Oklahoma Transportation By The Numbers:

PROVIDING A MODERN, EFFICIENT TRANSPORTATION NETWORK IN THE SOONER STATE

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A National Transportation Research Nonprofit

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

Executive Summary

Mobility, accessibility and connectivity are critical factors in a state's quality of life and economic competitiveness. The growth and development of a state or region hinges on efficient and safe access to employment, customers, commerce, recreation, education and healthcare via multiple transportation modes. The quality of life and the pace of a state's economic growth are directly tied to the condition, efficiency, safety and resiliency of its transportation system.

An adequate and reliable source of transportation funding is critical to providing a transportation system to support commerce within Oklahoma and connect the state to markets around the globe, while providing safe, efficient mobility on a well-maintained transportation system.

TRIP's "Oklahoma Transportation by The Numbers" report examines the condition, use, safety, efficiency and funding needs of Oklahoma's surface transportation system. The report also looks at the challenges Oklahoma faces to accommodate future transportation growth, maintain the existing system, and sustain adequate state transportation investment despite the funding impacts of highway construction cost inflation, increasing fuel efficiency standards, and the adoption of electric vehicles.

Sources of information for this report include AAA, the AAA Foundation for Traffic Safety, the American Association of State Highway and Transportation Officials (AASHTO), the American Road & Transportation Builders Association (ARTBA), the Bureau of Transportation Statistics (BTS), the Federal Highway Administration (FHWA), the National Highway Traffic Safety Administration (NHTSA), the Oklahoma Department of Transportation (ODOT), the Texas Transportation Institute (TTI), The Transportation Research Board (TRB), the U.S. Census Bureau, and the U.S. Department of Transportation.

THE COSTS OF DETERIORATED ROADS, TRAFFIC CONGESTION AND CRASHES

Driving on Oklahoma roads that are deteriorated, congested and that lack some desirable safety features costs the state's drivers a total of $6.3 billion each year. TRIP has calculated the cost to the average motorist in the state's largest urban areas in the form of additional vehicle operating costs (VOC) as a result of driving on rough roads, the cost of lost time and wasted fuel due to congestion, and the financial cost of traffic crashes in which the lack of desirable roadway safety features- while not the primary cause- was likely a contributing factor. The chart below shows the cost of deficient roads statewide and for the average driver in the state's largest urban areas.

Location	VOC	Safety	Congestion	TOTAL
Oklahoma City	$976	$471	$1,124	$2,571
Tulsa	$1,072	$585	$829	$2,486
OKLAHOMA STATEWIDE	**$2.4 Billion**	**$1.5 Billion**	**$2.4 Billion**	**$6.3 Billion**

OKLAHOMA ROADS PROVIDE A ROUGH RIDE

Due to inadequate state and local funding, 48 percent of major locally and state-maintained roads and highways in Oklahoma are in poor or mediocre condition. Driving on rough roads costs the average Oklahoma driver $925 annually in additional vehicle operating costs – a total of $2.4 billion statewide. The chart below details pavement conditions on major roads in the state's largest urban areas and statewide.

Location	Poor	Mediocre	Fair	Good
Oklahoma City	32%	21%	19%	28%
Tulsa	37%	24%	11%	28%
OKLAHOMA STATEWIDE	**27%**	**21%**	**16%**	**36%**

OKLAHOMA BRIDGE CONDITIONS

Eight percent of Oklahoma's bridges (1,764 of 22,917 bridges) are rated in poor/structurally deficient condition. Bridges rated in poor/structurally deficient condition have significant deterioration of the bridge deck, supports or other major components. Fifty percent of the state's bridges are rated in fair condition and the remaining 42 percent are in good condition. Of the 6,750 bridges in the state that are maintained by ODOT, less than one percent (46 bridges) are in poor condition.

Most bridges are designed to last 50 years before major overhaul or replacement, although many newer bridges are being designed to last 75 years or longer. In Oklahoma, 41 percent of the state's bridges were built in 1969 or earlier. The chart below details bridge conditions statewide and in the state's largest urban areas.

	POOR/STRUCTURALLY DEFICIENT		FAIR		GOOD		TOTAL BRIDGES
	Number	Share	Number	Share	Number	Share	
Oklahoma City	106	5%	1064	53%	855	42%	2025
Tulsa	220	12%	841	44%	835	44%	1896
OKLAHOMA STATEWIDE	**1,764**	**8%**	**11,533**	**50%**	**9,620**	**42%**	**22,917**

OKLAHOMA ROADS ARE INCREASINGLY CONGESTED

In 2023, the state's transportation system carried 45.1 billion annual vehicle miles of travel (VMT). Due to the Covid-19 pandemic, vehicle travel in Oklahoma dropped by as much as 33 percent in April 2020 (as compared to vehicle travel during the same month the previous year). By 2024, vehicle miles of travel in Oklahoma had rebounded to two percent above pre-pandemic levels in 2019.

Congested roads choke commuting and commerce and cost Oklahoma drivers $2.4 billion each year in the form of lost time and wasted fuel. The chart below shows the annual number of hours lost to congestion, the cost of lost time and wasted fuel, and gallons of fuel lost to congestion for the average driver in the state's largest urban areas.

Location	Hours Lost to Congestion	Annual Cost Per Driver	Gallons of Fuel Wasted Per Driver
Oklahoma City	54	$1,124	22
Tulsa	42	$829	15

OKLAHOMA TRAFFIC SAFETY AND FATALITIES

From 2019 to 2023, 3,462 people were killed in traffic crashes in Oklahoma. In 2023, Oklahoma had 1.53 traffic fatalities for every 100 million miles traveled, the ninth highest rate in the nation and higher than the national average of 1.26. The number of traffic fatalities and the fatality rate per 100 million vehicle miles of travel in Oklahoma spiked dramatically in 2020 and 2021 before falling in 2022 and 2023.

OKLAHOMA TRAFFIC FATALITIES AND FATALITY RATE						
	2019	2020	2021	2022	2023	2019-23 Change
Traffic Fatalities	640	653	762	710	697	8%
Fatalities per 100M VMT	1.43	1.55	1.70	1.59	1.53	7%

From 2018 to 2022, 15 percent of those killed in crashes involving motorized vehicles were pedestrians or bicyclists, a total of 433 pedestrian fatalities and 68 bicyclist fatalities over the five-year period. The chart below indicates the number of pedestrian, bicyclist and total traffic fatalities in Oklahoma from 2018 to 2022 and the overall share of pedestrian and bicyclist fatalities.

Year	Total Fatalities	Pedestrian Fatalities	Bicyclist Fatalities	Share Bike and Ped.
2018	655	60	16	12%
2019	640	85	13	15%
2020	653	86	12	15%
2021	762	106	12	15%
2022	710	96	15	16%
TOTAL	**3,420**	**433**	**68**	**15%**
AVERAGE	**684**	**87**	**14**	**15%**

Traffic crashes imposed a total of $4.4 billion in economic costs in Oklahoma in 2022 and traffic crashes in which a lack of adequate roadway safety features, while not the primary factor, were likely a contributing factor, imposed $1.5 billion in economic costs. In addition to the lack of desirable roadway safety features, driver behavior – including driver impairment, seatbelt usage and distracted driving- are also major factors in traffic crashes. The chart below shows the number of people killed in traffic crashes in the state's largest urban areas between 2018 and 2022, and the cost of traffic cashes per driver. According to a 2015 National Highway Traffic Safety Administration (NHTSA) report, the economic costs of traffic crashes includes work and household productivity losses, property damage, medical costs, rehabilitation costs, legal and court costs, congestion costs, and emergency services.

Location	Average Fatalities 2018-2022	Crash Costs per Driver
Oklahoma City	131	$471
Tulsa	102	$585

In early 2022 the U.S. Department of Transportation adopted a comprehensive National Roadway Safety Strategy, a roadmap for addressing the nation's roadway safety crisis based on a Safe

System approach. The Safe System approach, which is also being adopted by state and local transportation agencies has five objectives: Safer People, Safer Roads, Safer Vehicles, Safer Speeds, and improved Post-Crash Care.

OKLAHOMA TRANSPORTATION SYSTEM AND FUNDING

Oklahoma's roads, highways and bridges are funded by investments from local, state and federal governments. State transportation funds are supplemented by the federal Infrastructure Investment and Jobs Act (IIJA), signed into law in November 2021. The IIJA will provide $4.4 billion in federal funds for highway and bridge investments in Oklahoma over five years, representing a 29 percent increase in annual federal funding for roads and bridges in Oklahoma over the previous federal surface transportation program. Federal funds currently provide 53 percent of the revenue used by ODOT to fund highway and bridge improvements. The IIJA is set to expire on September 30, 2026.

The ability of revenue from the Oklahoma and the federal motor fuel tax -- as well as other sources of state and federal transportation funding -- to keep pace with Oklahoma's future transportation needs is likely to erode as a result of increasing vehicle fuel efficiency, the increasing use of electric vehicles and inflation in highway construction costs.

The average fuel efficiency of U.S. passenger vehicles increased from 20 miles per gallon in 2010 to 24.5 miles per gallon in 2020. Average fuel efficiency is expected to increase another 31 percent by 2030, to 32 miles per gallon, and increase 51 percent by 2040, to 37 miles per gallon. Increasing adoption of electric vehicles will also reduce the amount of motor fuel tax revenue available for state and federal transportation funding.

Increasing inflation has also hampered Oklahoma's ability to complete needed projects and improvements, as the available funding now covers significantly less work. The Federal Highway Administration's national highway construction cost index, which measures labor and materials cost, increased by 68 percent from the first quarter of 2021 through the first quarter of 2024.

TRANSPORTATION AND ECONOMIC DEVELOPMENT

In 2023 Oklahoma's freight system moved 431 million tons of freight, valued at $295 billion. From 2023 to 2050, freight moved annually in Oklahoma by trucks is expected to increase 53 percent by weight and 90 percent by value (inflation-adjusted dollars). Fourteen percent of travel on Oklahoma's Interstate highways is by combination trucks. This anticipated growth in freight transport in Oklahoma, and the rest of the U.S., is a result of further economic growth, changing business and retail models, increasing international trade, and rapidly changing consumer expectations that place an emphasis on faster deliveries, often of smaller packages or payloads.

According to a report by the American Road & Transportation Builders Association, the design, construction and maintenance of transportation infrastructure in Oklahoma supports approximately 51,000 full-time jobs across all sectors of the state economy. These workers earn $1.8 billion annually. Approximately 796,000 full-time jobs in Oklahoma in key industries like tourism, retail sales, agriculture and manufacturing are completely dependent on the state's transportation network.

Sources of information for this report include AAA, the AAA Foundation for Traffic Safety, the American Association of State Highway and Transportation Officials (AASHTO), the American Road & Transportation Builders Association (ARTBA), the Bureau of Transportation Statistics (BTS), the Federal Highway Administration (FHWA), the National Highway Traffic Safety Administration (NHTSA), the Oklahoma Department of Transportation (ODOT), the Texas Transportation Institute (TTI), The Transportation Research Board (TRB), the U.S. Census Bureau, and the U.S. Department of Transportation. Cover photo credit: iStockphoto .com.

INTRODUCTION

Oklahoma's roads, highways and bridges form vital transportation links for the state's residents, visitors and businesses, providing daily access to homes, jobs, shopping, tourist destinations, natural resources and recreation. Modernizing Oklahoma's transportation system is critical to quality of life and economic competitiveness in the Sooner State. Inadequate transportation investment, which will result in deteriorated transportation facilities and diminished access, will negatively affect Oklahoma's economic competitiveness and quality of life.

To accommodate population and economic growth, maintain its level of economic competitiveness and achieve further economic growth, Oklahoma will need to maintain and modernize its roads, highways and bridges by improving the physical condition of its transportation network and enhancing the system's ability to provide efficient, reliable and safe mobility for residents, visitors and businesses. Making needed improvements to Oklahoma's roads, highways, bridges and transit systems could also provide a significant boost to the state's economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access.

This report examines the condition, use and safety of Oklahoma's roads, highways and bridges, and the state's future mobility needs. In addition to statewide data, the TRIP report includes regional data for the Oklahoma City and Tulsa urban areas. An urban area is defined as a region's municipalities and surrounding suburbs for pavement condition and congestion data; bridge and traffic fatality data include a region's major counties.[1]

POPULATION, TRAVEL AND ECONOMIC TRENDS IN OKLAHOMA

Oklahoma motorists and businesses require a high level of personal and commercial mobility. To foster quality of life and spur continued economic growth, it is critical that the state provide a safe and modern transportation system that can accommodate future growth in population, tourism, business, recreation and vehicle travel.

Oklahoma's population reached approximately 4.1 million residents in 2024, a 19 percent increase since 2000.[2] Oklahoma had approximately 2.6 million licensed drivers in 2022.[3]

In 2023 annual vehicle miles traveled (VMT) in Oklahoma reached 45.1 billion miles traveled annually.[4] Due to the COVID-19 pandemic, vehicle travel in Oklahoma dropped by as much as 33 percent in April 2020 (as compared to vehicle travel during April 2019). By 2024, VMT in Oklahoma had rebounded to two percent higher than pre-pandemic levels in 2019.[5]

From 2000 to 2023, Oklahoma's gross domestic product (GDP), a measure of the state's economic output, increased by 72 percent, when adjusted for inflation.[6] U.S. GDP increased 61 percent during the same period.[7]

CONDITION OF OKLAHOMA ROADS

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

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

Statewide, 48 percent of Oklahoma's major roads are in poor or mediocre condition. Twenty-seven percent of Oklahoma's major locally and state-maintained roads are in poor condition and 21 percent are in mediocre condition.[8] Sixteen percent of Oklahoma's major roads are in fair condition and the remaining 36 percent are in good condition.[9]

Thirty-four percent of Oklahoma's major locally and state-maintained urban roads and highways have pavements rated in poor condition and 23 percent are in mediocre condition.[10] Fourteen percent are in fair condition and the remaining 30 percent of Oklahoma's major urban roads are rated in good condition.[11]

Twenty-six percent of Oklahoma's major locally and state-maintained rural roads and highways have pavements rated in poor condition and 21 percent are in mediocre condition.[12] Sixteen percent are in fair condition and the remaining 37 percent of Oklahoma's rural roads are rated in good condition.[13]

The chart below details pavement conditions on locally and state-maintained major urban roads in the state's largest urban areas and statewide.[14]

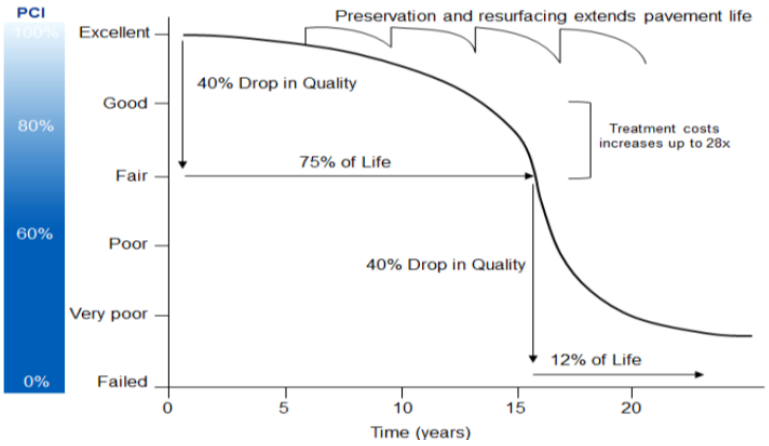
Chart 1. Pavement conditions on major urban roads in Oklahoma's largest urban areas and statewide.

Location	Poor	Mediocre	Fair	Good
Oklahoma City	32%	21%	19%	28%
Tulsa	37%	24%	11%	28%
OKLAHOMA STATEWIDE	**27%**	**21%**	**16%**	**36%**

Source: TRIP analysis of Federal Highway Administration data.

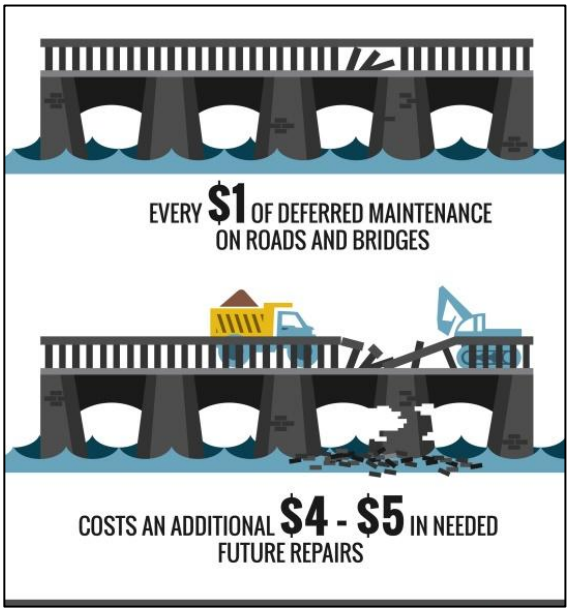
Pavement failure is caused by a combination of traffic, moisture and climate. Moisture often works its way into road surfaces and the materials that form the road's foundation. Road surfaces at intersections are more prone to deterioration because the slow-moving or standing loads occurring at these 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.[15] As roads and highways continue to age, they will reach a point of deterioration where routine paving and maintenance will not be adequate to keep pavement surfaces in good condition and costly reconstruction of the roadway and its underlying surfaces will become necessary.

Chart 2. Pavement Condition Cycle Time with Treatment and Cost.



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

Long-term repair costs increase significantly when road and bridge maintenance is deferred, as road and bridge deterioration accelerate later in the service life of a transportation facility and require more costly repairs. A report on maintaining pavements found that every $1 of deferred maintenance on roads and bridges costs an additional $4 to $5 in needed future repairs.[16]



THE COST TO MOTORISTS OF ROADS IN INADEQUATE CONDITION

TRIP has calculated the additional cost to motorists of driving on roads in poor, mediocre or fair condition. When roads are in poor, mediocre or fair condition – which may include potholes, rutting or rough surfaces – the cost to operate and maintain a vehicle increases. These additional vehicle operating costs (VOC) include accelerated vehicle depreciation, additional vehicle repair costs, increased fuel consumption and increased tire wear. TRIP estimates that additional VOC borne by Oklahoma motorists as a result of deteriorated road conditions is $2.4 billion annually, an average of $925 per driver statewide.[17] The chart below shows additional VOC per motorist in the state's largest urban areas and statewide.

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

Location	VOC
Oklahoma City	$976
Tulsa	$1,072
OKLAHOMA STATEWIDE	**$2.4 Billion**

Source: TRIP estimates.

Additional vehicle operating costs have been calculated in the Highway Development and Management Model (HDM), which is recognized by the U.S. Department of Transportation and more than 100 other countries as the definitive analysis of the impact of road conditions on vehicle operating costs. The HDM report is based on numerous studies that measured the impact of various factors, including road conditions, on vehicle operating costs.[18] The HDM study found that road deterioration increases ownership, repair, fuel and tire costs. The report found that deteriorated roads accelerate the pace of depreciation of vehicles and the need for repairs because the stress on the vehicle increases in proportion to the level of roughness of the pavement surface. Similarly, tire wear and fuel consumption increase as roads deteriorate since there is less efficient transfer of power to the drive train and additional friction between the road and the tires.

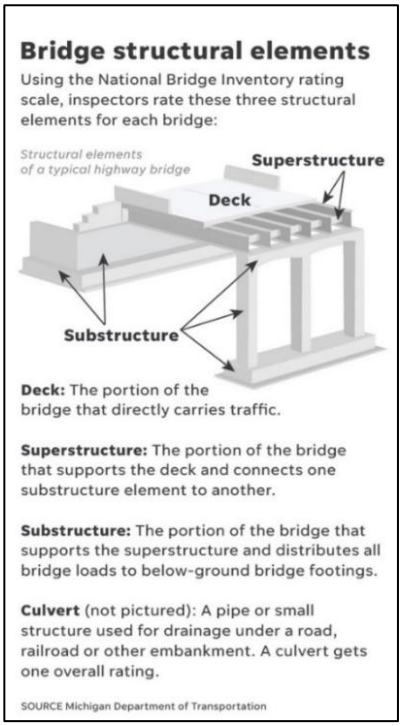
TRIP's additional VOC estimate is based on taking the average number of miles driven annually by a motorist, calculating current VOC based on AAA's driving cost estimates and then using the HDM model to estimate the additional VOC paid by drivers as a result of substandard roads.[19] Additional research on the impact of road conditions on fuel consumption by the Texas Transportation Institute (TTI) is also factored into TRIP's vehicle operating cost methodology.

BRIDGE CONDITIONS IN OKLAHOMA

Oklahoma's bridges form key links in the state's highway system, providing communities and individuals access to employment, schools, shopping and medical facilities, and facilitating commerce and access for emergency vehicles.

In total, eight percent (1,764 of 22,917) of Oklahoma's locally and state-maintained bridges are rated in poor/structurally deficient condition.[20] This includes all bridges that are 20 feet or more in length. A bridge is deemed structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Of the 6,750 bridges in the state that are maintained by ODOT, less than one percent (46 bridges) are in poor condition.[21]

Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid posted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.



Fifty percent of Oklahoma's locally and state-maintained bridges have been rated in fair condition.[22] A fair rating indicates that a bridge's structural elements are sound but minor deterioration has occurred to the bridge's deck, substructure or superstructure. The remaining 42 percent of the state's bridges are rated in good condition.[23]

The chart below details the condition of bridges statewide and in Oklahoma's largest urban areas.

Chart 4. Bridge conditions statewide and in Oklahoma's largest urban areas.

	POOR/STRUCTURALLY DEFICIENT		FAIR		GOOD		TOTAL BRIDGES
	Number	Share	Number	Share	Number	Share	
Oklahoma City	106	5%	1064	53%	855	42%	2025
Tulsa	220	12%	841	44%	835	44%	1896
OKLAHOMA STATEWIDE	**1,764**	**8%**	**11,533**	**50%**	**9,620**	**42%**	**22,917**

Source: TRIP analysis of Federal Highway Administration National Bridge Inventory (2024).

Most bridges are designed to last 50 years before major overhaul or replacement, although many newer bridges are being designed to last 75 years or longer. In Oklahoma, 41 percent of the state's bridges were built in 1969 or earlier.[24]

The service life of bridges can be extended by performing routine maintenance such as resurfacing decks, painting surfaces, ensuring that a facility has good drainage and replacing

deteriorating components. But most bridges will eventually require more costly reconstruction or major rehabilitation to remain operable.

TRAFFIC SAFETY IN OKLAHOMA

A total of 3,462 people were killed in Oklahoma traffic crashes from 2019 to 2023, an average of 692 fatalities per year.[25] Oklahoma's overall traffic fatality rate of 1.53 fatalities per 100 million vehicle miles of travel in 2023 is the ninth highest in the nation and higher than the national average of 1.26.[26] Traffic crashes increased dramatically in the wake of the COVID-19 pandemic, increasing from 640 in 2019 to 762 in 2021, before falling to 697 in 2023.

Chart 5. Traffic Fatalities and Fatality Rate per 100M VMT in Oklahoma 2019-2023.

OKLAHOMA TRAFFIC FATALITIES AND FATALITY RATE						
	2019	2020	2021	2022	2023	2019-23 Change
Traffic Fatalities	640	653	762	710	697	8%
Fatalities per 100M VMT	1.43	1.55	1.70	1.59	1.53	7%

Source: National Highway Traffic Safety Administration.

Three major factors are associated with fatal vehicle crashes: driver behavior, vehicle characteristics and roadway features. Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design.

Traffic crashes in Oklahoma imposed a total of $4.4 billion in economic costs in 2023.[27] TRIP estimates that roadway features, while not the primary cause of a crash, were likely a contributing factor in approximately one-third of all fatal traffic crashes, resulting in $1.5 billion in economic costs in Oklahoma in 2023.[28] According to a National Highway Traffic Safety Administration (NHTSA) report, the economic costs of traffic crashes includes work and household productivity losses, property damage, medical costs, rehabilitation costs, legal and court costs, congestion costs, and emergency services.[29]

In addition to the lack of desirable roadway safety features, driver behavior- including driver impairment, seatbelt usage and distracted driving - are also major factors in traffic crashes.

The chart below shows the average number of people killed in traffic crashes in the state's largest urban areas between 2018 and 2022 and the cost of traffic crashes per driver. According to a 2015 National Highway Traffic Safety Administration (NHTSA) report, the economic costs of traffic crashes includes work and household productivity losses, property damage, medical costs, rehabilitation costs, legal and court costs, congestion costs, and emergency services.[30]

Chart 6. Average fatalities between 2018 and 2022 and the annual cost of crashes per driver.

Location	Average Fatalities 2018-2022	Crash Costs per Driver
Oklahoma City	131	$471
Tulsa	102	$585

Source: TRIP analysis of NHTSA data.

From 2018 to 2022, 15 percent of those killed in crashes involving motorized vehicles were pedestrians or bicyclists, a total of 433 pedestrians and 68 bicyclist fatalities over the five-year period.[31] The chart below indicates the number of pedestrian, bicyclist and total traffic fatalities in Oklahoma from 2018 to 2022 and the overall share of pedestrian and bicyclist fatalities.

Chart 7. Oklahoma bicyclist and pedestrian fatalities 2018-2022.

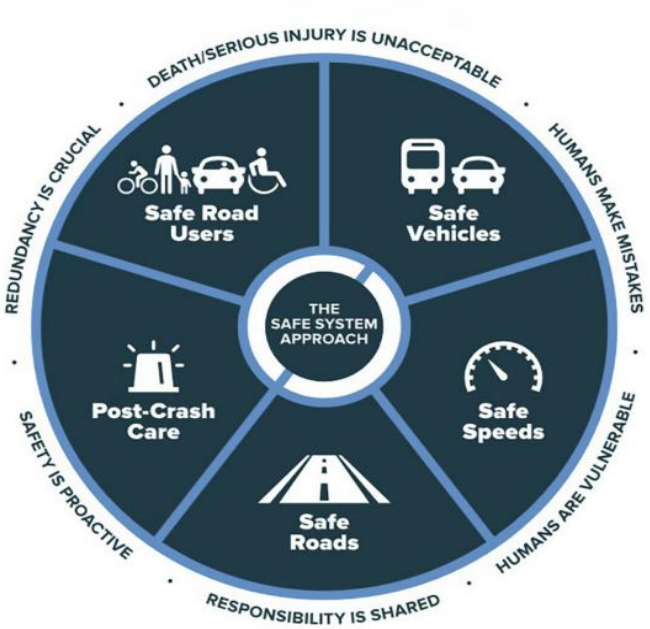
Year	Total Fatalities	Pedestrian Fatalities	Bicyclist Fatalities	Share Bike and Ped.
2018	655	60	16	12%
2019	640	85	13	15%
2020	653	86	12	15%
2021	762	106	12	15%
2022	710	96	15	16%
TOTAL	**3,420**	**433**	**68**	**15%**
AVERAGE	**684**	**87**	**14**	**15%**

Source: National Highway Traffic Safety Administration.

The significant increase in traffic fatalities since the onset of the pandemic appears largely related to increased risks being taken by drivers. In an October 2021 report, the National Highway Traffic Safety Administration found that "after the declaration of the public health emergency in March 2020, driving patterns and behaviors in the United States changed significantly. Of the drivers who remained on the roads, some engaged in riskier behavior, including speeding, failure to wear seat belts, and driving under the influence of alcohol or drugs."[32]

In early 2022 the U.S. Department of Transportation adopted a comprehensive National Roadway Safety Strategy, a roadmap for addressing the nation's roadway safety crisis based on a Safe System approach that acknowledges the following: humans make mistakes and are physically vulnerable; traffic deaths and serious injuries are unacceptable; traffic deaths and serious injuries need to be reduced by the provision of a redundant transportation system that reduces or minimizes crashes and ensures that, if crashes do occur, they do not result in serious injury or death.[33]

Chart 8. The Safe System Approach.



Source: Federal Highway Administration.

The Safe System approach, which is also being adopted by state and local transportation agencies has five objectives:

- Safer People: Encourage safe, responsible behavior by people who use our roads, and create conditions that prioritize their ability to reach their destination unharmed.
- Safer Roads: Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.
- Safer Vehicles: Expand the availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants.
- Safer Speeds: Promote safer speeds in all roadway environments through a combination of thoughtful, context-appropriate roadway design, targeted education and outreach campaigns, and enforcement.
- Post-Crash Care: Enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.

Improving safety on the nation's roadways will require that additional steps are taken to make further progress in achieving the Safe System's objectives. NHTSA, which provides states with roadway safety grants, requires states to submit annually a state highway safety plan. The state plans outline numerous steps states are taking to improve traffic safety. Elements of these state roadway safety plans aimed at addressing the Safe System objectives include:

- Safer People: education on speeding, impaired or disadvantaged driving; education on safe pedestrian and bicycling behavior; education on driving safely around large commercial vehicles; enforcement of commercial driver license and vehicle weight requirements; extension of safety belt laws and their enforcement to include all passenger vehicle occupants; enhancing enforcement action of speeding, impaired, aggressive and distracted driving, particularly at high-risk locations; increase penalties, particularly for repeat offender drivers; and increased enforcement at work zones.
- Safer Roads: converting intersections to roundabouts; removing or shielding roadside objects; the addition of left-turn lanes at intersections; improved signalization and lighting at intersections; adding or improving median barriers; improved roadway lighting; adding centerline or shoulder rumble strips; improving pedestrian and bicycle facilities, including sidewalks and bike lanes and providing pedestrian crossing islands; improved work zone safety measures; wider lanes and paved shoulders; upgrading roads from two lanes to four lanes; providing or improving lane markings; updating rail crossings; eliminating vertical pavement drop-offs; and providing large truck parking spaces.
- Safer Vehicles: Support the development, testing and deployment of connected and autonomous vehicle technology such as collision avoidance, lane departure avoidance systems and turning detection systems.
- Safer Speeds: Where appropriate, provide roadway features to encourage safer speeds, including traffic roundabouts and curb extensions; improved signage and dynamic speed signing at high-risk locations; education on the consequences of speeding; and increased speeding enforcement, particularly at high-risk locations.
- Post-Crash Care: Reduce crash response time including the use of emergency vehicle preemption technology; improve emergency response to multi-vehicle or hazardous

material crashes; and increase access to level one or two trauma centers for seriously-injured crash victims.

Improving safety on Oklahoma's roadways can be achieved through further improvements in vehicle safety; improvements in driver, pedestrian, and bicyclist behavior; and, a variety of improvements in roadway safety features. The severity of serious traffic crashes could be reduced through roadway improvements, where appropriate, such as converting intersections to roundabouts; removing or shielding roadside objects; the addition of left-turn lanes at intersections; the signalization of intersections; adding or improving median barriers; improved lighting; adding centerline or shoulder rumble strips; providing appropriate pedestrian and bicycle facilities, including sidewalks and bicycle lanes; providing wider lanes, wider and paved shoulders; upgrading roads from two lanes to four lanes; providing better road and lane markings; and updating rail crossings.

The U.S. has a $146 billion backlog in needed roadway safety improvements, according to a 2017 report from the AAA Foundation for Traffic Safety. The report found implementing these cost-effective and needed roadway safety improvements on U.S. roadways would save approximately 63,700 lives and reduce the number of serious injuries as a result of traffic crashes by approximately 350,000 over 20 years.

TRAFFIC CONGESTION IN OKLAHOMA

Increasing levels of traffic congestion cause significant delays in Oklahoma, particularly in its larger urban areas, choking commuting and commerce. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to the consumer. Increased levels of congestion can also reduce the attractiveness of a location to a business when considering expansion or where to locate a new facility.

Based on TTI methodology, TRIP estimates the value of lost time and wasted fuel in Oklahoma is approximately $2.4 billion a year. The chart below shows the number of hours lost to congestion annually for each driver in the state's largest urban areas, the per-driver cost of lost time and wasted fuel due to congestion, and the gallons of fuel lost annually.

Chart 9. Annual hours lost to congestion and congestion costs per driver.

Location	Hours Lost to Congestion	Annual Cost Per Driver	Gallons of Fuel Wasted Per Driver
Oklahoma City	54	$1,124	22
Tulsa	42	$829	15

Source: TRIP analysis based on TTI Urban Mobility Report.

OKLAHOMA TRANSPORTATION FUNDING

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

In addition to state transportation funding, the Infrastructure Investment and Jobs Act (IIJA), signed into law on November 2021, will provide $4.4 billion in federal funds to the state for highway and bridge investments in Oklahoma over five years, representing a 29 percent increase in annual federal funding for roads and bridges in the state over the previous federal surface transportation

program.[34] Federal funds currently support 53 percent of the state's transportation department spending on highway and bridge improvements.[35] The IIJA is set to expire on September 30, 2026.

Most federal funds for highway and transit improvements in Oklahoma are provided by federal highway user fees, largely an 18.4 cents-per-gallon tax on gasoline and a 24.4 cents-per-gallon tax on diesel fuel.

Revenue from Oklahoma's motor fuel tax – a critical source of state transportation funding -- is likely to erode as a result of increasing vehicle fuel efficiency, the increasing use of electric vehicles and the impact of highway construction inflation. The average fuel efficiency of U.S. passenger vehicles increased from 20 miles per gallon in 2010 to 24.5 miles per gallon in 2020. Average fuel efficiency is expected to increase another 31 percent by 2030, to 32 miles per gallon, and increase 51 percent by 2040, to 37 miles per gallon.[36] Increasing adoption of electric vehicles will also reduce the amount of motor fuel tax revenue available for state and federal transportation funding.

Increasing inflation has also hampered Oklahoma's ability to complete needed projects and improvements, as the available funding now covers significantly less work. The Federal Highway Administration's national highway construction cost index, which measures labor and materials cost, increased by 68 percent from the first quarter of 2021 through the first quarter of 2024..[37]

Chart 10. FHWA's national highway construction cost index.

Source: Federal Highway Administration.

TRANSPORTATION AND ECONOMIC GROWTH

Today's culture of business demands that an area have well-maintained and efficient roads, highways and bridges if it is to remain economically competitive. Global communications and the impact of free trade in North America and elsewhere have resulted in a significant increase in freight movement, making the quality of a region's transportation system a key component in a business's ability to compete locally, nationally and internationally.

Businesses have responded to improved communications and the need to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and e-commerce. The result of these changes has been a significant improvement in logistics efficiency as firms move from a push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system, which relies on smaller, more

strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

Highways are vitally important to continued economic development in Oklahoma. As the economy expands, creating more jobs and increasing consumer confidence, the demand for consumer and business products grows. In turn, manufacturers ship greater quantities of goods to market to meet this demand, a process that adds to truck traffic on the state's highways and major arterial roads.

The ability of the nation's freight transportation system to efficiently and safely accommodate the growing demand for freight movement could be hampered by inadequate transportation capacity, a lack of adequate safety features on some transportation facilities, institutional barriers to enhancing the nation's freight facilities, a lack of adequate funding for needed improvements to the freight network and a shortage of drivers.

The need to improve the U.S. freight network is occurring at a time when the nation's freight delivery system is being transformed by advances in vehicle autonomy, manufacturing, warehousing and supply chain automation, increasing e-commerce, and the growing logistic networks being developed by Amazon and other retail organizations in response to the demand for a faster and more responsive delivery and logistics cycle.

In 2023 Oklahoma's freight system moved 431 million tons of freight, valued at $295 billion.[38] From 2023 to 2050, freight moved annually in Oklahoma by trucks is expected to increase 53 percent by weight and 90 percent by value (inflation-adjusted dollars).[39] Fourteen percent of travel on Oklahoma's Interstate highways is by combination trucks.[40] This anticipated growth in freight transport in Oklahoma, and the rest of the U.S., is a result of further economic growth, changing business and retail models, increasing international trade, and rapidly changing consumer expectations that place an emphasis on faster deliveries, often of smaller packages or payloads.

Investments in transportation improvements in Oklahoma play a critical role in the state's economy. A report by the American Road & Transportation Builders Association found that the design, construction and maintenance of transportation infrastructure supports the equivalent of approximately 51,000 full-time jobs across all sectors of the state economy, earning these workers approximately $1.8 billion annually.[41] These jobs include approximately 25,000 full-time jobs directly involved in transportation infrastructure construction and related activities. Spending by employees and companies in the transportation design and construction industry supports an additional 25,000 full-time jobs in Oklahoma.[42] Transportation construction in Oklahoma contributes an estimated $323.3 million annually in state and local income, corporate and unemployment insurance taxes and the federal payroll tax.[43]

Approximately 796,000 full-time jobs in Oklahoma in key industries like tourism, retail sales, agriculture and manufacturing are dependent on the quality, safety and reliability of the state's transportation infrastructure network. These workers earn $32.8 billion in wages and contribute an estimated $6 billion in state and local income, corporate and unemployment insurance taxes and the federal payroll tax.[44]

Highway and bridge spending multiplies through the economy by stimulating additional output. A 2021 macroeconomic analysis by IHS Markit found that that every dollar spent on highway and bridge improvements results in $3.4 dollars in combined direct, indirect and induced output from industries throughout the economy, resulting in a multiplier for highway and bridge investment of 3.4.[45]

Local, regional and state economic performance is improved when a region's surface transportation system is expanded or repaired. This improvement comes as a result of the initial job creation and increased employment created over the long-term because of improved access, reduced transport costs and improved safety.

Highway 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.

IMPROVING TRANSPORTATION SAFETY, RESILIENCY AND EFFICIENCY

Recognizing that extreme weather, sea level change, and changes in environmental conditions may threaten the condition and longevity of the nation's transportation infrastructure, transportation agencies have begun to assess vulnerabilities and consider the resilience of their transportation assets during the transportation planning process. Transportation agencies across the country have begun to incorporate resilience in asset management plans, addressing resilience in project development and design and optimizing operations and maintenance practices.[46]

Based on the importance of maximizing the level and safety of mobility provided by its transportation system, transportation agencies are adopting Transportation Systems Management and Operations (TSMO) practices and incorporating improved resiliency into their transportation network. While a TSMO program does not eliminate the need for capacity expansions along some routes, it helps enhance the mobility of an existing corridor as much as possible.

A TSMO program adopts an integrated set of strategies to improve traffic flow and safety on a portion of a roadway, including work zone management, traffic incident management, freight management, traveler information, traffic signal coordination, ramp management, transit management and improved bicycle and pedestrian crossings.[47] The benefits of TSMO can include reduced traffic congestion, reduced fuel consumption and reduced emissions.

CONCLUSION

As Oklahoma works to enhance its thriving, growing and dynamic state, it will be critical that it is able to address the most significant transportation issues by providing a 21st century network of roads, highways, bridges and transit that can accommodate the mobility demands of a modern society.

Oklahoma will need to continue to modernize its surface transportation system by improving the physical condition of its transportation network and enhancing the system's ability to provide efficient, safe and reliable mobility for residents, visitors and businesses. Making needed improvements to the state's roads, highways, bridges and transit systems would provide a significant boost to the economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access. Despite federal funding provided by the IIJA and Oklahoma state funding, numerous projects to improve the condition and expand the capacity of the state's roads, highways, bridges and transit systems will not proceed without a boost in funding.

If Oklahoma is unable to complete needed transportation projects it will hamper the state's ability to improve the condition and efficiency of its transportation system or enhance economic development opportunities and quality of life.

# # #

ENDNOTES

[1] Bridge condition data and safety data for each urban area includes the counties noted: Oklahoma City: Canadian, Cleveland and Oklahoma Counties; Tulsa: Creek, Osage and Tulsa Counties.
[2] U.S. Census Bureau Quick Facts (2024).
[3]Highway Statistics (2022). Federal Highway Administration. DL-1C.
[4] U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2000 and 2019.
[5] Federal Highway Administration – Traffic Volume Trends.
https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm
[6] TRIP analysis of Bureau of Economic Analysis data (2023).
https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1
[7] Ibid.
[8] Federal Highway Administration data for 2023. The following scale is used to evaluate pavement conditions:

	IRI	PSR
Poor	**170+**	**0-2.5**
Mediocre	**120-170**	**2.6-3.0**
Fair	**95-119**	**3.1-3.4**
Good	**0-94**	**3.5+**

[9] Ibid.
[10] Ibid.
[11] Ibid.
[12] Ibid.
[13] Ibid.
[14] Ibid.
[15] Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
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[17] TRIP calculation.
[18] Highway Development and Management: Volume Seven. Modeling Road User and Environmental Effects in HDM-4. Bennett, C. and Greenwood, I. 2000.
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[21] Ibid.
[22] Ibid.
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[24] TRIP analysis of Federal Highway Administration National Bridge Inventory data (2024).
[25] Federal Highway Administration National Highway Traffic Safety Administration, 2019-2023. 2023 data is preliminary.
[26] TRIP analysis of National Highway Traffic Safety Administration and Federal Highway Administration data (2022).
[27] TRIP analysis based on The Economic and Societal Impact of Motor Vehicle Crashes, 2019 (Revised) (2023). National Highway Traffic Safety Administration The Economic and Societal Impact of Motor Vehicle Crashes, 2019 (Revised) (dot.gov) and travel data from the Federal Highway Administration and inflation data from the Bureau of Economic Analysis.
[28] Ibid.
[29] The Economic and Societal Impact of Motor Vehicle Crashes, 2010 (Revised) (2015). National Highway Traffic Safety Administration. P. 1. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812013
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[31] TRIP analysis of National Highway Traffic Safety Administration and Federal Highway Administration data (2021).
[32] Continuation of Research on Traffic Safety During the COVID-19 Public Health Emergency: January-June 2021. U.S. Department of Transportation National Highway Traffic Safety Administration.
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[35] ODOT.
[36] KPMG. (2019). Evaluating Sustainable Transportation Funding Options.

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[40] Ibid.
[41] American Road & Transportation Builders Association (2015). The 2015 U.S. Transportation Construction Industry Profile. https://www.transportationcreatesjobs.org/pdf/Economic_Profile.pdf
[42] Ibid.
[43] Ibid
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