

RESTORING MISSOURI'S INTERSTATE HIGHWAY SYSTEM:

Meeting Missouri's Transportation Needs with a Reliable,
Safe & Well-Maintained National Highway Network



TRIP | A National
Transportation
Research
Nonprofit

AUGUST 2021

Founded in 1971, [TRIP](#)® of Washington, DC, is a nonprofit organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

EXECUTIVE SUMMARY

At sixty-five years old, Missouri's 1,380-mile Interstate Highway System remains the workhorse of the state's surface transportation network: heavily traveled and providing the most important link in the supply chain, and the primary connection between and within urban communities. The importance of the Interstate Highway System and the reliable movement of goods it provides has been heightened during the response to the COVID-19 pandemic. But many Interstate highways are wearing out and showing signs of their advanced age, often heavily congested, and in need of significant reconstruction, modernization and expansion.

In 2015, as part of the Fixing America's Surface Transportation (FAST) Act, the U.S. Congress asked the [Transportation Research Board](#) (TRB), a division of the National Academy of Sciences, Engineering and Medicine, to conduct a study to determine actions needed to upgrade and restore the Interstate Highway System to fulfill its role of safely and efficiently meeting the nation's future critical personal, commercial and military travel needs. In 2019, the TRB provided Congress with a [report](#) that found that the nation's Interstates are heavily congested and aging, with large portions of the system in need of major reconstruction and modernization. The report found that addressing the needs of the Interstate Highway System will require more than a doubling of current investment to adequately improve the system's condition, reliability and safety, and that the restoration of the nation's Interstate Highway System should be based on strong federal leadership of a collaborative effort with the states.

TRIP's *Restoring Missouri's Interstate Highway System* report provides the latest information on the state's Interstate system, including pavement conditions, bridge conditions, travel trends, traffic congestion levels, truck use, and traffic safety. It reviews the findings of the TRB Interstate report and concludes with recommended actions - based on the findings of the TRB report - to ensure that the system is able to meet the nation's transportation needs.

MISSOURI INTERSTATE HISTORY

The need for a transcontinental highway system in the U.S. was recognized as early as 1919, and an initial Interstate plan was completed in the late 1930s. But, it was not until Congress approved a suitable funding mechanism in 1956 that the Interstate Highway System became a reality.

- In 1919, Lieutenant Dwight D. Eisenhower participated in the U.S. Army's first transcontinental motor convoy, from Washington, DC, to San Francisco, California. The trip took 62 days, largely due to inadequate roads and highways.
- In 1954, President Eisenhower appointed a committee to draft a proposal to fund a national system of Interstate Highways. The initial proposal, subsequently dismissed by Congress, called for financing a national Interstate system through bond financing.
- Nationwide construction of the Interstate Highway System began in 1956 following the approval of the Federal-Aid Highway Act of 1956. Some segments of urban and regional highways built prior to 1956 were later incorporated into the Interstate Highway System.

- The first construction contracts awarded under the provisions of the 1956 Interstate legislation were in Missouri in August of 1956, for portions of Interstate 44 in Laclede County and a portion of Interstate 70 in St. Charles County.
- The majority of the nation's Interstate system was completed by 1986, when 92 percent of the Interstate system's current length and 86 percent of lane miles were complete. By 1996, 98 percent of the Interstate system's current length and 96 percent of lane miles were complete.
- 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. The Act called for the Interstates to be paid for by taxes on motorists, such as the federal motor fuel tax, with the federal government paying 90 percent of the initial construction costs.
- The federal motor fuel tax was set at three cents-per-gallon in 1956. Last increased in 1993, the tax is currently 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, pedestrian and bicycling facilities.

MISSOURI'S INTERSTATE ROAD AND BRIDGE CONDITIONS

Pavements and bridges on Missouri's Interstate system are showing deterioration and signs of their advancing age. As the aging Interstate system's foundations continue to deteriorate, most Interstate highways, bridges and interchanges will need to be rebuilt or replaced.

- Five percent of Missouri's Interstate bridges are rated in poor/structurally deficient condition, the tenth highest rate in the nation. A bridge is rated in poor/structurally deficient condition if there is significant deterioration of the bridge deck, supports or other major components. Seventy-one percent of the state's Interstate bridges are rated in fair condition and the remaining 25 percent are in good condition.
- The chart below shows the top 20 states with the greatest share of Interstate bridges in poor/structurally deficient condition.

RANK	STATE	INTERSTATE BRIDGES POOR/STRUCTURALLY DEFICIENT
1	West Virginia	13%
2	Rhode Island	12%
3	Illinois	8%
4	Massachusetts	7%
5	New York	6%
6	Michigan	6%
7	Colorado	5%
8	Maine	5%
9	Washington	5%
10	Missouri	5%
11	Idaho	4%
12	Pennsylvania	4%
13	Wyoming	3%
14	Montana	3%
15	Louisiana	3%
16	California	3%
17	Connecticut	3%
18	New Mexico	3%
19	New Jersey	3%
20	North Carolina	3%

- The intended lifespan of many of the nation’s Interstate bridges at the time of their construction is 50 years, though newer bridges are often built with longer-lasting materials and techniques that allow for a longer intended lifespan. Older bridges often need significant repairs or rehabilitation or may need to be replaced to continue to provide adequate service.
- The average age of Missouri’s Interstate bridges is 46 years. Fifty-six percent of the state’s Interstate bridges are at least 50 years old.
- One percent of Missouri’s Interstates have pavement in poor condition, lower than the national average of three percent. Four percent of Missouri’s Interstate pavements are rated in mediocre condition, five percent are in fair condition and the remaining 89 percent are in good condition.

MISSOURI INTERSTATE USE AND CONGESTION

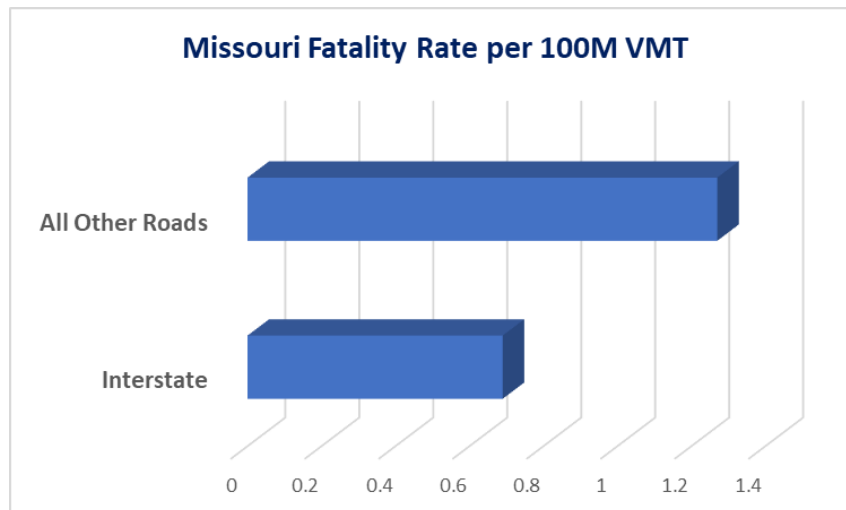
Missouri's Interstate Highway System is among the most critical links in the state's transportation system and a vital part of Missouri's transportation network. Traffic congestion is increasing on Missouri's Interstate Highway System as the amount of vehicle travel far outstrips the capacity added to the system. Nearly half of the length of Missouri's urban Interstates is congested.

- While Missouri's Interstate Highway System accounts for two percent of all roadway lane miles in the state, it carries 27 percent of the state's vehicle travel – 21.5 million vehicle miles of travel annually.
- Due to the COVID-19 pandemic, vehicle travel on Missouri's roads dropped by as much as 38 percent in April 2020 (as compared to vehicle travel during the same month the previous year) but rebounded to three percent above May 2019 (the previous pre-COVID-19 May) levels by May 2021.
- Since 1956 when funding of the Interstate system was approved, the number of vehicles in Missouri increased more than three and a half times, from approximately 1.5 million vehicles to 5.5 million vehicles. Missouri's population increased by 47 percent, from approximately 4.2 million to 6.1 million during this time.
- Forty-seven percent of Missouri's urban Interstate highways are considered congested because they carry traffic levels that result in significant delays during peak travel hours. Missouri's urban Interstates carry 12,607 vehicles per urban lane mile daily.

INTERSTATE FATALITY RATES AND SAFETY

Missouri's Interstate Highway System provides a network of highways with a variety of safety designs that greatly reduce the likelihood of serious crashes. Travel on the state's Interstate highways is nearly twice as safe as travel on all other roadways in the state.

- Missouri's Interstate Highway System, which carried 27 percent of the state's travel in 2019, accounted for only 17 percent of the state's traffic fatalities as a result of superior safety features.
- 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, paved shoulders, median barriers, and rumble strips to warn drivers when they are leaving the roadway.
- Travel on Missouri's Interstate highways is nearly twice as safe as travel on all other roadways in the state. The fatality rate per 100 million vehicle miles of travel on Missouri's Interstate system in 2019 was 0.69 compared to 1.27 on Missouri's non-Interstate routes.



- TRIP estimates that Missouri’s Interstate Highway System saved 137 lives in 2019, based on an estimate of the number of additional fatalities that would have occurred had Interstate traffic been carried by other major roadways, which often have higher traffic fatality rates and may lack the safety features common to Interstate routes.

INTERSTATE TRAVEL AND ECONOMIC GROWTH

Missouri’s Interstate Highway System is the backbone of the state’s economy and has played a critical role in improving business productivity.

- Travel by combination trucks, which are the large trucks that carry the majority of freight shipped in the U.S., accounted for 17 percent of all vehicle miles of travel on Missouri’s Interstate Highway System in 2019, the ninth highest rate in the nation. The chart below shows the top 20 states with the highest rate of vehicle travel by large trucks on their Interstate system.

RANK	STATE	Percent Interstate Vehicle Travel by Combination Trucks
1	Wyoming	30%
2	Arkansas	28%
3	Indiana	23%
4	Nebraska	22%
5	Iowa	19%
6	South Dakota	18%
7	North Dakota	18%
8	Montana	17%
9	Missouri	17%
10	West Virginia	17%
11	Illinois	17%
12	Mississippi	17%
13	Kentucky	17%
14	Maine	16%
15	Kansas	16%
16	Tennessee	16%
17	Oregon	16%
18	Idaho	15%
19	Oklahoma	15%
20	Alabama	14%

- Every year, \$481 billion in goods are shipped to and from sites in Missouri, primarily by truck. Sixty-seven percent of the goods shipped annually from sites in Missouri are carried by trucks and another five percent are carried by courier services, which use trucks for part of the deliveries.
- 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. 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 eight percent in 2018.
- The TRB report found that U.S. counties either on an Interstate highway or within 20 miles of an Interstate are anticipated to grow in population through 2060 at a rate approximately seven times greater than counties that are at least 20 miles from an Interstate highway (36 percent versus five percent).
- The Interstate Highway System has reduced travel times between destinations throughout the U.S. The improved mobility provided by the Interstate Highway System has given Americans greater choices about where they live, work, shop and spend their leisure time.

- Missouri is home to the eighth worst truck bottleneck in the US, as identified by the American Transportation Research Institute (ATRI) in its 2021 [annual list](#) of the nation’s top 100 truck bottlenecks. The 54th worst bottleneck identified by the report is also in Kanas City: I-70 at I-670 and US 71.
- The top 20 truck bottlenecks in the U.S. are listed below.

RANK	STATE	Top Bottlenecks
1	NJ	Fort Lee, NJ I-95 at SR 4
2	OH	Cincinnati, OH I-71 at I-75
3	GA	Atlanta, GA I-285 at I-85 (North)
4	GA	Atlanta, GA I-20 at I-285 (West)
5	TX	Houston, TX I-45 at I-69/US 59
6	IL	Chicago, IL I-290 at I-90/I-94
7	TN	Chattanooga, TN I-75 at I-24
8	MO	St. Louis, MO I-64/I-55 at I-44
9	NY	Rye, NY I-95 at I-287
10	CA	San Bernardino, CA I-10 at I-15
11	CA	Los Angeles, CA SR 60 at SR 57
12	TX	Dallas, TX I-45 at I-30
13	TN	Nashville, TN I-24/I-40 at I-440 (East)
14	NY	Brooklyn, NY I-278 at Belt Parkway
15	TX	Austin, TX I-35
16	GA	Atlanta, GA I-75 at I-285 (North)
17	TX	Houston, TX I-45 at I-610 (North)
18	LA	Baton Rouge, LA I-10 at I-110
19	IL	Chicago, IL I-90 at I-94 (South)
20	CO	Denver, CO I-70 at I-25

INTERSTATE FUNDING CHALLENGES

The U.S. Department of Transportation (USDOT) has determined that the nation faces a significant backlog in needed Interstate highway repairs and improvements.

- The current backlog of needed improvements on the nation’s Interstate Highway System is estimated by the USDOT to be \$123 billion.
- The backlog on the nation’s Interstate Highway System includes \$54 billion needed to improve pavement conditions, \$37 billion to improve bridges and \$33 billion for needed system expansion and enhancement.
- The July 2021 legislative approval of [SB 262](#), which was subsequently signed into law by Governor Parson, provides a critical first step towards addressing the underfunding of Missouri’s Interstate Highway System and is expected to provide an additional \$450 million annually once fully implemented.

The primary source of revenue for the Interstate Highway System is the federal surface transportation program, which was set to expire on September 30, 2020 and extended by one year by Congress to September 30, 2021. The program does not have a long-term and sustainable revenue source.

- Signed into law in December 2015, the [Fixing America’s Surface Transportation \(FAST Act\)](#), provides modest increases in federal highway and transit spending. The bill also provides states with greater funding certainty and streamlines the federal project approval process. But, the FAST Act does not provide adequate funding to meet the nation’s need for highway and transit improvements and does not include a long-term and sustainable funding source.
- 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 and other surface transportation improvements, including public transit, pedestrian and bicycling facilities.

RECOMMENDATIONS FOR RESTORING THE INTERSTATE HIGHWAY SYSTEM

Restoring and upgrading the Interstate Highway System to meet 21st Century transportation needs will require strong federal leadership and a robust federal-state partnership to reestablish the Interstate Highway System as the nation’s premier transportation network. The TRB Interstate report notes that “the scale and scope of the Interstate reinvestment imperative is daunting.”

- The following recommendations, based on the findings and recommendations of the TRB Interstate report, provide a roadmap for the restoration of the Interstate Highway System:
 - Reconstruct the nation’s Interstate Highway System, including pavements, bridges and interchanges
 - Improve safety features on Interstate highways
 - Right-size the Interstate Highway System by:
 - ✓ upgrading some existing roadways to Interstate standard
 - ✓ adding needed additional highway capacity on existing routes to maintain and improve mobility
 - ✓ adding additional corridors to accommodate demographic and economic growth
 - ✓ modifying some urban segments to maintain connectivity while remediating economic and social disruption

All data used in this report is the most current available. Sources of information for this report include: The Federal Highway Administration (FHWA), the Missouri Department of Transportation (MoDOT), the National Highway Traffic Safety Administration (NHTSA), the Transportation Research Board (TRB), and the U.S. Census Bureau. Cover photo credit: Bill Burmaster.

Introduction

The Dwight D. Eisenhower National System of Interstate and Defense Highways, built at a cost of \$114 billion (\$209 billion in current dollars), has been called the most ambitious public works project built since the age of the Roman Empire, and is the backbone of America's economy and the most critical element of the nation's transportation system. Today, Missouri's Interstate Highway System - which includes seven Interstate highways, not including three-digit urban portions - continues to provide economic growth, improved traffic safety and convenient access.

Following President Eisenhower's signing of the Federal-Aid Highway Act of 1956 on June 29, 1956, the nation moved quickly to orient its highway program toward the enormous task of planning and constructing the nation's eventual 48,482-mile Interstate system.

The first construction contracts awarded under the provisions of the 1956 Interstate legislation were in Missouri in August of 1956, for portions of Interstate 44 in Laclede County and a portion of Interstate 70 in St. Charles County.¹



The majority of the nation's Interstate system was completed by 1986, when 92 percent of the Interstate system's current length and 86 percent of lane miles were complete. By 1996, 98 percent of the Interstate system's current length and 96 percent of lane miles were complete.²

Concerned that the condition, reliability and safety of the nation's preeminent transportation system is declining, Congress, in 2015, as part of the legislation authorizing the five-year Fixing

America's Surface Transportation Act ([FAST-Act](#)), required that a comprehensive report be prepared on the Interstate Highway System. The U.S. Congress asked the [Transportation Research Board](#) (TRB), a division of the National Academy of Sciences, Engineering and Medicine, to develop the report, which was to include an examination of the condition of the Interstate Highway System and provide recommendations on actions necessary to restore and upgrade the system to meet the transportation needs of the 21st Century. The findings of TRB's report, "[Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future](#)," confirmed Congress' fears for the nation's Interstate highways.

"The Interstate Highway System's physical condition and operating performance continue to exhibit deficiencies, and much of the Interstate System is already past due for major reconstruction and modernization as a result of heavy use and the effects of age, exacerbated by escalating use and deferred reinvestment," notes the report.³ "These aging and intensely used segments, whose numbers are expected to grow over the next 20 years, are poorly positioned to accommodate even modest projections of future traffic growth, much less the levels of growth actually experienced over the past 50 years."⁴

This report looks at Missouri's, and the nation's, Interstate Highway System, its current use and condition, and the future needs of Missouri's most critical transportation network. It concludes with a set of recommendations based on the findings of the TRB report to restore, renew and upgrade the nation's Interstate Highway System.

Trends in Missouri Interstate Travel and Capacity

Since the beginning of the Interstate era 65 years ago, Missouri and the nation have seen enormous increases in population, motor vehicles and vehicle travel. From 1956 to 2020, the nation's population increased by 96 percent, from 168 million to 329 million.⁵ From 1956 to 2019, the number of motor vehicles increased by 324 percent, from 65 million to 276 million⁶, and vehicle travel increased by 427 percent, from 626 billion miles driven annually to approximately 3.3 trillion.⁷

Since funding of the Interstate system was approved in 1956 to 2019, the number of vehicles in Missouri increased more than three and a half times, from approximately 1.5 million vehicles to 5.5 million vehicles.⁸ Missouri's population increased by 47 percent, from 4.2 million to 6.1 million during this time.⁹

Missouri’s Interstate Highway System remains the most critical component of the state’s surface transportation network. Missouri’s Interstate highways account for two percent of all lane miles of roads in the state and carry 27 percent of the state’s vehicle travel – a total of 21.5 million vehicle miles of travel annually.¹⁰

Due to the COVID-19 pandemic, vehicle travel on Missouri’s roads dropped by as much as 38 percent in April 2020 (as compared to vehicle travel during the same month the previous year) but rebounded to three percent above May 2019 (the previous pre-COVID-19 May) levels by May 2021.¹¹

Missouri Interstate Bridge Conditions

Of the 1,381 bridges on Missouri’s Interstate system, five percent are rated in poor/structurally deficient condition – the tenth highest rate in the nation.¹² Seventy-one percent are rated in fair condition and the remaining 25 percent are in good condition.¹³ The chart below shows the top 20 states with the greatest share of their Interstate bridges in poor/structurally deficient condition.

Chart 1. Top 20 states with highest share of poor/structurally deficient Interstate bridges.

RANK	STATE	INTERSTATE BRIDGES POOR/STRUCTURALLY DEFICIENT
1	West Virginia	13%
2	Rhode Island	12%
3	Illinois	8%
4	Massachusetts	7%
5	New York	6%
6	Michigan	6%
7	Colorado	5%
8	Maine	5%
9	Washington	5%
10	Missouri	5%
11	Idaho	4%
12	Pennsylvania	4%
13	Wyoming	3%
14	Montana	3%
15	Louisiana	3%
16	California	3%
17	Connecticut	3%
18	New Mexico	3%
19	New Jersey	3%
20	North Carolina	3%

Source: Federal Highway Administration National Bridge Inventory, 2020.

Bridges that are rated poor/structurally deficient show significant signs of deterioration as a result of use and exposure. The FHWA defines a poor/structurally deficient bridge as one that requires immediate rehabilitation to remain open, is restricted to carrying lighter-weight vehicles, or is closed.

The intended lifespan of many of the nation's Interstate bridges at the time of their construction is 50 years, though newer bridges are often built with longer-lasting materials and techniques that allow for a longer intended lifespan. Older bridges often need significant repairs or rehabilitation or may need to be replaced to continue to provide adequate service. The average age of Missouri's Interstate bridges is 46 years.¹⁴ Fifty-six percent of the state's Interstate bridges are at least 50 years old.¹⁵

Pavement Conditions on Missouri'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 as long as possible. The pavement condition of major roads is evaluated and classified as being in poor, mediocre, fair or good condition. In 2019, pavement on one percent of Missouri's Interstate highways were rated in poor condition, lower than the national average of three percent.¹⁶

Four percent of Missouri's Interstate pavement was rated mediocre, five percent fair, and the remaining 89 percent was rated in good condition in 2019.¹⁷ Roads rated poor often have pavements that are cracked or broken. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed. 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.

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.¹⁸

The 2019 TRB Interstate report found that more than half a century of intensive use has taken a toll on the nation's Interstate system, and that most segments of the system need to be rebuilt from the subbase up. The report found that most of the nation's Interstate miles have been subject to age and wear with only periodic resurfacing, resulting in a significant backlog of needed reconstruction of the roadway's original underlying structure.¹⁹ The TRB report found that the repeated resurfacing of Interstate highways is not addressing the deterioration of subbases of the roadways and results in diminishing returns. This leads to shorter periods of serviceability between successive overlays and can produce higher life-cycle costs relative to full-depth periodic pavement reconstruction.²⁰

Traffic Congestion and Travel Volume on Missouri's Interstates

The nation's Interstate Highway System was initially designed to provide transportation between 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 between and often within urban areas.

Across the nation, the continued increase in Interstate highway travel, without a corresponding increase in capacity, has resulted in a surge in traffic congestion levels. Forty-seven percent of Missouri's urban Interstates are considered congested because they carry traffic levels that result in delays during peak travel hours.²¹

The vast majority of the most congested sections of freeways and expressways in Missouri are on the state's Interstate network. Missouri's urban Interstates carry 12,607 vehicles per urban lane mile daily.²²

Traffic Safety on Missouri's Interstate Highways

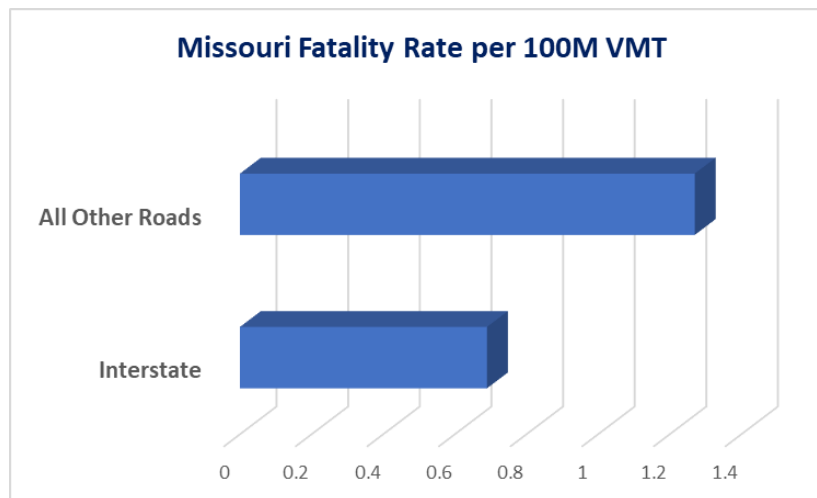
Perhaps the most significant benefit of the Interstate system is that it has greatly improved traffic safety throughout the nation by providing travelers with a network of highways with a variety of safety designs that significantly reduce the likelihood of serious accidents.

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 crashes 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 the nation’s Interstate highways is more than twice as safe as travel on all other roads and highways.

Missouri’s Interstate Highway System, which carried 27 percent of the state’s travel in 2019, accounted for only 17 percent of the state’s traffic fatalities as a result of superior safety features.²³ The traffic fatality rate per 100 million vehicle miles of travel on Missouri’s Interstate highways was 0.69 in 2019,²⁴ significantly lower than the 1.27 fatality rate on non-Interstate routes in the state.²⁵

Chart 2. Missouri Fatality Rate on Interstate and Non-Interstate Roads, 2019.



Source: TRIP analysis of FHWA data.

Lives Saved by Interstate Highway System

Because it carries significant volumes of traffic on roadways with higher safety standards and lower traffic fatality rates, the Interstate Highway System saves thousands of lives annually. TRIP estimates that Missouri’s Interstate Highway System saved 137 lives in 2019.²⁶ This estimate is based on a comparison of the annual fatality rate on the nation’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 each year if the travel that occurred on Interstate highways had instead been carried by other major roads, many of which often lack some of the safety features found on Interstate highways and have a significantly higher traffic fatality rate.

Freight Shipment by Large Trucks on the Interstates

Every year, \$481 billion in goods are shipped to and from sites in Missouri.²⁷ Sixty-seven percent of the goods shipped annually to and from sites in Missouri are carried by trucks and another five percent are carried by courier services, which use trucks for part of their deliveries.²⁸

Travel by combination trucks, which are the large trucks that carry the majority of freight shipped in the U.S., accounted for 17 percent of all vehicle miles of travel on Missouri’s Interstate Highway System in 2019, the ninth highest rate in the nation.²⁹ The chart below shows the top 20 states with the highest rate of vehicle travel by large trucks on their Interstate system.

Chart 3. Top 20 states with highest rate of vehicle travel by large trucks on their Interstate system.

RANK	STATE	Percent Interstate Vehicle Travel by Combination Trucks
1	Wyoming	30%
2	Arkansas	28%
3	Indiana	23%
4	Nebraska	22%
5	Iowa	19%
6	South Dakota	18%
7	North Dakota	18%
8	Montana	17%
9	Missouri	17%
10	West Virginia	17%
11	Illinois	17%
12	Mississippi	17%
13	Kentucky	17%
14	Maine	16%
15	Kansas	16%
16	Tennessee	16%
17	Oregon	16%
18	Idaho	15%
19	Oklahoma	15%
20	Alabama	14%

Source: TRIP analysis of Federal Highway Administration Data, 2019.

Missouri is home to the eighth worst truck bottleneck in the US, as identified by the American Transportation Research Institute (ATRI) in its 2021 [annual list](#) of the nation’s top 100 truck bottlenecks. The 54th worst bottleneck identified by the report is also in Kanas City: I-70 at I-670 and US 71. The top 20 truck bottlenecks are listed below.

Chart 4. Top 20 truck bottlenecks in the United States.

RANK	STATE	Top Bottlenecks
1	NJ	Fort Lee, NJ I-95 at SR 4
2	OH	Cincinnati, OH I-71 at I-75
3	GA	Atlanta, GA I-285 at I-85 (North)
4	GA	Atlanta, GA I-20 at I-285 (West)
5	TX	Houston, TX I-45 at I-69/US 59
6	IL	Chicago, IL I-290 at I-90/I-94
7	TN	Chattanooga, TN I-75 at I-24
8	MO	St. Louis, MO I-64/I-55 at I-44
9	NY	Rye, NY I-95 at I-287
10	CA	San Bernardino, CA I-10 at I-15
11	CA	Los Angeles, CA SR 60 at SR 57
12	TX	Dallas, TX I-45 at I-30
13	TN	Nashville, TN I-24/I-40 at I-440 (East)
14	NY	Brooklyn, NY I-278 at Belt Parkway
15	TX	Austin, TX I-35
16	GA	Atlanta, GA I-75 at I-285 (North)
17	TX	Houston, TX I-45 at I-610 (North)
18	LA	Baton Rouge, LA I-10 at I-110
19	IL	Chicago, IL I-90 at I-94 (South)
20	CO	Denver, CO I-70 at I-25

Source: American Transportation Research Institute, 2021.

Economic Benefits of the Interstate System

The construction of the Interstate Highway System has had a profound impact on the nation’s development, affecting the quality of life of Americans in numerous ways including increased safety, expanded lifestyle choices and an enhanced standard of living. By greatly increasing the number of areas that are within a reasonable driving distance, the Interstate system has significantly increased access to jobs, housing, recreation, healthcare, shopping and other amenities.

Similarly, the construction of the Interstate Highway 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 domestic and international sites has resulted in lower costs and greater selection to consumers, while opening up new markets to U.S. 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. 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 eight percent in 2018.³⁰

Interstate access has a significant impact on the competitiveness of a region's economy. Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient and more modern transportation system. Highway access has a significant impact on the competitiveness of a region's economy. Not surprisingly, highway accessibility was ranked the number two site selection factor in the 2021 [survey](#) of corporate executives by Area Development Magazine, behind only skilled labor.³¹

The TRB report found that U.S. counties either on an Interstate highway or within 20 miles of an Interstate are anticipated to grow in population through 2060 at a rate approximately seven times greater than counties that are at least 20 miles from an Interstate highway (36 percent versus five percent).³²

The 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, increased small package delivery, demand-side inventory management and e-commerce.

The result of these changes has been a significant improvement in logistics efficiency as businesses 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. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

Funding of the Interstate System

The primary source of revenue for the Interstate Highway System is the [Fixing America's Surface Transportation \(FAST Act\)](#), the nation's current federal surface transportation program, which was authorized in 2015 and was set to expire on September 30, 2020. Congress extended the

legislation for one year to September 30, 2021. The FAST Act provides modest increases in federal highway and transit spending. The bill also provides states with greater funding certainty and streamlines the federal project approval process. But, the FAST Act does not provide adequate funding to meet the nation’s need for highway and transit improvements and does not include a long-term and sustainable funding source.

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 and other surface transportation improvements, including public transit, pedestrian and bicycling facilities.

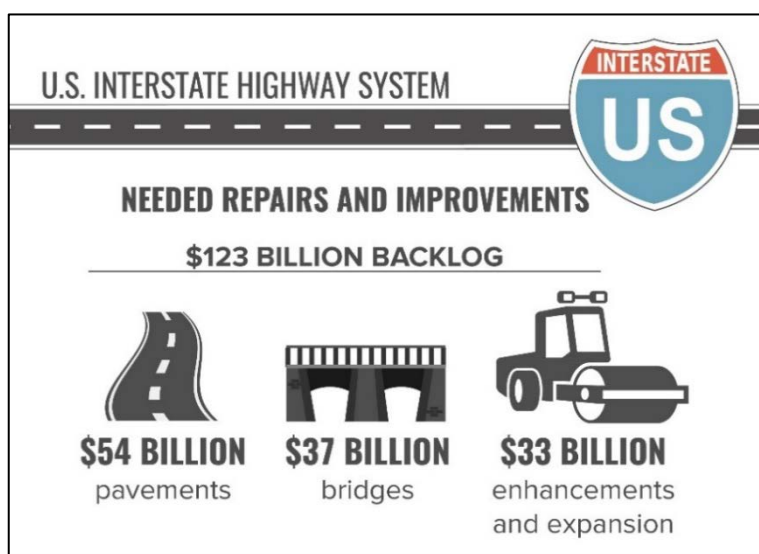
The July 2021 legislative approval of [SB 262](#), which was subsequently signed into law by Governor Parson, provides a critical first step towards addressing the underfunding of Missouri’s Interstate Highway System and is expected to provide an additional \$450 million annually once fully implemented.

Meeting Future Interstate Travel Needs

The U.S. faces a significant challenge in maintaining and rebuilding its aging Interstate Highway System and providing additional lane capacity to meet growing travel demand.

The most recent U.S. Department of Transportation (USDOT) analysis of the condition of the nation’s surface transportation system found that the nation faces a significant backlog in needed improvements to the Interstate Highway System.

The U.S. Department of Transportation, in its report, [Status of the Nation’s Highways, Bridges, and Transit, 23rd Edition](#), submitted to Congress in 2019, determined that the current backlog in needed improvements on the nation’s Interstate Highway System is estimated to be \$123 billion.³³ The backlog on the nation’s Interstate Highway System includes \$54 billion



needed to improve pavement conditions, \$37 billion to improve bridges and \$33 billion for needed system expansion and enhancement.³⁴

The TRB report evaluated future Interstate Highway System investment that will be necessary to: address the need to rebuild the majority of the system’s pavements and bridges; address current and future deterioration; improve traffic safety features and expand the capacity of the system to handle future traffic levels, particularly in urban areas; and, to connect growing urban areas that are not well connected to the Interstate system.

The TRB report estimated that approximately \$57 billion should be spent on Interstate Highway System renewal and modernization annually over the next 20 years, a 146 percent increase from the approximately \$23 billion spent on Interstate highways in 2018.³⁵



Because of the lack of analytical tools and adequate databases, the TRB needed funding estimate does not include the funding needed to reconfigure and reconstruct many of the Interstate system’s approximately 15,000 interchanges.³⁶

Recommendations for Restoring and Renewing the Interstate Highway System

Restoring and upgrading the Interstate Highway System to meet the nation’s 21st Century transportation needs will take significant resolve to reestablish the Interstate Highway System as the nation’s premier transportation network. The TRB Interstate report notes that “the scale and scope of the Interstate reinvestment imperative is daunting.”³⁷ The TRB report also noted that the renewal and restoration of the Interstate Highway System will require strong federal leadership and a robust partnership between the states and the federal government.³⁸

The following recommendations, based on the findings and recommendations of the TRB Interstate report, provide a roadmap for the restoration of the Interstate Highway System:

- Reconstruct the nation’s Interstate Highway System, including pavements, bridges and interchanges
- Improve safety features on Interstate highways
- Right-size Interstate system by:
 - ✓ upgrading some existing roadways to Interstate standard
 - ✓ adding needed additional highway capacity on existing routes to maintain and improve mobility
 - ✓ adding additional corridors to accommodate demographic and economic growth
 - ✓ modifying some urban segments to maintain connectivity while remediating economic and social disruption

Conclusion

Sixty-five years after President Eisenhower articulated a vision for the nation’s 20th Century transportation system, a Congressionally-mandated report has found that the U.S. faces a “daunting” task in restoring and renewing its most important transportation system.

Missouri’s Interstate Highway System is beset with growing traffic congestion, increasing car and truck travel, and aging pavements, bridges and interchanges that need to be reconstructed and modernized.

Today, Missouri’s Interstate Highway System continues to save time, lives and money while playing a critical role in supporting economic growth and enhancing the lifestyle choices of the nation’s residents and visitors.

If Americans are to continue to enjoy the benefit of the unparalleled level of access and mobility provided by the Interstate Highway System, which has enabled the nation’s unprecedented development and growth, the U.S. will need to commit to a well-funded program of Interstate restoration, modernization and renewal.

Ensuring that the Interstate Highway System plays the same role in supporting the nation’s development in the 21st Century will require a significant boost in investment in an Interstate restoration program based on strong federal leadership of a robust federal-state partnership.

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ENDNOTES

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- ¹ Public Roads, 1996. “Three States Claim First Interstate Highway.” Federal Highway Administration.
- ² TRIP analysis of Highway Statistics 1986, 1996 and 2014, Federal Highway Administration.
- ³ Transportation Research Board (2019). Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future. P. 199. <http://www.trb.org/Main/Blurbs/178485.aspx>
- ⁴ *Ibid.* P. 200
- ⁵ TRIP analysis of U.S. Census Bureau data.
- ⁶ U.S. Census Bureau data, Federal Highway Administration data. See chart MV-1. Additional historical data from Highway Statistics Summary to 1995.
- ⁷ U.S. Census Bureau data, Federal Highway Administration data. See chart VM-2. Additional historical data from Highway Statistics Summary to 1995.
- ⁸ U.S. Census Bureau data, Federal Highway Administration data. See chart VM-2. Additional historical data from Highway Statistics Summary to 1995.
- ⁹ *Ibid.*
- ¹⁰ TRIP analysis of Highway Statistics, 2019, Federal Highway Administration. Data is from charts VM-2 and HM-60.
- ¹¹ U.S. Department of Transportation (2021). Travel Monitoring Traffic Volume Trends https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm
- ¹² Federal Highway Administration, 2020. National Bridge Inventory data.
- ¹³ *Ibid.*
- ¹⁴ *Ibid.*
- ¹⁵ *Ibid.*
- ¹⁶ TRIP analysis of 2019 Federal Highway Administration data. See chart HM-64 in Highway Statistics.
- ¹⁷ *Ibid.*
- ¹⁸ Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
- ¹⁹ Transportation Research Board (2019). Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future. P. 51. <http://www.trb.org/Main/Blurbs/178485.aspx>
- ²⁰ *Ibid.* P. 54
- ²¹ Highway Statistic 2019. Federal Highway Administration.
- ²² Federal Highway Administration. TRIP analysis of Highway Statistics 2019, charts VM-2, HM-60.
- ²³ TRIP analysis of 2019 FHWA data. See charts FI-20, VM-2 in 2019 Highway Statistics.
- ²⁴ *Ibid.*
- ²⁵ *Ibid.*
- ²⁶ TRIP analysis of 2019 FHWA data. See charts FI-20, VM-2 in 2019 Highway Statistics.
- ²⁶ *Ibid.*
- ²⁷ TRIP analysis of Federal Highway Administration’s Freight Analysis Framework data (2019). Data is for 2017. <https://faf.ornl.gov/fafweb/>
- ²⁸ *Ibid.*
- ²⁹ TRIP analysis of 2019 FHWA data. See chart VM-4 in 2019 Highway Statistics.
- ³⁰ Select USA. (2019). Logistics and Transportation Spotlight. <https://www.selectusa.gov/logistics-and-transportation-industry-united-states>
- ³¹ Area Development Magazine (2021). 35th Annual Corporate Survey: Effects of Global Pandemic Reflected in Executives Site and Facility Plans _ <https://www.areadevelopment.com/corporate-consultants-survey-results/q1-2021/35th-annual-corporate-survey.shtml>
- ³² Transportation Research Board (2019). Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future. P. 89. <http://www.trb.org/Main/Blurbs/178485.aspx> Additional analysis provided by TRIP.
- ³³ United States Department of Transportation (2015). 2015 Status of the Nation’s Highways, Bridges, and Transit: Conditions and Performance. Chapter 7. Exhibit 7-9. <https://www.fhwa.dot.gov/policy/2015cpr/es.cfm#8h>
- ³⁴ *Ibid.*

³⁵ Transportation Research Board (2019). Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future. P. 4. <http://www.trb.org/Main/Blurbs/178485.aspx> The recommended funding is based on the funding needs estimated by TRB assuming an annual 1.5 percent annual average increase in travel. From 2013 to 2019, the average annual increase in vehicle miles of travel was 2.1 percent.

³⁶ Ibid. P. 5

³⁷ Ibid. P. 266.

³⁸ Ibid. P. 5.