

MICHIGAN'S TOP TRANSPORTATION CHALLENGES:

Providing a Transportation System to Support and Sustain
Michigan's Economic Revival

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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

As Michigan continues to recover from a devastating economic downturn, the condition, efficiency and safety of the state's transportation system is likely to play a critical role in determining the extent and pace of the state's re-emergence as a region with a strong economy and a desirable quality of life.

Since unemployment and population loss crested in 2010, Michigan has experienced steady economic and employment growth and seen its population stabilize and begin to grow modestly. But the state's economic recovery is threatened by Michigan's inability to address its transportation challenges. These challenges include deteriorating roads, highways and bridges, a lack of adequate traffic safety features, a lack of transportation facilities to support economic growth and quality of life, and a lack of adequate financial resources to address the state's transportation challenges.

For Michiganders to enjoy an enhanced quality of life while the state sustains and accelerates economic recovery, Michigan will need to maintain and improve the condition of its roads, highways and bridges. Making needed improvements to the state's transportation system will enhance its ability to provide efficient, safe and reliable mobility for residents, visitors and businesses.

Meeting Michigan's need to modernize and maintain its transportation system will require a significant boost in local, state and federal funding.

TRANSPORTATION CHALLENGE: Deteriorated Pavement Conditions

The condition of locally and state-maintained roads and highways are deteriorating and are forecast to worsen significantly under current levels of funding. Repairing roads and highways while they are in good or fair condition greatly reduces long-term preservation costs because of the high cost of repairing roads in poor condition.

- A report by the [Michigan Transportation Asset Management Council](#) (MTAMC) found that the percentage of Michigan's major roads in poor condition has increased from 23 percent in 2006 to 38 percent in 2014.
- 45 percent of Michigan's major roads were rated in fair condition and the remaining 17 percent were rated in good condition in 2014.
- Michigan's major roads and highways (all arterial and collector routes) account for 37 percent of all lane miles of roadways in the state and carry 90 percent of all vehicle miles of travel in the state.
- Under current funding, the [MTAMC](#) found that the percentage of major roads in Michigan in poor condition will increase to 53 percent by 2025.
- Keeping roads in good condition by performing minor maintenance is far more cost-effective than waiting until roads are in fair or poor condition when it becomes far more costly to make needed repairs.

- Roads in good condition can be maintained by preventive maintenance, which costs approximately \$85,000 per lane mile. Roads in mediocre or fair condition require resurfacing, which costs approximately \$575,000 per lane mile. Roads in poor condition require reconstruction to repair the surface and the base under the road, which costs approximately \$1,625,000 per mile – 19 times greater than the cost of preventive maintenance.
- A Fall 2014 [poll](#) of local Michigan governments conducted by the Gerald R. Ford School of Public Policy at the University of Michigan found that a majority (52 percent) of the state’s local governments are only able to keep up with short-term road fixes such as filling potholes, as opposed to practicing long-term and more cost-effective preventive maintenance.
- Driving on rough roads costs all Michigan motorists a total of \$4.8 billion annually in extra vehicle operating costs (VOC), an average of \$686 annually per motorist. Costs include accelerated vehicle depreciation, additional repair costs, and increased fuel consumption and tire wear.

TRANSPORTATION CHALLENGE: Progress in Reducing Share of Deficient Bridges Threatened

Michigan has made progress in reducing its share of bridges that are rated structurally deficient, but under current funding levels, the share of Michigan’s locally and state-maintained bridges that are structurally deficient is expected to increase.

- Twelve percent of Michigan’s locally and state-maintained bridges were rated structurally deficient in 2014. A bridge is structurally deficient if there is significant deterioration of the bridge deck, superstructure or substructure. A structurally deficient bridge may be posted for lower weight, restricting or redirecting large vehicles, including commercial trucks and emergency services vehicles, or it may need to be closed.
- Sixteen percent of Michigan’s locally and state-maintained bridges are functionally obsolete. Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.
- In 2006, 16 percent of Michigan’s bridges were rated structurally deficient and twelve percent were rated functionally obsolete.
- Under current funding, the share of Michigan’s bridges rated structurally deficient is expected to increase to 14 percent by 2023.

TRANSPORTATION CHALLENGE: Improving Roadway Safety

Improving safety features on Michigan's roads and highways would likely result in a decrease in traffic fatalities and serious crashes. It is estimated that roadway features are likely a contributing factor in approximately one-third of all fatal and serious traffic crashes.

- Between 2009 and 2013 a total of 4,587 people were killed in traffic crashes in Michigan, an average of 917 fatalities per year.
- Michigan's overall traffic fatality rate of 1.00 fatalities per 100 million vehicle miles of travel in 2013 is slightly lower than the national traffic fatality rate of 1.09.
- The fatality rate on Michigan's rural non-Interstate roads was 1.76 fatalities per 100 million vehicle miles of travel in 2013, nearly two-and-a-half times higher than the 0.75 fatality rate on all other roads and highways in the state.
- 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. The cost of serious crashes includes lost productivity, lost earnings, medical costs and emergency services.
- Several factors are associated with vehicle crashes that result in fatalities, including driver behavior, vehicle characteristics and roadway features. TRIP estimates that roadway features are likely a contributing factor in approximately one-third of fatal traffic crashes.
- Where appropriate, highway improvements can reduce traffic fatalities and crashes while improving traffic flow to help relieve congestion. Such improvements include removing or shielding obstacles; adding or improving medians; improved lighting; adding rumble strips, wider lanes, wider and paved shoulders; and better road markings and traffic signals.
- Investments in rural traffic safety have been found to result in significant reductions in serious traffic crashes. A 2012 report by the [Texas Transportation Institute](#) (TTI) found that improvements completed recently by the Texas Department of Transportation that widened lanes, improved shoulders and made other safety improvements on 1,159 miles of rural state roadways resulted in 133 fewer fatalities on these roads in the first three years after the improvements were completed (as compared to the three years prior). TTI estimates that the improvements on these roads are likely to save 880 lives over the next 20 years.

TRANSPORTATION CHALLENGE: Economic Recovery Threatened by Deteriorated Roads and Bridges, Freight Bottlenecks and lack of Modernized Highway and Transit Facilities

The efficiency of Michigan's transportation system is critical to the recovery and health of the state's economy. The state's economic recovery is threatened by increased deterioration of Michigan's roads and bridges and the lack of needed transportation improvements to serve economic development.

- Michigan's three largest economic sectors – manufacturing, agriculture and tourism – are highly reliant on an efficient and well-maintained transportation system.
- More than half of Michigan local governments (58 percent) said that poor roads in their jurisdictions had a negative impact on economic development, in response to a 2014 [poll](#). Fifty-one percent said that poor roads had a negative impact on the fiscal health of local governments.
- Michigan's population increased by approximately eight percent between 1990 and 2005, from approximately 9.3 million to 10.1 million, before experiencing a slight decline through 2010 when the state's population declined to approximately 9.9 (9.877) million people as a result of Michigan's severe economic downturn.
- Michigan's population has achieved modest growth as the state's economy has recovered. The state's population rose from 9.877 million in 2010 to 9.909 million in 2014.
- Michigan's economy faltered during the latter half of the 2000s. Employment peaked at approximately 4.7 million jobs in 2005 resulting in an unemployment rate of 7.1 percent, before dropping to approximately 4.2 million jobs and an unemployment rate of 14.9 percent in 2010.
- By January 2015, Michigan had added approximately 300,000 jobs, reaching approximately 4.5 million jobs, and the state's unemployment rate dropped to 5.9 percent.
- Annually, \$520 billion in goods are shipped throughout Michigan, mostly by truck. Seventy-eight percent of the goods shipped annually throughout Michigan are carried by trucks, another 21 percent are carried by rail, and the remaining freight shipped by water and air.
- The amount of freight, measured by weight, shipped annually throughout Michigan is expected to increase by 25 percent from 2015 to 2030, putting further stress on Michigan's roads, highways and bridges.

- The efficiency of freight delivery and personal travel in Michigan is being compromised by six significant highway bottlenecks, which are rated among the nation’s worst 250 highway bottlenecks. Relieving congestion at these bottlenecks will require significant investment to improve traffic flow at these sites.
- The [American Transportation Research Institute reports](#) that the top six highway bottlenecks in Michigan on highways that are critical to the nation’s freight delivery system are: I-94 at I-75 and I-75 at I-696 in the Detroit area; I-96 at US-131 in the Grand Rapids area; I-69 at I-96 and I-96 at US-127 in the Lansing area; and I-94 at I-69 in the Port Huron area.
- Highway accessibility was ranked the number two site selection factor behind only the availability of skilled labor in a 2013 survey of corporate executives by [Area Development magazine](#).
- A number of critical transportation improvements that will improve the efficiency of Michigan’s transportation system are underway or are in the planning process. However, most of these projects will need significant additional funding to be completed. These projects include:

New international bridge crossing between Detroit and Windsor.
Improved intermodal truck-rail terminal and facilities in Southeast Michigan.
Modernizing and repairing portions of I-94 and I-75 in the Detroit area.
Improvements to Willow Run Airport in the Detroit area.
New rail tunnel between Detroit and Windsor to accommodate modern rail cars.
New intermodal rail/bus transit facilities in Troy/Birmingham, Grand Rapids, Dearborn, East Lansing, Ann Arbor and Detroit.
Completion of the M-1 Streetcar along Woodward Avenue in Detroit.
Construction of a second bus rapid transit line in the Grand Rapids area and a bus rapid Transit line in the Lansing area.
Improve and enhance public transit along the Woodward Avenue corridor from the Detroit riverfront to the city of Pontiac.
Improve and enhance public transit from northeast of Ann Arbor to south of Ann Arbor, connecting the campuses of the University of Michigan, downtown, the medical center, the train station and commercial areas.

- Because of a lack of adequate resources, the Michigan Department of Transportation (MDOT) plans to focus almost exclusively on preserving its current system rather than making any improvements to the system to support economic development opportunities.
- From 2015 to 2019, MDOT plans to spend an average of \$671 million on road, highway and bridge repairs and only \$4 million annually on expanding the capacity of the system.

TRANSPORTATION CHALLENGE: Inadequate Transportation Funding

Without a significant boost in transportation funding at the local, state and federal level, the condition of Michigan's roads, highways and bridges will decline. This lack of funding will reduce economic productivity in the state and many projects needed to support economic growth and to support quality of life in Michigan will not move forward. New research indicates that the cost of making needed road, highway, and bridge improvements is far less than the potential loss in state economic activity caused by a lack of adequate road, highway and bridge preservation.

- Upgrading all of Michigan's major roads currently in poor or fair condition to good condition would cost \$14.1 billion.
- Seventy-nine percent of local Michigan governments said they would need a 50 percent increase in state funding for local roads just to maintain their roads in their current condition. And more than half (56 percent) said that state funding for local roads would need to more than double to allow them to improve the condition of their roads, in response to a 2014 [poll](#).
- The [Federal Highway Administration](#) estimates that each dollar spent on road, highway and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs, and reduced emissions as a result of improved traffic flow.
- Signed into law in July 2012, MAP-21 (Moving Ahead for Progress in the 21st Century Act), has improved several procedures that in the past had delayed projects, MAP-21 does not address long-term funding challenges facing the federal surface transportation program.
- In July 2014, Congress approved the Highway and Transportation Funding Act of 2014, an eight-month extension of the federal surface transportation program, on which states rely for road, highway, bridge and transit funding. The program, initially set to expire on September 30, 2014, will now run through May 31, 2015. In addition to extending the current authorization of the highway and public transportation programs, the legislation will transfer nearly \$11 billion into the Highway Trust Fund (HTF) to preserve existing levels of highway and public transportation investment through the end of May 2015.

- If Congress decides to provide additional revenues into the federal Highway Trust Fund in tandem with authorizing a new federal surface transportation program, a number of technically feasible revenue options have been identified by the [American Association of State Highway and Transportation Officials \(AASHTO\)](#).
- A significant boost in investment on the nation's roads, highways, bridges and public transit systems is needed to improve their condition and to meet the nation's transportation needs, concluded a new report from AASHTO. The [2015 AASHTO Transportation Bottom Line Report](#) found that annual investment in the nation's roads, highways and bridges needs to increase from \$88 billion to \$120 billion and from \$17 billion to \$43 billion in the nation's public transit systems, to improve conditions and meet the nation's mobility needs.
- The [2015 AASHTO Transportation Bottom Line Report](#) also found that the current backlog in needed road, highway and bridge improvements is \$740 billion.

A 2014 [report by the Oregon Department of Transportation \(ODOT\)](#) concluded that allowing the state's major roads, highways and bridges to deteriorate would result in significant reduction in job growth and reduced state gross domestic product (GDP) as a result of reduced economic efficiency.

- The ODOT report used a sophisticated model that integrates transportation, land use and economic activity to compare how an economy operates when a transportation system is well-maintained versus when it is allowed to deteriorate. The report found that deteriorated pavements, which result in a rougher and slower ride for vehicles, and deteriorated bridges, which need to be closed to heavy trucks, reduce economic productivity by increasing transportation costs.
- The report found that allowing roads and bridges to deteriorate reduces business productivity by increasing vehicle operating costs as a result of driving on rough roads, reducing travel speeds and increasing travel times because of route detours necessitated by weight-restricted bridges.
- As road and bridge conditions deteriorate, transportation agencies are likely to shift resources from preservation projects, which extend the service life of roads and bridges, to more reactive maintenance projects, which results in higher lifecycle costs, the report found. Transportation agencies are also likely to respond to increased road and bridge deterioration by shifting funds from modernization projects, which relieve congestion and increase business productivity, to maintenance projects.
- The ODOT report estimated that the road, highway and bridge deterioration anticipated over the next 20 years will result in Oregon creating 100,000 fewer jobs and generating \$9.4 billion less in state GDP.

- Oregon could avoid losing 100,000 jobs and \$9.4 billion in GDP through 2035 by spending an additional \$810 million more on road, highway and bridge repairs – nearly a 12-to-1 return on investment, according to the ODOT report.

Sources of information for this report include the Federal Highway Administration (FHWA), the Bureau of Transportation Statistics (BTS), the U.S. Census Bureau, the American Association of State Highway and Transportation Officials (AASHTO), the Texas Transportation Institute (TTI), the Michigan Department of Transportation (MDOT), the Michigan Transportation Asset Management Council, the Gerald R. Ford School of Public Policy at the University of Michigan, the American Transportation Research Institute and the National Highway Traffic Safety Administration (NHTSA). All data used in the report is the latest available.

Introduction

Michigan's roads, highways and bridges form vital transportation links for the state's residents, visitors and businesses, providing daily access to homes, jobs, shopping, natural resources and recreation. Today, with the Great Lakes State striving to support a high quality of life and economic competitiveness, the modernization of Michigan's transportation system is crucial, particularly to critical areas of the state's economy including agriculture, manufacturing and tourism.

Over the last five years, Michigan has made significant progress in recovering from a steep economic downturn, which saw the state lose jobs and population. But, Michigan's continued economic recovery is threatened by the poor condition of its roads, highways and bridges, and a lack of adequate investment in transportation to improve conditions, safety, access and mobility, which will support further economic growth and contribute to the state's quality of life.

As Michigan faces the challenge of preserving and modernizing its transportation system, the future level of federal, state and local transportation funding will be a critical factor in whether the state's economic recovery continues.

This report examines the condition, use and safety of Michigan's transportation system, local, state and federal funding needs, and the future mobility needs of the state.

Population and Economic Trends in Michigan

Michigan's residents and businesses require a high level of personal and commercial mobility. As Michigan's economic recovery continues it will result in increased demand for mobility and access to support the state's economic development and quality of life.

Michigan's population increased by approximately eight percent between 1990 and 2005, from approximately 9.3 million to 10.1 million, before experiencing a slight decline through 2010 when the state's population dropped to approximately 9.9 (9.877) million people as a result of the severe economic downturn suffered in Michigan.¹ From 2010 to 2014, Michigan's population stabilized and has achieved modest growth, from 9.877 million to 9.909 million, as the state's economy recovered.² Michigan had 6,986,587 licensed drivers in 2013.³

The state's economy began to falter after peaking around 2005. In 2005 the state supported approximately 4.7 million jobs and had an unemployment rate of 7.1 percent.⁴ But by 2010, the state supported only 4.2 million jobs and the unemployment rate had more than doubled to 14.9 percent.⁵ By January 2015 the state's economy was beginning to rebound, adding approximately 300,000 jobs to reach approximately 4.5 million jobs and seeing a drop in the unemployment rate to 5.9 percent.⁶

Condition of Michigan's Roads

The life cycle of Michigan's roads is greatly affected by the state and local government's ability to perform timely maintenance and upgrades to ensure that road and highway surfaces last

as long as possible. The condition of Michigan's roads and highways continues to decline and is forecast to worsen over the next decade as a result of a lack of funding.

More than one-third of major roads in Michigan are rated in poor condition and that rate is expected to increase to more than one-half by 2025 without a significant boost in state and local spending on road repairs. A report by the [Michigan Transportation Asset Management Council](#) (MTAMC) found that the percentage of Michigan's major roads in poor condition has increased from 23 percent in 2006 to 38 percent in 2014.⁷ An additional 45 percent of the state's major roads were rated in fair condition and the remaining 17 percent were rated in good condition in 2014.⁸ Under current funding, the MTAMC [report](#) found that the percentage of major roads in Michigan that are in poor condition will increase to 53 percent by 2025.⁹

Michigan's major roads and highways (includes all roads and highways classified as arterial or collector by the Federal Highway Administration) account for 37 percent of all lane miles of roadway in the state and carry 90 percent of all vehicle miles of travel in the state.¹⁰

Repairing roads and highways while they are in good or fair condition greatly reduces long-term preservation costs because of the high cost of repairing roads in poor condition. Roads in good condition can be maintained by preventive maintenance, which costs approximately \$85,000 per lane mile. Roads in mediocre or fair condition require resurfacing, which costs approximately \$575,000 per lane mile. Roads in poor condition require reconstruction to repair the surface and the base under the road, which costs approximately \$1,625,000 per mile – 19 times higher than the cost of preventive maintenance.¹¹

A Fall 2014 [poll](#) of local Michigan governments, conducted by the Gerald R. Ford School of Public Policy at the University of Michigan, found that a majority (52 percent) of local

governments are only able to keep up with short-term road fixes, such as filling potholes, as opposed to practicing long-term preventive maintenance.¹²

Pavement failure is caused by a combination of traffic, moisture, climate, and other factors. Moisture often works its way into road surfaces and the materials that form the road's foundation. Road surfaces at intersections are even more prone to deterioration because the slow-moving or standing loads occurring at these sites subject the pavement to higher levels of stress. 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.

The Costs to Motorists of Roads in Inadequate Condition

TRIP has calculated the additional cost to motorists of driving on roads in poor or unacceptable condition. When roads are in poor 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 vehicle operating costs borne by Michigan motorists as a result of poor road conditions is \$4.8 billion annually or \$686 annually per average Michigan motorist.¹³

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.¹⁴

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 vehicle operating cost estimate is based on taking the average number of miles driven annually by a motorist, calculating current vehicle operating costs based on AAA's 2014 vehicle operating costs and then using the HDM model to estimate the additional vehicle operating costs paid by drivers as a result of substandard roads.¹⁵ 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 Michigan

Michigan'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.

Michigan has made progress in reducing the share of bridges that are rated structurally deficient, but under current funding levels, the percentage of structurally deficient is expected to increase.

Twelve percent of Michigan's locally and state-maintained bridges were rated structurally deficient in 2014.¹⁶ A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Structurally deficient bridges are often posted for lower weight or closed to traffic, restricting or redirecting large vehicles, including commercial trucks and emergency services vehicles.

Sixteen percent of Michigan's locally and state-maintained bridges are functionally obsolete.¹⁷ Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.

In 2006, 16 percent of Michigan's bridges were rated structurally deficient and twelve percent were rated functionally obsolete.¹⁸ Under current funding, the share of Michigan's bridges rated structurally deficient is expected to increase to 14 percent by 2023.¹⁹

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.

The service life of bridges can be extended by performing routine maintenance such as resurfacing decks, painting surfaces, insuring 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 Michigan

A total of 4,587 people were killed in motor vehicle crashes in Michigan from 2009 through 2013, an average of 917 fatalities per year.²⁰

Chart 1. Traffic fatalities in Michigan from 2009 – 2013.

<i>Year</i>	<i>Fatalities</i>
2009	871
2010	942
2011	889
2012	938
2013	947
Total	4,587

Source: National Highway Traffic Safety Administration

Three major factors are associated with fatal vehicle crashes: driver behavior, vehicle characteristics and roadway features. It is estimated that roadway features are likely a contributing factor in approximately one-third of fatal traffic crashes. 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.

Michigan's overall traffic fatality rate of 1.00 fatalities per 100 million vehicle miles of travel in 2013 is slightly lower than the national average of 1.09.²¹ The fatality rate on Michigan's non-Interstate rural roads was 1.76 fatalities per 100 million vehicle miles of travel in 2013, nearly two-and-a-half times higher than the fatality rate of 0.75 on all other roads and highways in the state.²²

Improving safety on Michigan'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 adding turn lanes, removing or shielding obstacles, adding or improving medians, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals.

Roads with poor geometry, with insufficient clear distances, without turn lanes, having inadequate shoulders for the posted speed limits, or poorly laid out intersections or interchanges, pose greater risks to motorists, pedestrians and bicyclists.

Investments in rural traffic safety have been found to result in significant reductions in serious traffic crashes. A 2012 report by the [Texas Transportation Institute](#) (TTI) found that improvements completed recently by the Texas Department of Transportation that widened lanes, improved shoulders and made other safety improvements on 1,159 miles of rural state roadways resulted in 133 fewer fatalities on these roads in the first three years after the improvements were completed (as compared to the three years prior). TTI estimates that the improvements on these roads are likely to save 880 lives over the next 20 years.²³

Importance of Transportation to 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.

A lack of adequate access, roadway safety features or road and bridge repairs can impede the development of economic growth in the state by reducing productivity. Limited road and highway access, safety or preservation can reduce the efficiency of businesses, shippers and manufacturers, by increasing transportation costs.

More than half of Michigan local governments (58 percent) said that poor roads in their jurisdictions had a negative impact on economic development, in response to a 2014 [poll](#). Fifty-one percent of respondents said that poor roads had a negative impact on the fiscal health of local governments.²⁴

Reduced access and mobility can reduce the attractiveness of a location to a company to consider expansion or even to locate a new facility. And, the costs associated with delays as well as increased vehicle operating costs due to a deficient transportation system can increase overall costs for trucking and shipping companies, leading to revenue losses, lower pay for employees, and higher consumer costs.

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. This practice makes traffic operations and time delay a critically important factor in economic development.

Highways are vitally important to continued economic development in Michigan, particularly to the state's agriculture, manufacturing, tourism, mining, finance and health care sectors. 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.

Annually, \$520 billion in goods are shipped throughout Michigan, mostly by truck. Seventy-eight percent of the goods shipped annually throughout Michigan are carried by trucks, another 21 percent are carried by rail, and the remaining freight shipped by water and air.²⁵ The amount of freight, measured by weight, shipped annually throughout Michigan is expected to increase by 25 percent from 2015 to 2030, putting further stress on Michigan’s roads, highways and bridges.²⁶

The efficiency of freight delivery and personal travel in Michigan is being compromised by six significant highway bottlenecks, which are rated by the [American Transportation Research Institute](#) as among the nation’s top 250 highway bottlenecks on highways that are critical to the nation’s freight transportation system. Relieving congestion at these bottlenecks will require significant investment to improve traffic flow at these sites.

The following chart details the top six highway bottlenecks in Michigan on highways that are critical to the nation’s freight delivery system.²⁷

Chart 2. Top traffic bottlenecks in Michigan

Location	Bottleneck
Detroit	I-94 at I-75
Detroit	I-75 at I-696
Grand Rapids	I-96 at US-131
Lansing	I-69 at I-96
Lansing	I-96 at US-127
Port Huron	I-94 at I-69

Source: American Transportation Research Institute

The cost of road and bridge improvements are more than offset by the reduction of user costs associated with driving on rough roads, the improvement in business productivity, the reduction in delays and the improvement in traffic safety. The [Federal Highway Administration estimates](#) that each dollar spent on road, highway and bridge improvements results in an average

benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.²⁸

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. In fact, highway accessibility was ranked the number two site selection factor behind only the availability of skilled labor in a 2013 survey of corporate executives by [Area Development Magazine](#).²⁹

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.

A 2014 [report by the Oregon Department of Transportation](#) (ODOT) concluded that allowing the state's major roads, highways and bridges to deteriorate would result in significant reduction in job growth and reduced state gross domestic product as a result of reduced economic efficiency.

The ODOT report used a sophisticated model which integrates transportation, land use and economic activity to compare how an economy operates when a transportation system is well-maintained versus when it is allowed to deteriorate. The report found that deteriorated pavements, which result in a rougher and slower ride for vehicles, and deteriorated bridges, which need to be closed to heavy trucks, reduce economic productivity by increasing transportation costs.

The report found that allowing roads and bridges to deteriorate reduces business productivity by increasing vehicle operating costs as a result of driving on rough roads, reducing travel speeds and increasing travel times because of route detours necessitated by weight-restricted bridges and reducing the ability of transportation agencies to fund needed highway modernization projects to improve access.³⁰

As road and bridge conditions deteriorate, transportation agencies are likely to shift resources from preservation projects, which extend the service life of roads and bridges, to more reactive maintenance projects, which results in higher lifecycle costs, the report found.³¹ Transportation agencies are also likely to respond to increased road and bridge deterioration by shifting funds from modernization projects, which relieve congestion and increase business productivity, to maintenance projects.

The ODOT report estimated that the road, highway and bridge deterioration anticipated over the next 20 years will result in Oregon creating 100,000 fewer jobs and generating \$9.4 billion less in state gross domestic product (GDP).³² Oregon could avoid losing 100,000 jobs and \$9.4 billion in GDP through 2035 by spending an additional \$810 million more on road, highway and bridge repairs – nearly a 12 to 1 return on investment.³³

Transportation Funding

Without a significant boost in transportation funding at the local, state and federal level, the condition, efficiency and safety of Michigan's transportation system will decline. Michigan lacks adequate funding to improve the condition of state and locally-maintained roads, highways

and bridges and to proceed with numerous projects to enhance economic growth in the state by improving the efficiency of the state's transportation system.

Seventy-nine percent of local Michigan governments said they would need a 50 percent increase in state funding for local roads just to maintain their roads in their current condition; and more than half (56 percent) said that state funding for local roads would need to more than double to allow them to improve the condition of their roads, in response to a 2014 [poll](#).³⁴

Initial work on several significant transportation projects in Michigan is planned through 2015, but with the exception of the new Detroit to Windsor bridge and the M-1 Rail Streetcar in the Detroit area, significant additional funding will be needed in the future to complete these projects. The following projects are underway, but will require significant additional funding to proceed.

New International Trade Crossing: A new crossing between Detroit and Windsor, Ontario over the Detroit River will include freeway-to-freeway connections between I-75 in Michigan and Highway 401 in Ontario, greatly improving freight and passenger travel flow between the U.S. and Canada.

Detroit Intermodal Freight Terminal (DIFT): The DIFT project in southwest Detroit will improve the efficiency of freight movement in the area by enhancing truck/rail freight operations. The DIFT project comprises many individual projects that will be constructed over a 10 to 15-year period.³⁵

Modernizing portions of I-94 and I-75: Initial work has begun on modernizing and reconstructing a 6.7-mile section of I-94 and an 18-mile section of I-75 in the Detroit area. The improvements will include the reconstruction of bridges, overpasses and freeways.

Construction of the Continental Rail Gateway: The construction of a new rail tunnel under the Detroit River between Detroit in Windsor would accommodate modern rail cars that cannot travel on existing tunnels.

Improvements to Willow Run Airport: Modernizing the Willow Run Airport in Detroit is expected, along with other freight projects in the region, to enhance Southeast Michigan as a vital national and international logistics hub.

New intermodal bus and rail passenger facilities: The completion of new intermodal passenger facilities in Troy/Birmingham, Grand Rapids, Dearborn, East Lansing, Ann Arbor and Detroit is expected to increase the efficiency of personal travel in Michigan.

Construction of a second bus rapid transit (BRT) line in the Grand Rapids area and an initial BRT line in the Lansing area: Plans are underway to proceed with the Silver Line BRT in the Grand Rapids area in addition to the existing Silver Line BRT. Plans also call for the construction of an initial BRT line in the Lansing area.

Construction of the M-1 Rail Streetcar in the Detroit area: Construction on the 3.3-mile M-1 rail line in the Detroit area is scheduled to be complete by 2016, connecting key points and destinations along Woodward Avenue in Detroit's Central Business District to the New Center/North End district.

Improve and enhance public transit along the Woodward Avenue corridor from the Detroit riverfront to the city of Pontiac and from northeast of Ann Arbor to south of Ann Arbor, connecting the campuses of the University of Michigan, downtown, the medical center, the train station and commercial areas.

Because of a lack of adequate resources, MDOT plans to focus almost exclusively on preserving its current system rather than make any improvements to the system to support economic development opportunities.

From 2015 to 2019, MDOT plans to spend an average of \$671 million on road, highway and bridge repairs and only \$4 million annually on expanding the capacity of the system.³⁶

Federal Funding for Transportation in Michigan

The federal government provides some funding for the state and local transportation system largely as part MAP-21 (Moving Ahead for Progress in the 21st Century Act), the current two-year federal surface transportation program, which expires on May 31, 2015.

The federal government is a critical source of funding for Michigan's roads, highways, bridges and transit systems and provides a significant return to Michigan in road and bridge funding based on the revenue generated in the state by the federal motor fuel tax.

Federal funds for highway and transit improvements in Michigan are provided through the federal Highway Trust Fund, which raises revenue through federal user fees, largely an 18.4 cents-per-gallon tax on gasoline and a 24.4 cents-per-gallon tax on diesel fuel. Since 2008 revenue into the federal Highway Trust Fund has been inadequate to support legislatively set funding levels so Congress has transferred approximately \$53 billion in general funds and an additional \$2 billion from a related trust fund into the federal Highway Trust Fund.³⁷

Signed into law in July 2012, MAP-21 has improved several procedures that in the past had delayed projects. MAP-21 does not address long-term funding challenges facing the federal surface transportation program. In July 2014, Congress approved the Highway and

Transportation Funding Act of 2014, an eight-month extension of the federal surface transportation program on which states rely for road, highway, bridge and transit funding. The program, initially set to expire on September 30, 2014, will now run through May 31, 2015. In addition to extending the current authorization of the highway and public transportation programs, the legislation will transfer nearly \$11 billion into the Highway Trust Fund (HTF) to preserve existing levels of highway and public transportation investment through the end of May 2015.

If Congress decides to provide additional revenues into the federal Highway Trust Fund in tandem with authorizing a new federal surface transportation program, a number of technically feasible revenue options have been identified by the [American Association of State Highway and Transportation Officials \(AASHTO\)](#).

A significant boost in investment on the nation's roads, highways, bridges and public transit systems is needed to improve their condition and to meet the nation's transportation needs, concluded a new report from the American Association of State Highway and Transportation Officials.

The [2015 AASHTO Transportation Bottom Line Report](#) found that annual investment in the nation's roads, highways and bridges needs to increase from \$88 billion to \$120 billion and from \$17 billion to \$43 billion in the nation's public transit systems, to improve conditions and meet the nation's mobility needs.³⁸

The [2015 AASHTO Transportation Bottom Line Report](#) also found that the current backlog in needed road, highway and bridge improvements is \$740 billion.³⁹ The backlog includes a \$392 billion backlog for road and highway rehabilitation, a \$112 billion backlog in needed bridge rehabilitation and a \$237 billion backlog in needed highway capacity additions.⁴⁰

Conclusion

As Michigan continues to make progress in recovering from a severe economic downturn, a lack of adequate transportation investment threatens the state's ability to sustain strong economic growth. If Michigan is to build and enhance a thriving, growing and dynamic state, it will be critical that the state is able to provide a well-maintained, efficient and safe 21st Century transportation system that can accommodate the mobility demands of a modern society.

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Endnotes

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