1971, TRIP of Washington, DC is a nonprofit organization that researches, evaluates and distributes economic and technical data on highway transportation issues. TRIP is 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, Arkansas' Interstate highways have significantly improved the lives of the State's residents and visitors. In Arkansas, 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 20th Century transportation system, Arkansas and the nation again face a challenge in modernizing the system of aging, increasingly congested Interstate highways. If Arkansas 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 21st Century Interstate Highway System.

In this report, TRIP looks at the history and benefits of Arkansas' Interstate Highway System, its current use and condition, and 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 Arkansas State Highway and Transportation Department (AHTD). 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 Arkansas' transportation system.

- Arkansas' Interstate system, which includes two (2) percent of all roadway lane miles in the state, carries 26 percent of all vehicle travel in the State.
- Since Interstate construction began in 1956, total vehicle miles of travel in Arkansas have more than quadrupled, increasing by 359 percent. Since that time, the number of vehicles in the State has more than tripled, increasing by 215 percent, and the State's population has increased by only 50 percent.

The State's Interstate Highway System saves the average Arkansas resident \$1,629 per year in reduced safety costs, saved time, reduced motor fuel consumption and reduced clothing, food, housing and transportation costs. The total statewide savings is approximately \$4.5 billion per year.

- Improved traffic safety provided by the Interstate system saves the State \$329 million annually - \$120 per resident- in reduced healthcare costs and costs associated with lost productivity.
- Because it reduces travel times by providing more efficient and direct routes, the Interstate system saves each Arkansas resident 33 hours of travel time annually - 92 million hours statewide.
- Arkansas' Interstate system annually reduces statewide motor fuel consumption by 44 million gallons.
- The Interstate system saves Arkansas residents \$1.5 billion in the value of saved time and fuel - \$535 per person (\$495 in time and \$40 in fuel).
- 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 Arkansas for clothing, food, housing and transportation are reduced by approximately \$2.7 billion annually, \$974 per 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 economist.

Construction of the Interstate system in Arkansas under the 1956 Highway Act began in 1957. In 1975, Arkansas became the first state to complete its original allotment of Interstate miles. The most recent Interstate section built in the state was completed in 1999. Sections of eight Interstate routes serve the state, totaling 655 miles and connecting the State's largest urban areas and Arkansas 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 that was completed and opened to traffic in Arkansas was a segment of Interstate 55 in Crittenden County, which opened to traffic in 1959.
- The most recent sections of Arkansas' Interstate system opened to traffic were Interstate 540 from State Highway 282 to the Fayetteville Bypass, and Interstate 530 around Pine Bluff, both of which opened in 1999.
- The majority of the State's Interstate system was completed by 1986, when 83 percent of the State's total lane miles were open to traffic.

One half of Arkansas' urban Interstates are congested as a result of continued growth in travel.

- Fifty percent of Arkansas' urban Interstate highways are considered congested.
- Approximately one-third – 36 percent -- of Arkansas' rural Interstates are considered congested.
- Travel on Arkansas' Interstate highways is increasing at a rate more than four times faster than new lane capacity is being added. From 1990 to 2004, vehicle travel on Arkansas' Interstates increased by 90 percent, but actual lane miles on the system increased by twenty percent during that same period.
- The average annual amount of travel per Interstate lane-mile in Arkansas increased by 58 percent from 1990 to 2004.

Arkansas' Interstates provide a network of highways with a variety of safety designs that greatly reduce the likelihood of serious accidents. Travel on Arkansas' Interstate highways is more than twice as safe as travel on all other roadways in the state.

- Arkansas' Interstate highways have saved approximately 2,600 lives in the state since 1956, based on an estimate of the number of traffic deaths that would have occurred if Arkansas 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.
- Arkansas' Interstate system has saved an average of approximately 70 lives per year over the last 10 years, based on the above criteria.
- 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 Arkansas' Interstate highways is more than twice as safe as travel on all other roadways. The fatality rate per 100 million vehicle miles of travel on Arkansas' Interstate system in 2004 was 1.33, while it was 2.85 on non-Interstate routes in Arkansas.
- There were 108 traffic fatalities on Arkansas' Interstate highways in 2004. Only 15 percent of the 704 traffic fatalities in Arkansas in 2004 occurred on the Interstate system, even though it carried 25 percent of all travel in the State in 2004.

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

- Five percent of Arkansas' Interstate pavements are in poor condition and an additional nine percent are in mediocre condition. Another 14 percent of Interstate pavements are in fair condition and the remaining 72 percent are in good condition.
- One percent of the State's Interstate bridges are rated structurally deficient and nine 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 Arkansas' Interstate bridges is 32 years. Older bridges typically need significant repairs, reconstruction or replacement at approximately 50 years.

The Interstate system is the backbone of the Arkansas economy and has played a critical role in improving business productivity in the State.

- The Interstate system carries 58 percent of all large commercial truck travel in Arkansas. Travel by large commercial trucks accounted for 19 percent of all vehicle travel on the State's Interstate system in 2004.
- Every year, \$92 billion in goods are shipped annually from sites in Arkansas and another \$78 billion in goods are shipped annually to sites in Arkansas, mostly by truck.
- Eighty-five percent of the goods shipped annually from sites in Arkansas are carried by trucks and another four percent are carried by courier services, which use trucks for part of the deliveries. Similarly, 84 percent of the goods shipped to sites in Arkansas 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.
- Arkansas' Interstate highways have reduced travel times both within the State and to locations outside of Arkansas. The improved mobility provided by the Interstate system has given Arkansas' residents greater choices about where they live, work, shop and spend their leisure time.

Arkansas needs to spend \$4.4 billion over the next 20 years to maintain its Interstate highways and bridges in good condition, to widen urban and rural Interstate sections to relieve growing traffic congestion and to build Arkansas' portions of Interstate 49 from Missouri to Louisiana, and Interstate 69 from the Mississippi border to the Louisiana border.

- Travel on Arkansas' Interstate highways is expected to increase by 40 percent by the year 2026.
- The Arkansas State Highway and Transportation Department reports that by the year 2026, 96 percent of its urban Interstate highways and 77 percent of its rural Interstate highways will be congested unless additional highway capacity is constructed.
- Arkansas needs to build additional lanes along 186 miles of its existing 655 mile Interstate system in order to relieve growing traffic congestion.
- Forty-two percent (276 of 655 miles) of Arkansas' Interstate highways will need significant reconstruction by the year 2026 to maintain smooth pavement surfaces.
- Increasing urban traffic congestion may erode some of the logistics advantages that Arkansas producers and distributors have over competitors as the cost and reliability of shipping goods is negatively affected.
- Arkansas also will need to build its portion of Interstate 69 in the Southeastern part of the State, which will run diagonally from the Louisiana to Mississippi border. Interstate 69 is currently being planned and built as a new Interstate highway stretching from the Canadian border in Michigan to the Mexican border in Texas.
- Arkansas will also need to construct 183 miles of Interstate 49 in the Western part of the State from Missouri to Louisiana. This is part of the larger Interstate 49 corridor between Kansas City, Missouri and Shreveport, Louisiana.

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 eight Interstates running the length of the state and connecting the state's major urban areas, Arkansas's Interstate Highway System is the most critical element of the State's transportation system. Fifty years after construction of the Interstate system first started, this network of highways has become the most important set of corridors linking the residents of Arkansas to people and businesses within the State and throughout the nation.

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

In this report, TRIP looks at the benefits, history and impact of Arkansas' Interstate Highway System, its current use and condition, and finally at the future needs of the State's most critical transportation system. Just as 50 years ago, when the nation's leaders made critical decisions on the future of the nation's highway system, today's political leaders now face the need to insure that the safety and reliability of the State's Interstate system are maintained by investing adequately in needed repairs and improvements to meet the transportation challenges of the 21st 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 also began looking at 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 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 identified the need for a national system of interconnected highways, but 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 System through bond financing, but Congress dismissed the use of bond revenue as the primary source of Interstate highway 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 Arkansas

Following the signing of the Federal-Aid Highway Act of 1956 by President Eisenhower on June 29, 1956, Arkansas moved quickly to orient its highway program toward the enormous task of planning and constructing the State's eventual 655-mile Interstate system.

The first portion of Interstate highway completed in Arkansas was a segment of Interstate 55 in Crittenden County, which opened to traffic in 1959.¹ In 1975, Arkansas completed construction of its original allotment of Interstate highway miles. The majority of the state's current Interstate system was completed by 1986, when 83 percent of the current lanes miles of Arkansas' Interstate system were open to traffic (2,255 of 2,718 eventual lane miles).²

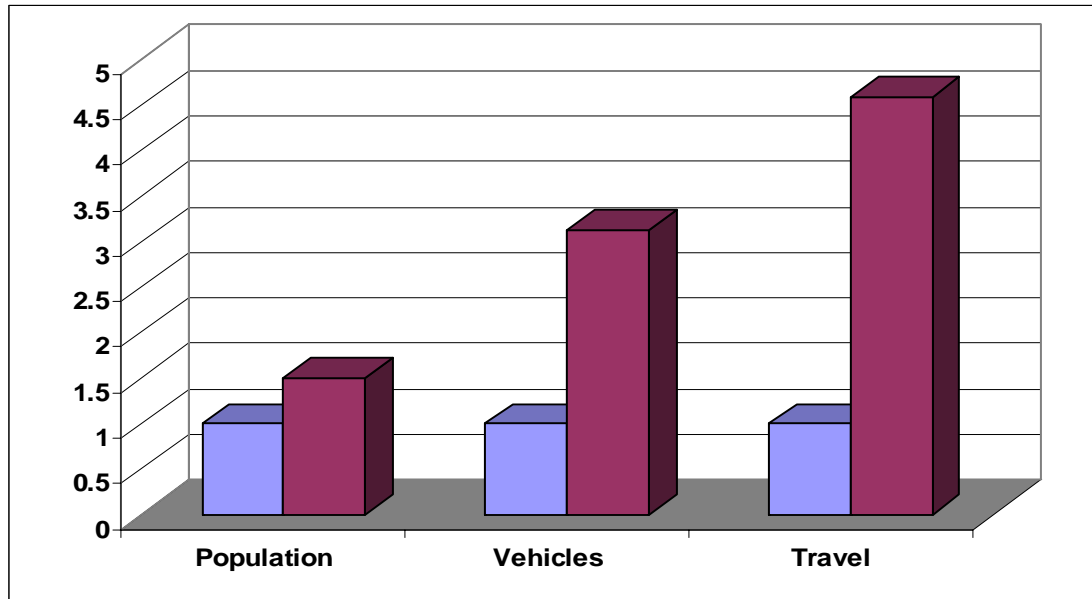
The most recent sections of Arkansas' Interstate system opened to traffic were Interstate 540 from State Highway 282 to the Fayetteville Bypass and Interstate 530 around Pine Bluff, both of which opened in 1999.³

Trends in Interstate Travel and Capacity

Eight Interstate routes (including three-digit routes) serve the state, consisting of 655 miles. These routes include Interstate 40, running the length of the state, from the Tennessee line, near Memphis, through the Little Rock area and west to Fort Smith and the Oklahoma border; Interstate 30, which travels from the Texas border, northeast to Little Rock; Interstate 55, which runs through a portion of Northeast Arkansas from the Tennessee line near Memphis to Eastern Missouri; Interstate 530, which travels south from Little Rock to Pine Bluff; and Interstate 540, which travels north from Fort Smith to Northwest Arkansas.

Since the beginning of the Interstate era 50 years ago, Arkansas has seen enormous increases in population, the number of motor vehicles and the amount of vehicle travel. From 1956 to 2004 (the latest year that data is available), the State's population increased by 50 percent from approximately 1.8 million to 2.8 million. During that same time, the number of motor vehicles increased by 215 percent from approximately 609,000 to 1.9 million and vehicle travel in Arkansas increased by 359 percent, from approximately 6.9 billion miles driven annually to 32 billion miles driven annually.⁴

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



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

Traffic Congestion on Arkansas' 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.

The Interstate Highway System remains the most critical component of Arkansas' transportation system. While Interstate highways account for only two (2) percent of all lane miles of roads in the State, they carry 26 percent of all travel in the State.⁵

Travel on Arkansas' Interstate highways continues to grow at a significant rate, although there has been very little expansion of the system in recent years. From 1990 to 2004, vehicle travel on the State's Interstates increased by 90 percent, from 4.2 billion

miles driven annually to 8 billion miles driven annually.⁶ Yet during the same 1990 to 2004 period, total lanes miles on Arkansas' Interstate system increased by twenty percent, from 2,262 lane miles to 2,718 lane miles.⁷ The result of this substantial increase in travel on the State's Interstate system with significantly less increase in Interstate lane mileage is that these highways are now carrying significantly more traffic than in the past. In fact, the average annual amount of travel per Interstate lane-mile in Arkansas increased by 58 percent from 1990 to 2004.⁸

This increase in traffic on Arkansas' Interstate highways has resulted in a marked increase in traffic congestion levels. One half – 50 percent – of Arkansas's urban Interstates are considered congested because they carry traffic levels that result in significant delays during peak travel hours (94 of 187 lane miles of urban Interstate).⁹ Traffic congestion is even beginning to occur on Arkansas' rural Interstates. Approximately one-third – 36 percent -- of Arkansas' rural Interstates are rated as congested (170 of 467 lane miles of rural Interstate).¹⁰ 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 a highway's design capacity they are 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.

Freight Shipment by Large Trucks on Arkansas' Interstate Highways

Every year, \$92 billion in goods are shipped from sites in Arkansas and another \$78 billion in goods are shipped to sites in Arkansas, mostly by trucks.¹¹ Eighty-five percent of the goods shipped annually from sites in Arkansas are carried by trucks and another four percent are carried by courier services, which use trucks for part of their deliveries.¹² Similarly, 84 percent of the goods shipped to sites in Arkansas are carried by trucks and another eight percent are carried by courier services, which use trucks for part of their deliveries.¹³

The State's Interstate system is the most critical set of highways for goods shipment. Arkansas' Interstate Highway System carries 58 percent of all large commercial truck travel in the State.¹⁴ In 2004, travel by large commercial trucks accounted for 19 percent of all miles traveled on Arkansas' Interstate system.¹⁵

Traffic Safety on Arkansas' Interstate Highways

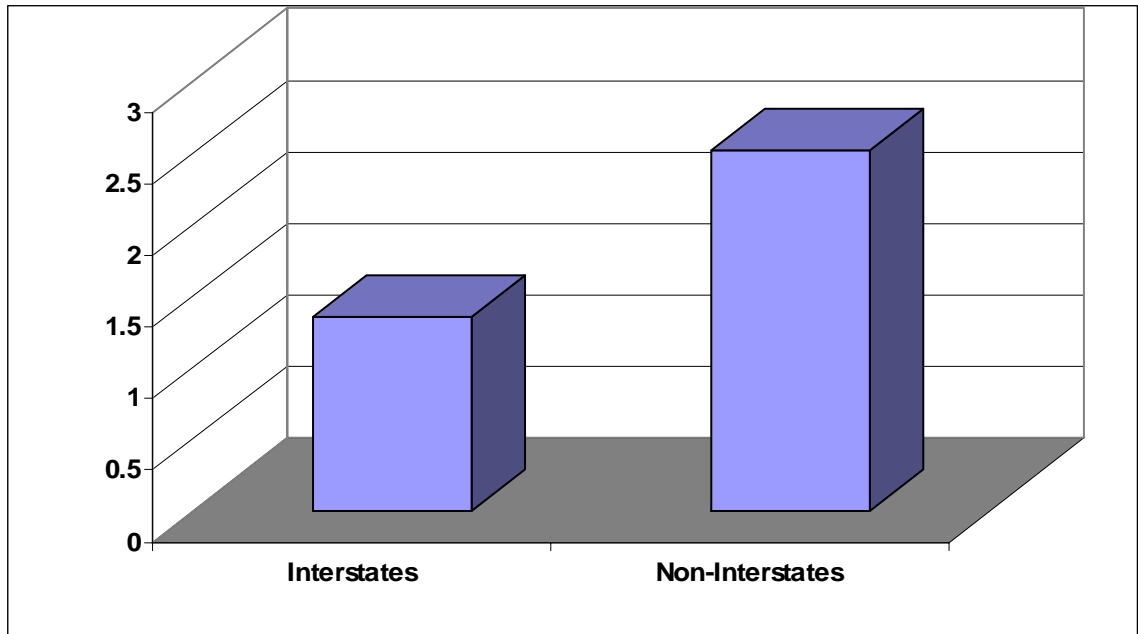
Perhaps the most significant benefit of the Interstate system is that it has greatly improved traffic safety in Arkansas and throughout the U.S. by providing travelers with a network of highways with a variety of safety designs that significantly reduce the likelihood of serious accidents.

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 Arkansas' Interstate highways is more than twice as safe as travel on all other roads and highways in the state. The traffic fatality rate per 100 million vehicle miles of travel on Arkansas' Interstate highways was 1.33 in 2004, the latest year for which data is available. The fatality rate per 100 million vehicle miles of travel in 2004 on Arkansas's non-Interstate routes was 2.85 – more than double the rate on the state's Interstates.

Chart 2. Fatality rate per 100 Million Vehicle Miles of Travel for Arkansas's Interstate and Non-Interstate roadways, 2004



Source: TRIP analysis of FHWA data

Arkansas' Interstate Highway System, which carried 25 percent of the State's travel in 2004, accounted for only 15 percent of the State's fatalities as a result of its superior traffic safety features. There were 107 traffic fatalities on Arkansas's Interstate

highways in 2004 – 15 percent of the 721 traffic fatalities that occurred in Arkansas in 2004.¹⁶

Pavement Conditions of Arkansas' 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 as long as possible. The pavement condition of a state's major roads is 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.¹⁷

In 2004 (the latest year for which data is available), Arkansas' Interstate highways had five percent of its pavements rated in poor condition and nine percent of its Interstate highways with pavements rated in mediocre condition.¹⁸ 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 Arkansas, 14 percent of Interstate pavements are rated in fair condition and the remaining 72 percent of Interstate pavements are rated in good condition.¹⁹

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.²⁰

Bridge Conditions of Arkansas' Interstate Highways

Of the 800 bridges on Arkansas' Interstate highways, one percent are rated as structurally deficient and nine percent are rated as functionally obsolete.²¹

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 the State's Interstate bridges are generally in good condition, a large number of these bridges are reaching an age when they will require significant repairs and in some cases replacement. The average lifespan of a bridge is 50 years.²² Older bridges often need significant repairs or rehabilitation or may need to be replaced to continue to provide adequate service. The average age of Arkansas' Interstate bridges is 32 years.²³

Benefits of Arkansas' Interstate System

The construction of Arkansas' 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 increased safety, expanded lifestyle choices and an enhanced economic standard of living.

By greatly increasing the number of areas that are within a reasonable driving distance, the Interstate system has significantly 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 Arkansas and many U.S. and international sites has provided lower costs and greater selection to consumers, while opening up new markets to Arkansas 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 2002.²⁴

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 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.²⁵

Interstate Benefits for Individuals in Arkansas

TRIP has calculated the annual financial benefit per person and statewide in Arkansas, based on the value of improved traffic safety, reduced travel time, reduced fuel use and lower consumer costs.

Safety:

Because it carries significant volumes of traffic on roadways with higher safety standards and lower traffic fatality rates, the Interstate saves numerous lives annually. In fact, TRIP estimates that Interstate highways in Arkansas have saved approximately 70 lives per year over the last 10 years.²⁶ Since 1956, TRIP estimates that Interstate highways have saved approximately 2,600 lives in Arkansas.²⁷ This estimate is based on a comparison of the annual fatality rate on Arkansas' 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 Arkansas' 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 Arkansas' Interstates saves the State approximately \$329 million annually in reduced economic costs as a result of the reduction in fatal or serious traffic accidents, saving \$120 per person annually.²⁸ 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 saves 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 Arkansas 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 Arkansas 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 in 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 in Arkansas currently being carried by the State's Interstate system.

TRIP found that without Interstate highways, Arkansas residents would spend an additional 92 million hours annually traveling in vehicles, or 33 hours per person per year.²⁹ TRIP also determined that without Interstate highways, Arkansas motorists would use an additional 44 million gallons of motor fuel annually.³⁰ The total value of the time and motor fuel that is saved annually in Arkansas by the Interstate Highway System is \$535 per person (\$495 in time and \$40 in fuel).³¹

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 provided 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 Arkansas, TRIP has gathered data on average consumer expenditures in the state and has estimated the impact of the Interstate Highway System on these costs.

³²Based 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 apparel, food, housing and transportation.³³ 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 Arkansas 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 Arkansas resident saves \$974 per year in reduced consumer costs as a result of the Interstate Highway System. The following chart indicates the annual saving per Arkansas resident for apparel, food, housing and transportation costs as a result of the Interstate Highway System. The total annual statewide savings in Arkansas in reduced consumer costs as a result of the Interstate Highway System is estimated to be approximately \$2.7 billion.

Chart 3. Annual, per person savings in Arkansas, as a result of the Interstate Highway System.

	Annual savings
Apparel	\$35
Food	\$128
Housing	\$498
Transportation	\$313
Total	\$974

Source: TRIP

The Interstate Highway System provides tremendous benefits every year to the people of Arkansas. The total annual benefit per person in Arkansas of the Interstate system is \$1,692 as a result of reduced safety costs, saved time and fuel and reduced consumer expenses. The total statewide benefit in Arkansas of the Interstate Highway System is approximately \$4.5 billion per year. The following chart shows the combined annual benefit of the Interstate system per person and statewide in Arkansas.

Chart 4. Total Annual Interstate Benefit Per Person and statewide in Arkansas

	Per Person	Statewide (millions)
Safety	\$120	\$329
Time and Fuel	\$535	\$1,473
Reduced Consumer Costs	\$974	\$2,682
Total	\$1,629	\$4,484

Source: TRIP

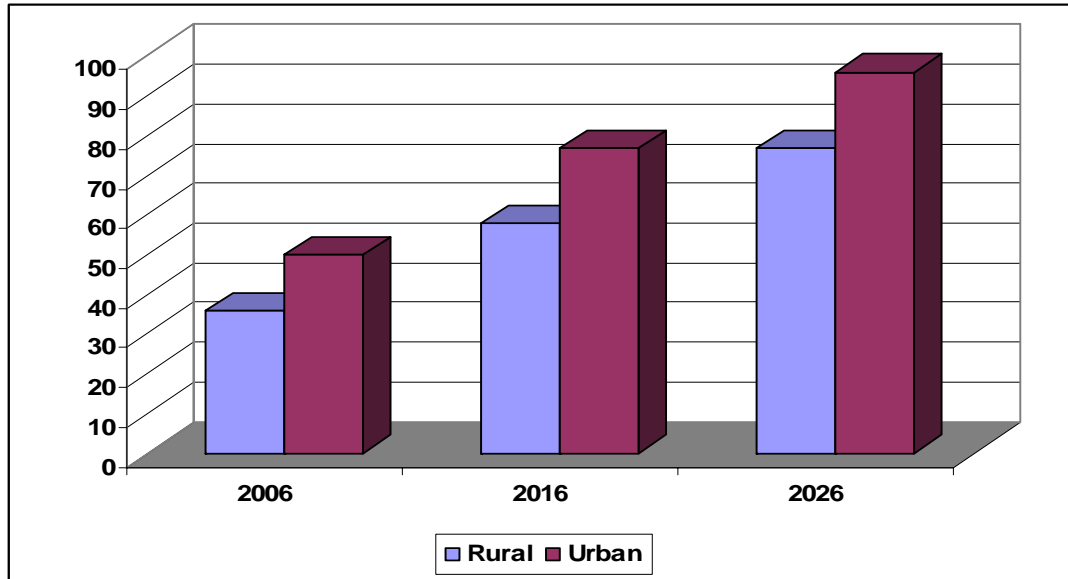
Meeting Arkansas' Future Interstate Travel Needs

Arkansas faces a significant challenge in maintaining and rebuilding its aging Interstate Highway System and providing additional lane capacity to meet growing travel demand. TRIP estimates that travel on Arkansas' Interstate highways is expected to increase by 40 percent by the year 2026.

The Arkansas State Highway and Transportation Department found that by 2026, 42 percent of the State's Interstate Highway System will be in need of significant rehabilitation or reconstruction to provide a smooth pavement surface (276 of 655 miles).³⁴

Arkansas must also expand key sections of its urban and rural Interstate highways to relieve traffic congestion and maintain reliable goods movement. The state transportation department reports that by 2026, 96 percent of urban Interstate highways and 77 percent of rural Interstate highways will be congested unless additional highway capacity is constructed.³⁵

Chart 5. Share of Arkansas' Rural and Urban Interstates that are Congested and Will be Congested Unless Additional Capacity is Built



Source: TRIP analysis of Arkansas State Highway and Transportation Department data

The Arkansas State Highway and Transportation Department forecasts that it needs to add additional lanes along 186 miles of its existing 655-mile Interstate system by the year 2026, in order to relieve growing traffic congestion.³⁶ The need to add additional Interstate highway lanes exists along portions of Interstates 30, 40, 55, 530 540 and 630.³⁷

Arkansas also will need to build its portion of Interstate 69 in the Southeastern part of the state, which will run diagonally from the Louisiana border to the Mississippi border. Interstate 69 is currently being planned and built as a new Interstate highway stretching from the Canadian border in Michigan to the Mexican border in Texas. Similarly, Arkansas will also need to construct 183 miles of Interstate 49 in the Western part of the State from Missouri to Louisiana. This is part of the larger Interstate 49 corridor between Kansas City, Missouri and Shreveport, Louisiana.

The total cost of needed repairs and expansion of Arkansas' Interstate highways over the next 20 years is \$4.4 billion.³⁸ The cost of needed Interstate repairs over the next 20 years is \$1 billion and the cost of needed Interstate expansion over the next 20 years is \$3.4 billion.

Conclusion

Fifty years after construction of the Interstate Highway System began, Arkansas and all of the U.S. continues to reap tremendous benefits from the nation's most critical transportation network. Arkansas' Interstate system has saved approximately 2,600 lives since its inception in 1956 and today it continues to save Arkansas residents time, lives and money while playing a critical role in supporting economic growth and 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 improved the efficiency of Arkansas' businesses and is integral to the functioning of the State's economy.

Prior to the approval to the funding 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, Arkansas faces similar challenges, with growing traffic congestion, increasing car and truck travel and aging road surfaces and bridges that will soon need significant repairs and rehabilitation.

As Arkansas' 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 21st Century Interstate Highway System that will continue to enhance the quality of life of today's and future residents of Arkansas.

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- ¹ Arkansas State Highway and Transportation Department, 2006. Response to TRIP survey.
- ² TRIP analysis of Federal Highway Administration data. See HM-60 in 1986 and 2004 Highway Statistics.
- ³ Arkansas State Highway and Transportation Department, 2006. Response to TRIP survey
- ⁴ 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.
- ⁵ TRIP analysis of Highway Statistics, 2004, Federal Highway Administration. Data is from charts VM-2 and HM-20.
- ⁶ TRIP analysis of 1990 and 2004 Federal Highway Administration data. See chart VM-2 in Highway Statistics 1990 and Highway Statistics 2004.
- ⁷ TRIP analysis of 1990 and 2004 Highway Statistics, Federal Highway Administration. See charts HM-60 and VM-2.
- ⁸ Ibid.
- ⁹ Arkansas State Highway and Transportation Department, 2006. Response to TRIP survey
- ¹⁰ Ibid.
- ¹¹ Bureau of Transportation Statistics, U.S. Department of Transportation. 2002 Commodity Flow Survey, State Summaries. State Table 13.
- ¹² Ibid.
- ¹³ Ibid. State Table 15.
- ¹⁴ Arkansas State Highway and Transportation Department, 2006. Response to TRIP survey
- ¹⁵ Ibid.
- ¹⁶ Highway Statistics 2004, Federal Highway Administration. Charts FI-10, VM-2.
- ¹⁷ Ibid.
- ¹⁸ TRIP analysis of 2004 Federal Highway Administration data. See charts HM-63 and HM-64 in Highway Statistics 2004.
- ¹⁹ Ibid.
- ²⁰ Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
- ²¹ Federal Highway Administration, 2005. National Bridge Inventory data.
- ²² Commonwealth of Pennsylvania. 2005-06 Governor's Executive Budget.
- ²³ Arkansas State Highway and Transportation Department, 2006. Response to TRIP survey
- ²⁴ TRIP analysis of Federal Highway Administration data. See 2004 Federal Highway Statistics, charts HM-60 and VM-2.
- ²⁵ Ibid. P. 7.
- ²⁶ Estimate is based on TRIP's analysis of FHWA data for 1997 through 2004. TRIP estimated safety benefits for 2005 and 2006, based on travel and traffic safety data for the 2000 to 2004 period. TRIP assumed that in the absence of Interstate highways, travel would occur on other federal-aid highways. The number of lives saved was based on calculating fatalities for Interstate travel, if it had occurred on other federal-aid routes in Arkansas.
- ²⁷ 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."
- ²⁸ TRIP analysis of National Highway Traffic Safety Administration and Federal Highway Administration data.
- ²⁹ TRIP analysis of 2004 Federal Highway data, using speed factors from the 2005 Urban Mobility Report, which is published by the Texas Transportation Institute.
- ³⁰ Ibid.
- ³¹ The value of time is based on estimates by the Texas Transportation Institute. The price of motor fuel used for this calculation is \$2.50 per gallon.
- ³²
- ³³ 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.
- ³⁴ Arkansas State Highway and Transportation Department, 2006. Response to TRIP survey.

³⁵ Ibid.

³⁶ Ibid.

³⁷ Ibid.

³⁸ Ibid.