Keeping Ohio Mobile: Providing a Modern, Sustainable Transportation System in the Buckeye State

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TRIP
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 system of roads, highways and bridges to support commerce within Ohio and connect the state to markets around the globe, while providing the safe, smooth and efficient mobility that residents require. Ohio transportation funding received a significant boost in 2019 when the state's tax per gallon of gasoline was increased by 10.5 cents (to 38.5 cents per gallon) and the state tax on diesel fuel was increased by 19 cents (to 47 cents per gallon). As a result, from 2020 through 2030 nearly $5.4 billion in additional funds will be made available to the Ohio Department of Transportation (ODOT) through state-provided sources alone, allowing for needed improvements to the state's surface transportation network. Ohio transportation funding was further boosted in 2021 by the passage of the Infrastructure Investment and Jobs Act (IIJA), which has increased federal highway, bridge and transit funding in Ohio by approximately 30 percent. While this additional transportation investment will allow Ohio to make significant progress on transportation improvements, many needed projects that have been identified by ODOT for system maintenance and congestion relief, by the Transportation Review Advisory Council (TRAC), and by local governments, will not proceed due to a lack of available funding.

TRIP's "Keeping Ohio Mobile" report examines the condition, use, safety and efficiency of Ohio's surface transportation system, the impact of additional transportation funding, and the importance of reauthorization of the federal surface transportation program. The report also looks at the challenges Ohio faces to accommodate future transportation growth, maintain the existing system, and sustain adequate state funding despite the potential of increasing fuel efficiency standards and the adoption of electric vehicles. Sources of information for this report include the Ohio Department of Transportation (ODOT), the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), the Bureau of Transportation Statistics (BTS), the U.S. Census Bureau, the Texas Transportation Institute (TTI), the American Road & Transportation Builders Association (ARTBA), and the National Highway Traffic Safety Administration (NHTSA).

OHIO'S TRANSPORTATION SYSTEM AND FUNDING

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

To address a lack of adequate transportation funding, Governor DeWine and the state legislature approved a 2019 transportation budget that increased the state tax on each gallon of gasoline by 10.5 cents and diesel fuel by 19 cents per gallon, to 38.5 and 47 cents per gallon respectively. ODOT projects that from FY2020 through FY2030 nearly $5.4 billion in additional transportation funds will be available as a result, allowing the state to move forward with needed improvements to its transportation system.

The Infrastructure Investment and Jobs Act (IIJA), signed into law by President Biden in November 2021, will provide $11.21 billion in state funds for highway, bridge and transit investments in Ohio over the next five years, including a 30% funding increase in FY 2022. Federal funds currently provide 49 percent of the revenue used by ODOT to fund highway and bridge improvements.

Due to this additional federal and state funding, ODOT plans to move forward with the following major construction projects from 2023 to 2026 – a total of over $1.4 billion in improvements.

Cincinnati/Dayton	
Clermont	SR 32 (Eastern Corridor) - New interchange at Glen Este Withamsville
Greene	New interchange at US 35 and Valley/Trebein Road
Hamilton	Construct New Western Hills Viaduct
Hamilton	I-75 (Thru the Valley) - Replace railroad bridge and add new spans for I-75 unification
Warren	Widen SR 63 from Union Rd. to SR 741
Cleveland/Akron	
Cuyahoga	Reconstruction of the Warrensville-Van Aken Light Rail Yard
Cuyahoga	Improvements to I-90 Central Interchange (9th St. to Carnegie)
Cuyahoga	Bus Rapid Transit along US 42 from Detroit Superior Bridge to Peal/State and Broadway Rds.
Summit	Widen I-77 from Everett Rd. to Ohio Turnpike
Columbus	
Delaware	Widen US 36/SR 37 and replace existing rail bridge
Delaware	New interchange at I-71/Sunbury Parkway (South of existing)
Franklin	Improvements to I-270/US 23 interchange and US 23/ Rathmell Road intersection
Franklin	I-70 Far East Freeway - Add Westbound lane and improve Brice Road interchange
Toledo	
Henry	US 24/CR 17D new interchange
Ottawa	SR 23 safety improvements, roundabout construction and widening
Other Areas (By County)	
Brown	New SR 32 interchange between Brooks-Malott and Bodman Roads
Erie	Roadway improvements along US 6 from Sandusky to Huron
Fairfield	New interchange at US 33/Pickerington Road
Hancock	Reconstruct existing I-75/CR 99 interchange to a Diverging Diamond
Lawrence	Chesapeake Bypass - Phase 2
Licking	Thornwood Bridge Crossing - new bridge on new alignment
Ross	Improvements to Bridge Street and US 35 interchange

The additional revenue has allowed the state to move forward with needed transportation improvements. ODOT, primarily through the TRAC process, has also identified nearly $1.6 billion in needed projects throughout the state for which funding is available for pre-construction activities including engineering and right-of-way acquisition, but for which construction funding is not yet available.

Cincinnati/Dayton	
Butler	North Hamilton Crossing - East-West roadway on new alignment with a new river crossing
Butler	Roadway improvements and new interchange at I-75/Millikin Rd.
Hamilton	Improvements to Western Hills Viaduct, including relocation of utilities, new Mill Creek bridge
Hamilton/Clermont	I-275 Smart Lane from US 42 to SR 28
Montgomery/Greene	Roadway improvements along Wilmington Pike/I-675 interchange
Cleveland/Akron	
Cuyahoga	Thrive 105 Transit improvements along E. 105th and E. 93rd.
Cuyahoga	Roadway improvements along Chagrin Boulevard/ I-271 interchange
Cuyahoga	I-480/Granger Rd. interchange reconstruction into full interchange
Mahoning	Safety and capacity improvements along US 224 (SR 7 to Tiffany Blvd.)
Stark	Relocate US 30 from Trump Avenue to SR 44 (East Canton bypass)
Summit	Improvements to I-77 and SR 8 including widening and ramp work
Columbus	
Delaware	US 23 Corridor roadway improvements between Delaware and Waldo
Delaware	New interchange at I-71/Big Walnut Road
Franklin	Widen I-270 EB ramp to I-71 NB and add lane on I-71 NB
Franklin	Widen Alum Creek Drive from SR 317 to Groveport Rd.
Franklin	I-71 hard shoulder running lane between 5th Ave. and SR 161
Franklin	Roadway improvements along US 33 from Refugee Road to Gender Road
Pickaway	New interchange at US 23 and SR 762
Toledo	
Lucas	I-475 widening to add third lane from US 23 interchange to Douglass Road
Seneca	Rail grade separation at S. Town Street and multiple crossing closures
Other Areas (By County)	
Athens/Meigs	Widen US 33 from Athens to Darwin and SR 7 to the Ohio River
Fairfield/Licking	Interchange improvements at I-70, SR 256 and Taylor Road
Knox	Relocate SR 13 along the Kokosing River (Mount Vernon)
Montgomery	Roadway improvements to North Dixie, Northwoods and Lightner Roads

Revenue from the motor fuel tax – a critical source of transportation funding -- is likely to erode as a result of increasing vehicle fuel efficiency, the increasing use of electric vehicles and the impact of 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. In 2023, of all passenger vehicles sold in the U.S., seven percent were electric vehicles. By 2030, the share of electric vehicles sold is projected to increase to 40 percent.

During 2022 and the first half of 2023 the Federal Highway Administration's national highway construction cost index, which measures labor and materials cost, increased by 36 percent.

ROAD CONDITIONS IN OHIO

Statewide, 31 percent of Ohio's major roads are in poor or mediocre condition. Sixteen percent of Ohio's major locally and state-maintained roads are in poor condition and 15 percent are in mediocre

condition. Thirteen percent of Ohio's major roads are in fair condition and the remaining 55 percent are in good condition.

Location	Poor	Mediocre	Fair	Good
Cincinnati	33%	22%	15%	30%
Cleveland-Akron	35%	22%	14%	29%
Columbus	20%	20%	17%	42%
Dayton	28%	27%	13%	33%
Toledo	24%	19%	14%	43%
Ohio Statewide	**16%**	**15%**	**13%**	**55%**

TRIP has calculated the additional cost to Ohio 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 Ohio motorists as a result of deteriorated road conditions is $4.2 billion annually, an average of $524 per driver statewide. The chart below details additional VOC per motorist in the state's largest urban areas and statewide.

Location	VOC
Cincinnati	$727
Cleveland-Akron	$763
Columbus	$534
Dayton	$675
Toledo	$567
Ohio Statewide	**$524**

BRIDGE CONDITIONS IN OHIO

Five percent of Ohio's bridges are rated in poor/structurally deficient condition. Bridges that are rated poor/structurally deficient have significant deterioration of the bridge deck, supports or other major components. Thirty-four percent of the state's bridges are rated in fair condition and the remaining 61 percent are in good 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 Ohio, 40 percent of the state's bridges are 50 years or older.

The chart below details bridge conditions statewide and in the state's largest urban areas.

	POOR/STRUCTURALLY DEFICIENT		FAIR		GOOD		TOTAL
	Number	Share	Number	Share	Number	Share	BRIDGES
Cincinnati	101	5%	879	40%	1243	56%	2,223
Cleveland-Akron	137	7%	806	44%	909	49%	1,852
Columbus	21	2%	230	25%	683	73%	934
Dayton	28	3%	287	29%	664	68%	979
Toledo	34	4%	252	27%	642	69%	928
Ohio Statewide	**1,251**	**5%**	**9,205**	**34%**	**16,504**	**61%**	**26,960**

For comparison, the chart below details bridge conditions in Ohio's contiguous states.

STATE	Poor/Structurally Deficient	Fair	Good	Total Bridges
Indiana	5%	53%	41%	19,381
Kentucky	7%	67%	26%	14,493
Michigan	11%	54%	34%	11,341
Pennsylvania	13%	53%	34%	23,257
West Virginia	20%	57%	24%	7,323
OHIO	**5%**	**34%**	**61%**	**26,960**

TRAFFIC CONGESTION IN OHIO

Congested roads, highways and bottlenecks choke commuting and commerce and cost Ohio drivers $5 billion each year in the form of lost time and wasted fuel. From 2000 to 2019, vehicle travel in Ohio increased by eight percent. Due to the COVID-19 pandemic, vehicle travel in Ohio dropped by as much as 39 percent in April 2020 (as compared to vehicle travel during the same month the previous year). By 2022, vehicle miles of travel (VMT) in Ohio had rebounded to two percent below pre-pandemic levels in 2019. During the first nine months of 2023, VMT in Ohio was two percent higher than the first nine months of 2022, returning Ohio VMT to pre-COVID levels.

The chart below details the annual hours lost to congestion, congestion costs per driver and the average amount of fuel per driver wasted annually due to congestion in the state's largest urban areas.

Location	Annual Hours Lost to Congestion	Annual Congestion Cost Per Driver	Gallons of Fuel Wasted Per Driver
Cincinnati	48	$1,157	24
Cleveland-Akron	40	$938	21
Columbus	46	$1,099	20
Dayton	30	$627	12
Toledo	37	$789	20

Increasing congestion on Ohio's major highways and roads hampers the state's ability to support economic development and quality of life by reducing the reliability and efficiency of personal and commercial travel, including the transport of goods and services. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to consumers. Increased levels of congestion can also reduce the attractiveness of a location when a company is considering expansion or deciding where to locate a new facility.

The following chart shows the most congested portions of Ohio highways during weekday AM and PM peak travel hours.

Rank	Location	Route	From	To	Miles
AM					
1	Cleveland	I-490	W. 7th St.	E. 55th St.	1.4
2	Cleveland	I-77 NB	SR-43 (Broadway Ave.)	I-90 Interchange	1.6
3	Columbus	I-670 WB	Leonard Ave.	N. High St.	2
4	Cleveland	I-71 NB	Denison Ave.	I-490 Interchange	2.8
5	Columbus	I-71 SB	E 5th Ave.	I-70/I-71 Interchange	2.1
6	Cleveland	I-90 EB	W. 73rd St.	US-322 (Chester Ave.)	4.1
7	Columbus	I-70 WB	US-33 (E. Livingston Ave.)	I-70/I-71 Interchange	2.6
8	Cincinnati	I-275 WB	SR-28	US-22 (Montgomery Rd.)	6.6
9	Cincinnati	I-75 SB	W. Liberty St.	OH/KY Border	1.7
10	Akron	I-77 NB	S. Arlington Ave.	I-76/I-77 Interchange	5.5
PM					
1	Cincinnati	I-75 SB	US-52 (Hopple St.)	I-71/I-75 Interchange	3.1
2	Cincinnati	I-71 NB	I-471	Victory Pkwy.	2.8
3	Mansfield	US-30 EB	N Lexington Springmill Rd.	SR-39 (S. Springmill St.)	3
4	Strasburg	US-250	Manchester Ave. SW	I-77 Interchange	5
5	Columbus	I-71 NB	E. 5th St.	Spring St.	1.3
6	Columbus	I-70 WB	Alum Creek Dr.	I-70/I-71 Interchange	1.5
7	Cincinnati	I-275 EB	US-22 (Montgomery Rd.)	Reed Hartman Hwy.	2.5
8	Sunbury	US-36	I-71	SR-3	3.8
9	Cleveland	I-480 WB	Northfield Rd.	SR-14 (Broadway Ave.)	3
10	Cleveland	I-90 WB	E. 55th St.	US-322 (Chester Ave.)	2.7

TRAFFIC SAFETY IN OHIO

From 2018 to 2022, 6,080 people were killed in traffic crashes in Ohio, an average of 1,216 fatalities per year. The state's 2022 traffic fatality rate of 1.16 fatalities for every 100 million miles traveled was lower than the national average of 1.35. The fatality rate on Ohio's non-Interstate rural roads in 2020 was nearly double that on all other roads in the state (1.85 per 100 million vehicle miles of travel vs. 1.0). From 2017 to 2021, 14 percent of the state's traffic fatalities in crashes involving motorized vehicles were of pedestrians or bicyclists, a total of 720 pedestrian fatalities and 114 bicycle fatalities over the five-year period.

Improving safety on Ohio'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.

Nationwide, traffic fatalities began to increase dramatically in 2020 even as vehicle travel rates plummeted due to the COVID-19 pandemic, and the number of fatalities continued to increase in 2021. The number of fatalities in Ohio increased 11 percent from 2019 to 2022, from 1,153 to 1,278, and the state's fatality rate per 100 million VMT increased from 1.01 to 1.16 during that time. This dramatic increase in the number of fatalities and the rate of fatalities per 100 million VMT happened while vehicle travel in the state decreased by two percent overall from 2019 to 2022.

OHIO TRAFFIC FATALITY AND VEHICLE MILES OF TRAVEL (VMT) DATA					
	2019	2020	2021	2022	2019-2022 Change
Traffic Fatalities	1,153	1,230	1,351	1,278	**11%**
Fatalities per 100M VMT	1.01	1.19	1.22	1.16	**15%**
VMT (Billions)	114.7	103.1	112.9	112.6	**-2%**

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.

Recognizing the rising number of crashes year-over-year, ODOT increased funding to target locations with high incidences of crashes. In the past year alone, 137 projects were completed that addressed locations where roadway geometrics, roadside hazards, and traffic control improvements were made. An additional 121 project locations have been identified for construction in the upcoming fiscal year.

FREIGHT TRANSPORTATION IN OHIO

The health and future growth of Ohio's economy is riding on its surface transportation system. Each year 1.1 billion tons of freight are shipped to, from or through Ohio.

The amount of freight transported in Ohio and the rest of the U.S. is expected to increase significantly as a result of 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. The amount of freight shipped annually to and from sites in Ohio is anticipated to increase by 98 percent by value 42 percent by weight by 2050.

Accommodating the significant increase expected in the movement of truck freight in Ohio will be further challenged by the significant number of freight routes in the state that are constrained because they have inadequate load carrying capacity to accommodate large trucks. The chart below lists Ohio's top 10 truck bottlenecks, which cause the longest delays.

Rank	Location	Route	From	To	Miles
1	Cincinnati	I-75 SB	Western Hills Viaduct	Ohio/Kentucky Border	3
2	Erie County	I-80 WB	SR-99 (Skadden Rd.)	SR-269	4.4
3	Cincinnati	I-275 WB	SR-28	Loveland Madeira Rd.	5.3
4	Springfield	I-70 EB	US-40 (E National Rd.)	SR-54 (Urbana St.)	3.5
5	Cincinnati	I-71 NB	Cooper Rd.	Snider Rd.	3.8
6	Cincinnati	I-75 SB	Shepherd Ln.	Towne St.	3.9
7	Cincinnati	I-75 NB	Vine St.	SR-126 (Ronald Reagan Cross County Hwy)	2.7
8	Dayton	I-70 WB	Kimmel Rd.	Brookville Phillipsburg Rd.	3.3
9	Mansfield	US-30 EB	Lexington Springmill Rd. N	SR-13 (N Main St.)	3.3
10	Cincinnati	I-75 NB	Shepherd Ln.	I-275	3

THE IMPACT OF TRANSPORTATION INVESTMENT ON ECONOMIC GROWTH IN OHIO

According to a report by the American Road & Transportation Builders Association, the design, construction and maintenance of transportation infrastructure in Ohio supports approximately 132,000 full-time jobs across all sectors of the economy. These workers earn $5.5 billion annually. Approximately 2.4 million full-time jobs in Ohio 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 the Federal Highway Administration (FHWA), the Ohio Department of Transportation (ODOT), the American Association of State Highway and Transportation Official (AASHTO), the American Road and Transportation Builders Association (ARTBA), the Bureau of Transportation Statistics (BTS), the U.S. Census Bureau, the Center for Transportation Studies, the Texas Transportation Institute (TTI) and the National Highway Traffic Safety Administration (NHTSA). Cover photo credit: Jasper Nijdam. All data used in the report are the most recent available.

Introduction

Ohio's surface transportation system provides a vital link for the state's residents, visitors and businesses, providing daily access to homes, jobs, shopping, natural resources and recreation. Supporting quality of life and a robust economy in Ohio requires that the state provide an efficient, safe and well-maintained transportation system that allows for a high level of accessibility, connectivity and safety.

Ohio relies on a diverse economy including manufacturing, financial services, agriculture, healthcare, tourism and education. A safe, well-maintained and reliable network of roads and bridges is critical to each of these sectors and to the economic health of the state and the nation.

Adequate investment in Ohio's transportation network will help enhance economic development opportunities, improve business productivity, and make it easier and more reliable for the public to get to and from destinations including work, home, school, shopping and social events.

Population, Travel and Economic Trends in Ohio

Ohio residents and businesses require a high level of personal and commercial mobility. To foster quality of life and spur economic growth, it will be critical that Ohio provide an efficient, safe and modern transportation system that can accommodate future growth in population, tourism, business, recreation and vehicle travel.

Ohio's population reached approximately 11.8 million residents in 2021, a four percent increase since 2000.[1] Ohio had approximately 8.1 million licensed drivers in 2020.[2] From 2000 to 2021, Ohio's gross domestic product (GDP), a measure of the state's economic output, increased by 21 percent when adjusted for inflation.[3] U.S. GDP, adjusted for inflation, increased 48 percent during this period.[4]

From 2000 to 2019, annual VMT in Ohio increased by eight percent, from approximately 105.9 billion miles traveled annually to approximately 114.7 billion miles traveled annually.[5] Due to the COVID-19 pandemic, vehicle travel in Ohio dropped by as much as 39 percent in April 2020 (as compared to vehicle travel during the same month the previous year).[6] By 2022, Ohio's overall VMT levels had rebounded to two percent below 2019's pre-pandemic levels.[7] During the first nine months of 2023, VMT in Ohio was two percent higher than the first nine months of 2022, returning Ohio VMT to pre-COVID levels.[8]

Road Conditions in Ohio

The life cycle of Ohio's roads is greatly affected by 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 major state and locally maintained roads and highways. Pavement data for Interstate highways and other principal arterials is collected for all system mileage, whereas pavement data for minor arterial and all collector roads and highways is based on sampling portions of roadways as prescribed by FHWA to ensure the data collected is adequate to provide an accurate assessment of pavement conditions on these roads and highways.

Sixteen percent of Ohio's major locally and state-maintained roads and highways have pavements rated in poor condition and 15 percent are in mediocre condition.[9] Thirteen percent of Ohio's major roads are rated in fair condition and the remaining 55 percent are rated in good condition.[10]

Twenty-eight percent of Ohio's major locally and state-maintained urban roads and highways have pavements rated in poor condition and 22 percent are in mediocre condition.[11] Fifteen percent of Ohio's major urban roads are rated in fair condition and the remaining 35 percent are rated in good condition.[12]

Five percent of Ohio's major locally and state-maintained rural roads and highways have pavements rated in poor condition and 10 percent are in mediocre condition.[13] Twelve percent of Ohio's major rural roads are rated in fair condition and the remaining 73 percent are rated in good condition.[14]

The chart below details pavement conditions on major roads in the state's largest urban areas and statewide.[15]

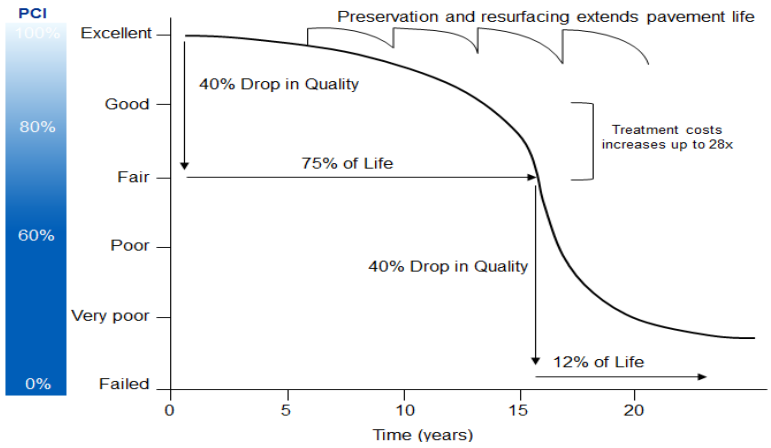
Chart 1. Pavement conditions on major roads in Ohio's largest urban areas and statewide.

Location	Poor	Mediocre	Fair	Good
Cincinnati	33%	22%	15%	30%
Cleveland-Akron	35%	22%	14%	29%
Columbus	20%	20%	17%	42%
Dayton	28%	27%	13%	33%
Toledo	24%	19%	14%	43%
Ohio Statewide	**16%**	**15%**	**13%**	**55%**

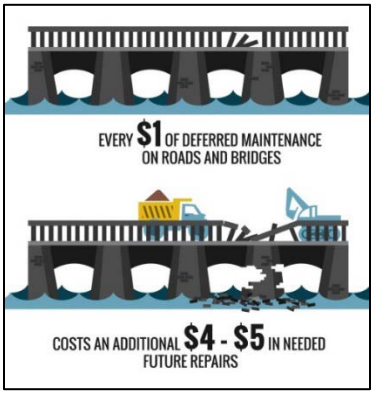
Source: TRIP analysis of Federal Highway Administration data.

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.[16] As roads and highways continue to age, they will reach a point of deterioration where routine paving and maintenance will not be adequate to keep pavement surfaces in good condition and costly reconstruction of the roadway and its underlying surfaces will become necessary.

Chart 2. Pavement condition cycle time with treatment and cost



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



Long-term repair costs increase significantly when road and bridge maintenance is deferred, as road and bridge deterioration accelerates later in the service life of a transportation facility and requires more costly repairs. A report on maintaining pavements found that every $1 of deferred maintenance on roads and bridges costs an additional $4 to $5 in needed future repairs.[17]

The Cost of Inadequate Road Conditions in Ohio

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 Ohio motorists as a result of deteriorated road conditions is $4.2 billion annually, an average of $524 per driver statewide.[18] The chart below details additional VOC per motorist in the state's largest urban areas.

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

Location	VOC
Cincinnati	$727
Cleveland-Akron	$763
Columbus	$534
Dayton	$675
Toledo	$567
Ohio Statewide	**$524**

Source: TRIP estimates.

Additional vehicle operating costs have been calculated in the Highway Development and Management Model (HDM), which is recognized by the U.S. Department of Transportation and more than 100 other countries as the definitive analysis of the impact of road conditions on vehicle operating costs. The HDM report is based on numerous studies that have measured the impact of various factors, including road conditions, on vehicle operating costs.[19] 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.[20] Additional research on the

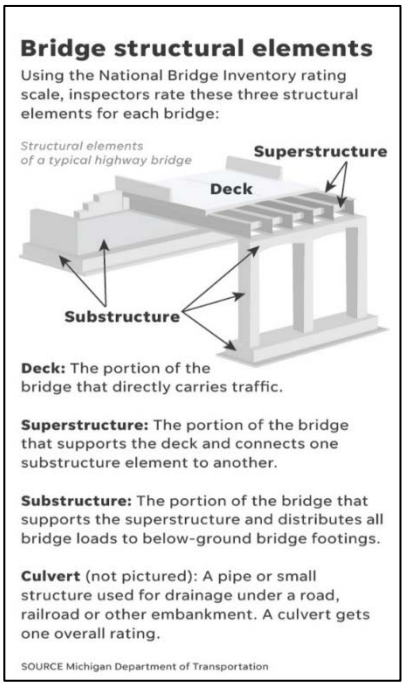
impact of road conditions on fuel consumption by the Texas Transportation Institute (TTI) is also factored into TRIP's vehicle operating cost methodology.

Bridge Conditions in Ohio

Ohio'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.

Five percent (1,251 of 26,960) of Ohio's locally and state-maintained bridges are rated in poor/structurally deficient condition.[21] This includes all bridges that are 20 feet or more in length. A bridge is deemed poor/structurally deficient if there is significant deterioration of the bridge deck, supports or other major components.

Bridges that are poor/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. Thirty-four percent of Ohio'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 61 percent of the state's bridges are rated in good condition.[23]



The chart below shows the condition of bridges statewide and in Ohio's largest urban areas.[24]

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

	POOR/STRUCTURALLY DEFICIENT		FAIR		GOOD		TOTAL
	Number	Share	Number	Share	Number	Share	BRIDGES
Cincinnati	101	5%	879	40%	1243	56%	2,223
Cleveland-Akron	137	7%	806	44%	909	49%	1,852
Columbus	21	2%	230	25%	683	73%	934
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Ohio Statewide	**1,251**	**5%**	**9,205**	**34%**	**16,504**	**61%**	**26,960**

Source: TRIP analysis of Federal Highway Administration National Bridge Inventory (2023).

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 Ohio, 40 percent of the state's bridges are 50 years or older.[25] 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.

For comparison, the chart below details bridge conditions in Ohio's contiguous states.

Chart 5. Share of bridges in poor/structurally deficient, fair and good condition in Ohio and contiguous states.

STATE	Poor/Structurally Deficient	Fair	Good	Total Bridges
Indiana	5%	53%	41%	19,381
Kentucky	7%	67%	26%	14,493
Michigan	11%	54%	34%	11,341
Pennsylvania	13%	53%	34%	23,257
West Virginia	20%	57%	24%	7,323
OHIO	**5%**	**34%**	**61%**	**26,960**

Source: TRIP analysis of Federal Highway Administration National Bridge Inventory (2023).

Traffic Congestion in Ohio

While traffic congestion is largely constrained to the state's urban areas, increasing congestion on Ohio's major highways and roads hampers the state's ability to support economic development and quality of life by reducing the reliability and efficiency of personal and commercial travel, including the transport of goods and services. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to consumers. Increased levels of congestion can also reduce the attractiveness of a location when a company is considering expansion or deciding where to locate a new facility.

Based on a 2019 report on urban mobility by the Texas Transportation Institute that analyzes urban traffic congestion levels and provides estimates on the amount of time and the value of lost time and wasted fuel as a result of traffic congestion, TRIP has estimated in the following chart the average number of hours lost annually for each driver, the per-driver cost of lost time and wasted fuel due to congestion and the average amount of fuel per driver wasted annually in 2021 due to congestion in each of Ohio's largest urban areas.

Chart 6. 2021 Annual hours and fuel lost to congestion and congestion costs per driver.

Location	Annual Hours Lost to Congestion	Annual Congestion Cost Per Driver	Gallons of Fuel Wasted Per Driver
Cincinnati	48	$1,157	24
Cleveland-Akron	40	$938	21
Columbus	46	$1,099	20
Dayton	30	$627	12
Toledo	37	$789	20

Source: TRIP estimate based on Texas Transportation Institute Analysis.

Based on the TTI report, TRIP estimates that the total cost of traffic congestion in Ohio in 2021 in the form of lost time and wasted fuel is $5 billion annually.[26] Increasing congestion on Ohio's major highways

and roads hampers the state's ability to support economic development and quality of life by reducing the reliability and efficiency of personal and commercial travel, including the transport of goods and services.

The following chart shows the most congested portions of Ohio highways during weekday AM and PM peak travel hours.

Chart 7. Ohio's most congested interstate segments.

Rank	Location	Route	From	To	Miles
AM					
1	Cleveland	I-490	W. 7th St.	E. 55th St.	1.4
2	Cleveland	I-77 NB	SR-43 (Broadway Ave.)	I-90 Interchange	1.6
3	Columbus	I-670 WB	Leonard Ave.	N. High St.	2
4	Cleveland	I-71 NB	Denison Ave.	I-490 Interchange	2.8
5	Columbus	I-71 SB	E 5th Ave.	I-70/I-71 Interchange	2.1
6	Cleveland	I-90 EB	W. 73rd St.	US-322 (Chester Ave.)	4.1
7	Columbus	I-70 WB	US-33 (E. Livingston Ave.)	I-70/I-71 Interchange	2.6
8	Cincinnati	I-275 WB	SR-28	US-22 (Montgomery Rd.)	6.6
9	Cincinnati	I-75 SB	W. Liberty St.	OH/KY Border	1.7
10	Akron	I-77 NB	S. Arlington Ave.	I-76/I-77 Interchange	5.5
PM					
1	Cincinnati	I-75 SB	US-52 (Hopple St.)	I-71/I-75 Interchange	3.1
2	Cincinnati	I-71 NB	I-471	Victory Pkwy.	2.8
3	Mansfield	US-30 EB	N Lexington Springmill Rd.	SR-39 (S. Springmill St.)	3
4	Strasburg	US-250	Manchester Ave. SW	I-77 Interchange	5
5	Columbus	I-71 NB	E. 5th St.	Spring St.	1.3
6	Columbus	I-70 WB	Alum Creek Dr.	I-70/I-71 Interchange	1.5
7	Cincinnati	I-275 EB	US-22 (Montgomery Rd.)	Reed Hartman Hwy.	2.5
8	Sunbury	US-36	I-71	SR-3	3.8
9	Cleveland	I-480 WB	Northfield Rd.	SR-14 (Broadway Ave.)	3
10	Cleveland	I-90 WB	E. 55th St.	US-322 (Chester Ave.)	2.7

Source: Ohio Department of Transportation.

Traffic Safety in Ohio

A total of 6,080 people were killed in Ohio traffic crashes from 2018 to 2022, an average of 1,216 fatalities per year.[27] From 2017 to 2021, 14 percent of the state's traffic fatalities in crashes involving motorized vehicles were of pedestrians or bicyclists, a total of 720 pedestrian fatalities and 114 bicycle fatalities over the five-year period.[28]

Chart 8. Ohio traffic fatalities 2017 – 2021.

Year	Total Fatalities	Pedestrian Fatalities	Bicycle Fatalities	Share Bike and Ped.
2017	1,179	142	19	14%
2018	1,068	127	22	14%
2019	1,153	124	25	13%
2020	1,230	159	18	14%
2021	1,351	168	30	15%
TOTAL	**5,762**	**720**	**114**	**14%**
AVERAGE	**1,152**	**144**	**23**	**14%**

Source: National Highway Traffic Safety Administration.

Ohio's 2022 traffic fatality rate of 1.16 fatalities per 100 million vehicle miles of travel is lower than the national average of 1.35.[29] The fatality rate in 2020 on Ohio's non-interstate rural roads is nearly double that on all other roads in the state (1.85 fatalities per 100 million vehicle miles of travel vs. 1.0).[30]

The number of fatalities in Ohio increased 11 percent from 2019 to 2022, from 1,153 to 1,278, and the state's fatality rate per 100 million VMT increased 15 percent during that time, from 1.01 to 1.16.[31] Traffic fatalities began to increase dramatically in 2020 even as vehicle travel rates plummeted due to the COVID-19 pandemic. This dramatic increase in the number of fatalities and the rate of fatalities per 100 million VMT happened while vehicle travel in the state decreased by two percent overall from 2019 to 2022.

Chart 9. Ohio traffic fatality and VMT data, 2019-2022.

OHIO TRAFFIC FATALITY AND VEHICLE MILES OF TRAVEL (VMT) DATA					
	2019	2020	2021	2022	2019-2022 Change
Traffic Fatalities	1,153	1,230	1,351	1,278	11%
Fatalities per 100M VMT	1.01	1.19	1.22	1.16	15%
VMT (Billions)	114.7	103.1	112.9	112.6	-2%

Source: National Highway Traffic Safety Administration and Federal Highway 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]The AAA Foundation for Traffic Safety (AAAFTS) drew similar conclusions about the role of increased risks being taken by drivers during the pandemic. A survey taken of drivers in October and November 2020 by the AAAFTS asked whether their level of driving had decreased, remained the same or increased since the beginning of COVID-19 related restrictions, and whether the motorist had engaged in a variety of risky driving behaviors in the previous 30 days.[33] In a February 2022 brief about the survey, the AAAFTS noted that drivers who maintained or increased their pre-COVID travel levels indicated that they were more likely to engage in risky driving behavior, including speeding, not wearing a seat belt, being impaired and driving aggressively. "It is possible that many of the individuals who were willing to travel—and even increase their travel—despite the health risks associated with the pandemic were already more willing than average to take other risks," the AAAFTS report found.[34]

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.[35]

Chart 10. The Safe System Approach

Source: US Department of Transportation.

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.

Traffic crashes in Ohio imposed a total of $16 billion in economic costs in 2022.[36] TRIP estimates that roadway features, while not the primary factor, were likely a contributing factor in approximately one-third of all fatal traffic crashes, resulting in $5.2 billion in economic costs in Ohio in 2022.[37] According to a 2023 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.[38]

Recognizing the rising number of crashes year-over-year, ODOT increased funding to target locations with high incidences of crashes. In the past year alone, 137 projects were completed that addressed locations where roadway geometrics, roadside hazards, and traffic control improvements were made. An additional 121 project locations have been identified for construction in the upcoming fiscal year.

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.

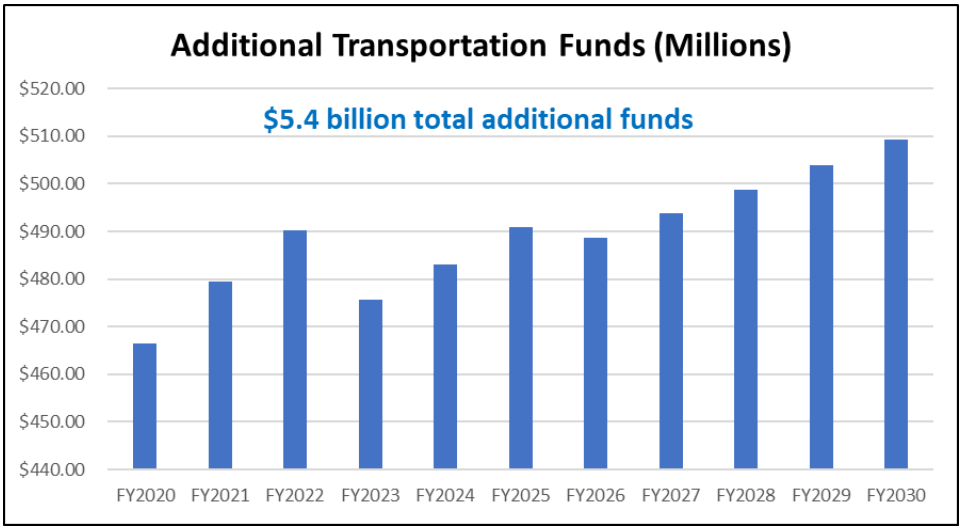
Transportation Funding in Ohio

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

To address a lack of adequate transportation funding, Governor Mike DeWine and the state legislature approved a 2019 transportation budget that increased the state tax on a gallon of gas by 10.5 cents and diesel fuel by 19 cents per gallon, to 38.5 and 47 cents per gallon respectively. As a result of the increased revenue collected, ODOT projects that from FY2020 through FY2030 a total of nearly $5.4 billion in state-provided additional transportation funds will be available, allowing the state to move forward with needed improvements to its transportation system.[39] The chart below details the amount of additional

transportation funding that is projected to be available from FY2020 to FY2030 as a result of the increased user fee on gasoline and diesel.

Chart 11. Additional transportation funds available to ODOT as a result of increased user fees on gasoline and diesel.



Source: ODOT response to TRIP survey.

Due to this additional federal and state funding, ODOT plans to move forward with the following major construction projects from 2023 to 2026 – a total of over $1.4 billion in improvements.

Chart 12. Projects underway from 2023 to 2026.

Cincinnati/Dayton	
Clermont	SR 32 (Eastern Corridor) - New interchange at Glen Este Withamsville
Greene	New interchange at US 35 and Valley/Trebein Road
Hamilton	Construct New Western Hills Viaduct
Hamilton	I-75 (Thru the Valley) - Replace railroad bridge and add new spans for I-75 unification
Warren	Widen SR 63 from Union Rd. to SR 741
Cleveland/Akron	
Cuyahoga	Reconstruction of the Warrensville-Van Aken Light Rail Yard
Cuyahoga	Improvements to I-90 Central Interchange (9th St. to Carnegie)
Cuyahoga	Bus Rapid Transit along US 42 from Detroit Superior Bridge to Peal/State and Broadway Rds.
Summit	Widen I-77 from Everett Rd. to Ohio Turnpike
Columbus	
Delaware	Widen US 36/SR 37 and replace existing rail bridge
Delaware	New interchange at I-71/Sunbury Parkway (South of existing)
Franklin	Improvements to I-270/US 23 interchange and US 23/ Rathmell Road intersection
Franklin	I-70 Far East Freeway - Add Westbound lane and improve Brice Road interchange

Toledo	
Henry	US 24/CR 17D new interchange
Ottawa	SR 23 safety improvements, roundabout construction and widening
Other Areas (By County)	
Brown	New SR 32 interchange between Brooks-Malott and Bodman Roads
Erie	Roadway improvements along US 6 from Sandusky to Huron
Fairfield	New interchange at US 33/Pickerington Road
Hancock	Reconstruct existing I-75/CR 99 interchange to a Diverging Diamond
Lawrence	Chesapeake Bypass - Phase 2
Licking	Thornwood Bridge Crossing - new bridge on new alignment
Ross	Improvements to Bridge Street and US 35 interchange

Source: Ohio Department of Transportation TRAC Tier I Construction Commitments.

The additional revenue has allowed the state to move forward with needed transportation improvements. ODOT, primarily through the TRAC process, has also identified nearly $1.6 billion in needed projects throughout the state for which funding is available for pre-construction activities including engineering and right-of-way acquisition, but for which construction funding is not yet available.[40]

Chart 13. Ohio needed transportation projects that lack adequate funding to proceed.

Cincinnati/Dayton	
Butler	North Hamilton Crossing - East-West roadway on new alignment with a new river crossing
Butler	Roadway improvements and new interchange at I-75/Millikin Rd.
Hamilton	Improvements to Western Hills Viaduct, including relocation of utilities, new Mill Creek bridge
Hamilton/Clermont	I-275 Smart Lane from US 42 to SR 28
Montgomery/Greene	Roadway improvements along Wilmington Pike/I-675 interchange
Cleveland/Akron	
Cuyahoga	Thrive 105 Transit improvements along E. 105th and E. 93rd.
Cuyahoga	Roadway improvements along Chagrin Boulevard/ I-271 interchange
Cuyahoga	I-480/Granger Rd. interchange reconstruction into full interchange
Mahoning	Safety and capacity improvements along US 224 (SR 7 to Tiffany Blvd.)
Stark	Relocate US 30 from Trump Avenue to SR 44 (East Canton bypass)
Summit	Improvements to I-77 and SR 8 including widening and ramp work
Columbus	
Delaware	US 23 Corridor roadway improvements between Delaware and Waldo
Delaware	New interchange at I-71/Big Walnut Road
Franklin	Widen I-270 EB ramp to I-71 NB and add lane on I-71 NB
Franklin	Widen Alum Creek Drive from SR 317 to Groveport Rd.
Franklin	I-71 hard shoulder running lane between 5th Ave. and SR 161
Franklin	Roadway improvements along US 33 from Refugee Road to Gender Road
Pickaway	New interchange at US 23 and SR 762

Toledo	
Lucas	I-475 widening to add third lane from US 23 interchange to Douglass Road
Seneca	Rail grade separation at S. Town Street and multiple crossing closures
Other Areas (By County)	
Athens/Meigs	Widen US 33 from Athens to Darwin and SR 7 to the Ohio River
Fairfield/Licking	Interchange improvements at I-70, SR 256 and Taylor Road
Knox	Relocate SR 13 along the Kokosing River (Mount Vernon)
Montgomery	Roadway improvements to North Dixie, Northwoods and Lightner Roads

Source: Ohio Department of Transportation TRAC Tier II Construction Commitments.

The Infrastructure Investment and Jobs Act (IIJA), signed into law by President Biden in November 2021, will provide $11.21 billion in state funds for highway, bridge and transit investments in Ohio over the next five years, including a 30% funding increase in FY 2022. Federal funds currently provide 49 percent of the revenue used by ODOT to fund highway and bridge improvements.

Most federal funds for highway and transit improvements in Ohio 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 (additional revenue is generated by fees on the sale of large trucks, a highway use tax levied on vehicles in excess of 55,000 pounds and a tax on the sale of large truck tires).

Revenue from the motor fuel tax – a critical source of transportation funding -- is likely to erode as a result of increasing vehicle fuel efficiency, the increasing use of electric vehicles and the impact of 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.[41] . In 2023, of all passenger vehicles sold in the U.S., seven percent were electric vehicles. By 2030, the share of electric vehicles sold is projected to increase to 40 percent.[42]

During 2022 and the first half of 2023 the Federal Highway Administration's national highway construction cost index, which measures labor and materials cost, increased by 36 percent.[43]

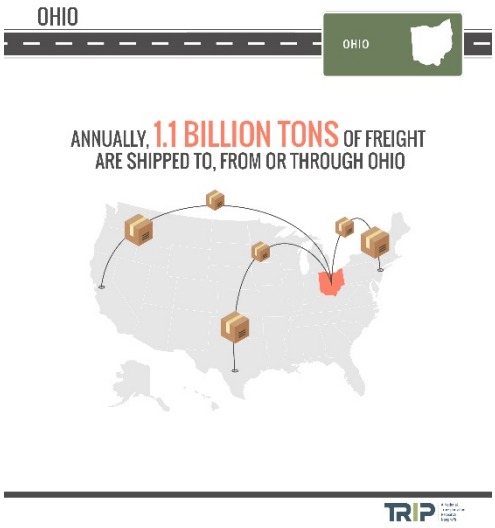
Freight Transportation in Ohio

Today's culture of business demands that an area has 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, including its highways, railroads, air and maritime ports, 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 economic development in Ohio. 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 amount of freight transported in Ohio and the rest of the U.S. is expected to increase significantly as a result of 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.

Every year, $1.1 trillion in goods are shipped to and from sites in Ohio, mostly by truck.[44] Seventy-nine percent of the goods shipped annually to and from sites in Ohio are carried by truck and another 12 percent are carried by courier services or multiple-mode deliveries, which include trucking.[45] The amount of freight shipped annually to and from sites in Ohio is anticipated to increase by 98 percent by value 42 percent by weight by 2050.[46]

Accommodating the significant increase expected in the movement of truck freight in Ohio will be further challenged by the significant number of freight routes in the state that are constrained because they have inadequate load carrying capacity to accommodate large trucks. The chart below lists Ohio's top 10 truck bottlenecks.[47]

Chart 14. Ohio's top ten truck bottlenecks.

Rank	Location	Route	From	To	Miles
1	Cincinnati	I-75 SB	Western Hills Viaduct	Ohio/Kentucky Border	3
2	Erie County	I-80 WB	SR-99 (Skadden Rd.)	SR-269	4.4
3	Cincinnati	I-275 WB	SR-28	Loveland Madeira Rd.	5.3
4	Springfield	I-70 EB	US-40 (E National Rd.)	SR-54 (Urbana St.)	3.5
5	Cincinnati	I-71 NB	Cooper Rd.	Snider Rd.	3.8
6	Cincinnati	I-75 SB	Shepherd Ln.	Towne St.	3.9
7	Cincinnati	I-75 NB	Vine St.	SR-126 (Ronald Reagan Cross County Hwy)	2.7
8	Dayton	I-70 WB	Kimmel Rd.	Brookville Phillipsburg Rd.	3.3
9	Mansfield	US-30 EB	Lexington Springmill Rd. N	SR-13 (N Main St.)	3.3
10	Cincinnati	I-75 NB	Shepherd Ln.	I-275	3

Source: ODOT.

The ability of Ohio's and the nation's freight transportation system to accommodate the growing demand for freight movement efficiently and safely 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.

The Importance of Transportation to Economic Growth in Ohio

Investments in transportation improvements in Ohio 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 132,000 full-time jobs across all sectors of the state economy, earning these workers approximately $5.5 billion annually.[48] These jobs include approximately 66,000 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 66,000 full-time jobs in Ohio.[49] Transportation construction in Ohio contributes an estimated $1 billion annually in state and local income, corporate and unemployment insurance taxes and the federal payroll tax.[50]

Approximately 2.4 million full-time jobs in Ohio 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 approximately $95 billion in wages and contribute an estimated $17.3 billion in state and local income, corporate and unemployment insurance taxes and the federal payroll tax.[51]

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

Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient and more modern transportation system. Highway access has a significant impact on the competitiveness of a region's economy. In a 2022 survey of corporate executives by Area Development Magazine, highway accessibility was ranked fifth out of 28 selection factors in choosing a location.[52]

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.[53]

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.[54] The benefits of TSMO can include reduced traffic congestion, reduced fuel consumption and reduced emissions.

Conclusion

As Ohio strives to support ongoing population and economic growth, it is critical that the state can provide a well-maintained, safe, and efficient 21st-century network of roads, highways, bridges, and transit to accommodate the mobility demands of modern society.

The combination of additional state and federal transportation funding has allowed Ohio to move forward with numerous projects to improve the condition, use and efficiency of the surface transportation network. While this has allowed the state to undertake dozens of needed transportation projects, Ohio still faces a funding shortfall to make additional repairs and improvements to its roads and bridges.

A safe and reliable transportation system that is maintained in good condition and offers improved mobility and accessibility to meet the needs of Ohio residents, businesses, and tourists alike, is critical to keeping Ohio mobile and moving the state forward.

# # #

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