

Modernizing Michigan's Transportation System:

Progress and Challenges in Providing Safe, Efficient and
Well-Maintained Roads, Highways and Bridges



 **TRIP**
a national transportation research group

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Executive Summary

A decade after suffering a significant economic downturn, Michigan is recovering, with its population and economy growing and vehicle travel increasing in response to the growth. But the state's rate of recovery could be slowed if Michigan is not able to provide a modern, well-maintained transportation system. The pace of economic growth, which will be greatly impacted by the reliability and condition of the state's transportation system, continues to have a significant impact on quality of life in the Great Lakes State.

An efficient, safe and well-maintained transportation system provides economic and social benefits by affording individuals access to employment, housing, healthcare, education, goods and services, recreation, entertainment, family, and social activities. It also provides businesses with access to suppliers, markets and employees, all critical to a business' level of productivity and ability to expand. Reduced accessibility and mobility - as a result of traffic congestion, a lack of adequate capacity, or deteriorated roads, highways, bridges and transit facilities - diminishes a region's quality of life by reducing economic productivity and limiting opportunities for economic, health or social transactions and activities.

With an economy based largely on agriculture, manufacturing, technology, natural resource extraction, and tourism, the quality of Michigan's transportation system plays a vital role in the state's economic growth and quality of life.

In late 2015, Michigan's governor signed into law a [transportation funding package](#) that relies on a combination of increased user fees, registration fees and general funds. While this increased funding will allow the state and local governments to move forward with numerous projects to repair and improve portions of the state's transportation system, the funding is not sufficient to fully address the significant deterioration of the system, or to allow the state to provide many of the transportation improvements needed to support economic growth.

Achieving the state's goals for a modern, well-maintained and safe transportation system will require staying the course with Michigan's current transportation program and increasing transportation investment.

THE COST TO MICHIGAN MOTORISTS OF DEFICIENT ROADS

Driving on Michigan's transportation system costs the state's motorists a total of \$14.1 billion every year in the form of additional vehicle operating costs (VOC), congestion-related delays and traffic crashes.

- Driving on rough roads costs Michigan motorists a total of \$4.6 billion annually in extra vehicle operating costs. These costs include accelerated vehicle depreciation, additional repair costs, and increased fuel consumption and tire wear.
- Based on research indicating that roadway design is likely a contributing factor in approximately one-third of serious and fatal traffic crashes, TRIP estimates that the economic costs of serious and fatal traffic crashes in Michigan, in which roadway design was likely a contributing factor, is \$3.9 billion per year. These costs come in the form of lost household and workplace productivity, insurance and other financial costs.
- Traffic congestion costs Michigan motorists a total of \$5.6 billion each year in the form of lost time and wasted fuel.
- The chart below details the average cost per driver in the state's largest urban areas and statewide.

Location	VOC	Safety	Congestion	TOTAL
Ann Arbor	\$642	\$447	\$671	\$1,759
Detroit	\$824	\$442	\$1,278	\$2,544
Flint	\$797	\$530	\$616	\$1,943
Grand Rapids	\$565	\$522	\$923	\$2,010
Kalamazoo - Battle Creek	\$601	\$831	\$491	\$1,923
Lansing	\$708	\$478	\$554	\$1,740
Muskegon	\$454	\$473	\$376	\$1,303
Saginaw-Bay City-Midland	\$520	\$559	\$349	\$1,428
MICHIGAN STATEWIDE	\$4.6 Billion	\$3.9 Billion	\$5.6 Billion	\$14.1 Billion

TRANSPORTATION FUNDING AND NEEDED TRANSPORTATION PROJECTS

Additional transportation funding provided by the state legislature in 2015 will allow MDOT to complete numerous needed projects throughout the state. While the additional dollars have been helpful, many needed projects still remain unfunded.

- In late 2015, Michigan's governor signed into law a [road funding package](#) that relies on a combination of increased user fees, such as gas taxes and registration fees, and allocations from the General Fund.
- As a result of the funding increase, state funding for local roads and bridges, state roads and bridges, and transit will increase from \$2.2 billion in 2015 to almost \$3.7 billion in 2023. The chart below details the amount (in millions) of state funding for local roads and bridges, state roads and bridges, and transit.

Year	State Funding for Local Roads/Bridges	State Funding for State Roads/Bridges	State Funding for Transit	Total Program State + Local
2015	1,043	923	276	2,242
2016	1,074	756	293	2,123
2017	1,364	967	319	2,649
2018	1,469	1,052	359	2,880
2019	1,642	1,143	350	3,135
2020	1,798	1,246	354	3,398
2021	1,906	1,317	359	3,583
2022	1,937	1,330	360	3,626
2023	1,968	1,342	360	3,670

- The 2015 transportation legislation provided an additional \$484 million in transportation revenue in 2017, increasing to \$649 million annually in 2021. The legislation also provided income-tax revenues for transportation starting in 2019.

Year	Additional User Fees	Income-tax Revenue
2016	N/A	N/A
2017	484	N/A
2018	628	N/A
2019	639	150
2020	644	325
2021	649	600

- The income-tax revenue provided by the 2015 legislation is not dedicated in the state's Constitution - as road-user fees are - and the appropriation could be changed. After 2020, income-tax revenues are expected to continue at \$600 million per year, and the fuel-tax rate will rise with the Consumer Price Index after 2022.
- Additional transportation funding provided by the 2015 legislation will allow Michigan to move forward with numerous projects that otherwise may have remained unfunded. The list below details a sampling of projects in Michigan's major urban areas and throughout the state that are either underway or will be underway or completed no later than 2023, partly due to increased revenue.

Detroit Regional Area			
County	Route	Location	Improvement
MACOMB	M-3 N	11 MILE ROAD TO 14 MILE ROAD	Reconstruction
OAKLAND	I-696 W	I-275 TO LAHSER	Road Rehabilitation
OAKLAND	M-24	S. OF GOLDENGATE TO N. OF HARRIET	Road Rehabilitation
OAKLAND	US-24 S	LONG LAKE TO ORCHARD LAKE RD AND MAPLE RD. INTERSE	Road Rehabilitation
WAYNE	I-275 S	S. OF M-153 TO 5 MILE ROAD	Road Rehabilitation
WAYNE	I-275 S	NORTHLINE ROAD (S. OF I-94) TO M-153	Road Rehabilitation
WAYNE	I-375BS E	S. OF I-75/I-375 INTERCHANGE TO JEFFERSON AVE.	Reconstruction
WAYNE	I-75 N	AT MILWAUKEE AVE (S17 OF 82251)	Bridge Replacement
WAYNE	I-75 N	OVER THE ROUGE RIVER AND FORT STREET	Bridge Rehabilitation
WAYNE	I-75 N	M-102 (8 MILE ROAD) OVER I-75	Bridge Replacement
WAYNE	I-94	CASS AVENUE, DETROIT, WAYNE COUNTY	Bridge Replacement
WAYNE	I-94 E	E OF I-96 TO E OF CONNER AVENUE	Reconstruction
WAYNE	I-94 E	E. GRAND BLVD OVER I-94	Bridge Replacement
WAYNE	I-94 E	AT GRAND RIVER AVE (S17 OF 82024)	Bridge Replacement
WAYNE	I-94 E	AT CONRAIL RAILROAD (X01 OF 82025)	Bridge Replacement
WAYNE	I-94 E	AT CONRAIL RAILROAD (X02 OF 82024)	Bridge Replacement
WAYNE	I-94 E	AT FORTENAC ST (S08 OF 82024)	Bridge Replacement
WAYNE	I-94 E	FROM ST. AUBIN TO FRONTENAC	Reconstruction
WAYNE	I-94 E	FROM ST. AUBIN TO FRONTENAC	Reconstruction
WAYNE	I-94 W	FROM I-96 TO CONNER	Queue Warning System
WAYNE	I-94 W	PELHAM TO EAST OF M-39	Road Rehabilitation
WAYNE	US-24	GRAND RIVER TO N. OF 8 MILE ROAD	Reconstruction
WAYNE	US-24	CARTER TO PENNSYLVANIA	Road Rehabilitation
Grand Rapids Regional Area			
ALLEGAN	I-196 (SB)	130TH AVENUE NORTH TO US-31	Reconstruction
IONIA	I-96 W	BLISS ROAD EAST TO SUNFIELD HIGHWAY	Reconstruction
KENT	I-96 E	THORNAPPLE RIVER DRIVE EAST TO WEST OF WHITNEYVILL	Road Rehabilitation
OTTAWA	I-196 E	WEST OF 32ND AVE. EAST TO EAST OF OTTAWA/KENT CO. LINE	Reconstruction
OTTAWA	I-196 E	BYRON ROAD EAST TO 32ND AVENUE	Reconstruction
OTTAWA	US-31 N	OVER THE GRAND RIVER	Bridge Rehabilitation
Lansing Regional Area			
CLINTON	I-69 S	12 BRIDGES BETWEEN AIRPORT RD AND I-96	Bridge CPM
CLINTON	I-69	I-96 TO AIRPORT ROAD	Reconstruction
CLINTON	US-127 S	US-127 FROM S. OF M-43 TO ~ 875' S. OF CLARK RD	Road Rehabilitation
EATON	I-496	I-496 FROM I-96 TO LANSING ROAD	Reconstruction
EATON	I-69 N	0.5 MILES SOUTH OF CALHOUN/EATON CO LINE TO NYE HWY.	Road Rehabilitation
INGHAM	I-496	I-496WB RAMP OVER CSX	Bridge Replacement
INGHAM	M-99	M-99 FROM ~1,700 FT NORTH OF HOLT HWY TO EDGEWOOD	Reconstruction
JACKSON	M-60 E	EB AND WB OVER I-94	Bridge Replacement
JACKSON	EAST I-94	I-94 AT ELM ROAD	Reconstruction
JACKSON	I-94 E	I-94 UNDER LANSING AVE	Reconstruction
JACKSON	I-94 E	MICHIGAN AVE TO M-60	Reconstruction
JACKSON	US-127 N	NORTH OF HENRY ROAD TO JACKSON/INGHAM COUNTY LINE	Road Rehabilitation
LENAWEE	US-223	US-127 & US-223 FROM US-12 TO STODDARD ROAD	Road Rehabilitation
LIVINGSTON	I-96	I-96 FROM CHILSON TO DORR	Road Rehabilitation
LIVINGSTON	M-59	WEST OF LAKENA RD TO THE COUNTY LINE	Road Rehabilitation
MONROE	I-75	UNDER LAPLAISANCE ROAD OVER I-75	Bridge Replacement
MONROE	I-75	I-75 FROM ERIE RD TO OTTER CREEK RD	Reconstruction
MONROE	I-75 N	4 BRIDGES ON I-75 IN MONROE COUNTY	Bridge Replacement
WASHTENAW	I-94 W	WASHTENAW/JACKSON COUNTY LINE TO FREER	Road Rehabilitation
WASHTENAW	US-23 BR	I-94 BL TO M-14	Road Rehabilitation

Michigan Statewide			
County	Route	Location	Improvement
ALGER	M-28	FROM ONOTA ST. TO THE ALGER/SCHOOLCRAFT COUNTY LINE	Road Rehabilitation
ARENAC	US-23	I-75 TO M-13	Road Rehabilitation
BAY	I-75	BEAVER RD TO COTTAGE GROVE	Road Rehabilitation
BAY	M-13	OVER THE EAST CHANNEL OF THE SAGINAW RIVER	Bridge Replacement
BAY	US-10 W	7 MILE RD TO BAY CITY	Reconstruction
BERRIEN	I-94 E	BRITAIN AVENUE TO I-196	Reconstruction
BERRIEN	I-94 E	ST. JOSEPH RIVER TO BRITAIN AVENUE.	Reconstruction
BERRIEN	I-94 W	I-196 TO 0.7 MILES WEST OF M-140	Road Rehabilitation
BERRIEN	I-94 W	OVER SQUAW CREEK, SOUTH OF US-12	Road Rehabilitation
BERRIEN	M-51	CHESTNUT LANE TO M-60BR	Reconstruction
BERRIEN	US-31 N	US-12 (EXIT 3) TO MATTHEW ROAD	Road Rehabilitation
CALHOUN	I-69 SB	N DRIVE NORTH (EXIT 42) TO EATON COUNTY LINE	Reconstruction
CHARLEVOIX	US-31	BARNARD ROAD/NORWOOD ROAD NORTH TO BARNARD ROAD	Reconstruction
CHEBOYGAN	I-75 NB	FROM LEVERING RD TO SOUTH OF HEBRON TOWN HALL RD	Road Rehabilitation
CHEBOYGAN	SB I-75	FROM SOUTH OF HEBRON TOWN HALL RD NORTH TO US-31	Road Rehabilitation
GENESEE	I-69	FENTON ROAD TO M-54	Reconstruction
GRAND TRAVERSE	US-31	MURCHIE BRIDGE EAST TO GARFIELD AVENUE	Reconstruction
GRATIOT	US-127	GREAT LAKES CENTRAL RAILROAD CROSSING TO BAGLEY RD.	Road Rehabilitation
ISABELLA	M-20	US-127 BUSINESS ROUTE (MISSION ST) TO US-127	Reconstruction
KALAMAZOO	I-94	EAST OF LOVERS LANE TO EAST OF PORTAGE ROAD	Major Widening
KALAMAZOO	I-94	PORTAGE ROAD TO SPRINKLE ROAD	Major Widening
MENOMINEE	US-41	FROM MENOMINEE TO WALLACE	Road Rehabilitation
ROSCOMMON	I-75 N	MAPLE VALLEY ROAD TO 9 MILE HILL ROAD	Road Rehabilitation
ROSCOMMON	US-127 SB	US-127 BUSINESS ROUTE TO RIVER ROAD	Road Rehabilitation
SAGINAW	I-75	2 BRIDGES IN SAGINAW COUNTY	Reconstruction
SAGINAW	M-46	2 BRIDGES IN SAGINAW COUNTY	Bridge Replacement
SAGINAW	US-127 N	HESS TO SOUTH I-675 INTERCHANGE	Road Rehabilitation
ST. CLAIR	I-69 EB	COX DOTY DRAIN TO M-19	Reconstruction
ST. CLAIR	I-69 W	M-19 TO TAYLOR ROAD	Road Rehabilitation
VAN BUREN	I-94 E	WEST OF M-51 TO 40TH STREET	Road Rehabilitation

- Despite additional transportation funding provided by the 2015 legislation, numerous needed transportation projects in Michigan remain unfunded. The list below details projects in Michigan's major urban areas and throughout the state that currently lack adequate funding to proceed.

Detroit Area			
County	Route	Location	Improvement
MACOMB	I-94	8 Mile to 11 Mile	Reconstruct
MACOMB	M-3	14 Mile to Remick	Reconstruct
OAKLAND	I-75	M-15 to County Line	Rehabilitation
OAKLAND	I-75	Giddings to M-15	Rehabilitation
OAKLAND	I-96	County Line to I-275	Rehabilitation
OAKLAND	M-1	Oakridge to 14 Mile Road	Reconstruct
OAKLAND	M-14	Sheldon to Newburgh	Reconstruct
OAKLAND	M-24	Harriet to Davison	Rehabilitation
OAKLAND	M-5	S. of 12 Mile to N. of 15 Mile Road	Rehabilitation
OAKLAND	M-59	Pontiac Lake Road to Airport Road	Reconstruct
WAYNE	I-275	Northline Road to County Line	Rehabilitation
WAYNE	I-94	County Line to I-275	Rehabilitation
WAYNE	I-94	Wayne to Beech Daly	Reconstruct
WAYNE	I-96	Schaefer to Roosevelt	Reconstruct
WAYNE	M-1	Tuxedo to S. of 8 Mile Road	Reconstruct
WAYNE	M-10	McNichols to S. of I-75	Rehabilitation
WAYNE	M-10	55 Bridges on/over M-10	Rehabilitation
WAYNE	M-153	Sheldon to Lotz	Reconstruct
WAYNE	M-39	Plymouth Road to Ford Road	Reconstruct
WAYNE	M-39	M-153 to S. of I-94	Rehabilitation
WAYNE	M-39	37 Bridges on/over M-39	Rehabilitation
WAYNE	M-59	Romeo Plank to I-94	Reconstruct
WAYNE	US-12	Pershing to Henry Ruff	Rehabilitation
WAYNE	US-12	I-96 to Cass (Corktown area)	Reconstruct
WAYNE	US-24	Van Born to Ford Road	Reconstruct
Grand Rapids Area			
IONIA	I-96 EB	Sunfield Highway to the Grand River	Reconstruct
KENT	I-196 EB	Fuller Avenue to Maryland Avenue	Reconstruct
KENT	I-96	Under Fruit Ridge Avenue	Reconstruct
KENT	I-96 EB	M-44 (East Beltline) to Cascade Road	Reconstruct
KENT	M-37	South of 84th Street north to 76th Street (Caledonia)	Reconstruct
KENT	US-131 NB	M-11 north to Hall Street	Reconstruct
KENT	US-131 NB	Hall Street north to S-Curve	Reconstruct
MASON	US-31 NB	Meisenheimer Road north to US-10	Rehabilitation
MECOSTA	US-131 Old	County Line north to 14 Mile Road	Rehabilitation
MONTCALM	M-46	Miles Road east to M-66 (East Junction)	Rehabilitation
MUSKEGON	M-46	US-31 east to Maple Island Road	Rehabilitation
MUSKEGON	US-31	at M-46	Reconstruct
NEWAYGO	M-37	M-82 (N JCT) north to the White River	Rehabilitation
OTTAWA	US-31 SB	Quincy Street to Ferris Street	Rehabilitation

Lansing Area			
County	Route	Location	Improvement
CLINTON	I-69	Airport Road to US-127	Reconstruct
CLINTON	I-69	US-127 to Shiawassee county line	Reconstruct
EATON	I-69	Island Highway to Vermontville Highway	Reconstruct
EATON	I-69	Vermontville Hwy to I-96	Reconstruct
HILLSDALE	M-49	Village of Camden	Reconstruct
HILLSDALE/LENAWEE	US-127	CHURCH RD TO US-223, HILLSDALE AND LENAWE CO	Rehabilitation
INGHAM	I-496	Lansing Road to the Grand River	Reconstruct
INGHAM	US-127	Jackson co line to Barnes	Reconstruction
INGHAM	US-127	I-96 to I-496 third lane	Reconstruct
INGHAM	US-127	12 Bridges on US-127	Reconstruct
JACKSON	I-94	west ave interchange	Reconstruct
JACKSON	I-94	County line to Michigan Ave	Reconstruct
JACKSON	I-94BL	MICHIGAN AVE, DWIGHT ST TO BENDER ST, JACKSON	Rehabilitation
LENAWEE	M-34	Hazen Creek to M-52	Rehabilitation
LENAWEE	M-50	Sunset to River Raisin in Tecumseh	Reconstruct
LENAWEE	US-223	Rome Road to Industrial Drive	Rehabilitation
LIVINGSTON	I-96 BL	National to I-96	Rehabilitation
LIVINGSTON	M-59	East City Limits of Howell to Old US-23	Reconstruct
LIVINGSTON	US-23	M-36 interchange	Reconstruction
LIVINGSTON	US-23	M-36 to I-96	Rehabilitation
MONROE	US-23	School to Ida Center	Reconstruct
WASHTENAW	I-94	Freer to Parker	Rehabilitation
WASHTENAW	I-94	Parker to M-14	Rehabilitation
WASHTENAW	I-94	US-23 to Wayne co line	Rehabilitation
WASHTENAW	I-94	11 Bridge on/over I-94	Reconstruct/CPM
WASHTENAW	I-94	M-14 to US-23	Reconstruct
WASHTENAW	I-94	12 Bridges on/over I-94	Reconstruct
WASHTENAW	I-94 BL	US-23 BR to Carpenter Road	Rehabilitation
WASHTENAW	M-14	I-94 to US-23	Reconstruct
WASHTENAW	US-12	Maple Street to I-94	Rehabilitation

Michigan Statewide			
County	Route	Location	Improvement
ALPENA	US-23	Hamilton Road to the N. Alpena Co. Line	Reconstruction
ANTRIM	US-131	Elder Rd to Alba Rd	Reconstruction
ARENAC	US-23	Standish south CL to Grove Str	Reconstruct
BAY	US-10 WB	Midland/Bay COL to 7 Mile Road	Reconstruct
BENZIE	US-31	East of Honor from Goose Rd to Reynolds Rd	Rehabilitation
BERRIEN	I-94BL	Glenlord Rd to M-63	Rehabilitation
BERRIEN	M-139	I-94 to I-94BL	Rehabilitation
BERRIEN	M-63	City of St. Joseph	Reconstruction
BERRIEN	M-63	St. Joseph River to I-196	Rehabilitation
BERRIEN	US-12	Galien River to Dayton Lake	Rehabilitation
BERRIEN	US-12	Mayflower Road to Barron Lake Road	Rehabilitation
BRANCH	M-66	M-60 to D Drive S	Rehabilitation
BRANCH	US-12	Michigan Avenue to Willowbrook Road	Reconstruction
CALHOUN	I-94	M-311 to Old 27	Rehabilitation
CALHOUN	M-311	M-60 to M-96	Rehabilitation
CALHOUN	M-60	Homer to Jackson County	Rehabilitation
CASS	M-60	Barron Lake Road to Vandalia	Rehabilitation
CASS	M-62	Eau Claire to Dowagiac	Rehabilitation
CASS	M-62	Indiana State Line to Cassopolis	Rehabilitation
CASS	M-62	US-12 to M-60	Rehabilitation
CHEBOYGAN	US-23	Mill Creek Discovery Park Drive to Nipigon Rd	Reconstruction
CLARE	US-127	US-10 BR to US-10	Rehabilitation
CLARE	US-127	over US-127 Business Route and M-61	Reconstruct
CLARE	US-127	Long Lake Rd north to Clare/Roscommon COL	Rehabilitation
DELTA	US-2	Hyde to Escanaba	Reconstruct
DELTA	US-2	N. 30th Street to Danforth Rd	Reconstruct
DICKINSON	US-2	US-141 south Jct to C St Norway	Reconstruct
DICKINSON	US-2	Michigan Ave to US-141 south junction in Iron Mountain	Reconstruct
EMMET	M-68	Crooked River Bridge to King Rd	Rehabilitation
EMMET	US-131	Bear River Road to Lears Road	Reconstruction
EMMET	US-31	Graham Rd to Blumke Rd	Rehabilitation
EMMET	US-31	Division Road to Graham Road	Reconstruction
GENESEE	I-475	Flint River to Carpenter Rd, Flint	Reconstruct
GENESEE	I-475	6 Bridges on I-475, Flint	Reconstruct
GENESEE	I-475	Bristol Rd to Thread Creek, Flint	Reconstruct
GENESEE	I-75	Court Street north to I-475 north JCT	Reconstruct
GENESEE	I-75	10 Bridges on/over I-75, Flint	Reconstruct/CPM
GENESEE	I-75	Oakland / Genesee COL to US-23	Rehabilitation
GENESEE	M-21	Thayer St to Cesar Chavez Dr, Flint	Reconstruct
GENESEE	M-21	Morrish Road to I-75	Rehabilitation
GENESEE	M-54	Hemphill to Atherton, Leith to Stuart	Rehabilitation
GENESEE	M-54	3 Bridges on M-54	Reconstruct
GRAND TRAVERSE	US-31	Benzie/GT Cnty Line to M-37 (Chums)	Reconstruction
GRATIOT	M-46	Montcalm COL to US-127 BR	Rehabilitation
GRATIOT	US-127	US-127/M-46 interchange area	Reconstruct
GRATIOT	US-127	3 Bridges US-127/M-46 interchange area	Reconstruct
GRATIOT	US-127	Clinton/Gratiot COL to M-57	Rehabilitation
IOSCO	US-23	Iosco S. Co. Line to Townline Road	Reconstruction
IOSCO	US-23	Tawas River to Tawas Beach Road	Reconstruction
KALAMAZOO	I-94	40th Street (Exit 88) to 6 1/2 mile road	Rehabilitation
KALAMAZOO	I-94BL	M-96 to I-94	Rehabilitation
KALAMAZOO	M-89	M-43/M-89 Intersection to the Kalamzoo/Calhoun Co. Line	Rehabilitation

KALKASKA	M-72	East of Kalkaska from US-131 east to County Line	Rehabilitation
KALKASKA	US-131	In Kalkaska from south limit to north limit	Reconstruction
LAPEER	I-69	Newark Rd to Lapeer COL	Reconstruct
LAPEER	I-69	Lake George Road to Newark Road	Reconstruct
LAPEER	M-24	Davis Rd to Tuscola / Lapeer COL	Rehabilitation
MANISTEE	US-31	In Manistee from Bascule Bridge north to M-55	Reconstruction
MIDLAND	US-10BR (Midland	M-20 (Jerome St) to Washington St	Reconstruct
ROSCOMMON	M-55	Dollina to M-18 S	Reconstruction
SAGINAW	M-46	Stephens to M-13	Reconstruct
SAGINAW	M-46	Center to Stephens	Reconstruct
SAGINAW	M-47	Tittabawassee Rd to Freeland	Reconstruct
SAGINAW	M-47	M-58 to Tittabawassee Rd	Reconstruct
ST. CLAIR	M-29	County Line to Palms Rd	Rehabilitation
ST. JOSEPH	M-60	M-66 WJCT to Branch County Line	Rehabilitation
ST. JOSEPH	M-60	Cass County to US-131	Rehabilitation
ST. JOSEPH	US-12	Sturgis	Rehabilitation
ST. JOSEPH	US-12	St. Joseph River to US-131	Rehabilitation
ST. JOSEPH	US-131	Three Rivers to City of Portage (U Ave)	Rehabilitation
ST. JOSEPH	US131BL, M-86	Three Rivers	Rehabilitation
VAN BUREN	I-196	Van Buren County Line to Van Buren Trail	Rehabilitation
VAN BUREN	I-94	M-51 to Mattawan	Rehabilitation
VAN BUREN	I-94	Under M-40, over South Branch of Paw Paw River (3 Bridges)	Reconstruct
VAN BUREN	M-140	CR 378 to Blue Star Hwy	Rehabilitation
VAN BUREN	M-43	Blue Star Hwy to Bangor	Rehabilitation

POPULATION, ECONOMIC AND TRAVEL TRENDS

Population and economic growth results in increased demands on major roads and highways, leading to increased wear and tear on a state's transportation system.

- Michigan's population is again growing and nearing pre-recession levels after beginning to fall in 2005 and dropping each year until 2011. The state's population has increased each year from 2011 to 2018 and is currently at 10 million residents. Michigan has approximately 7.1 million licensed drivers.
- After decreasing by 14 percent between 2000 and 2009, when adjusted for inflation, Michigan's gross domestic product, a measure of the state's economic output, increased by 21 percent from 2009 to 2017.
- Vehicle miles traveled (VMT) in Michigan increased by seven percent from 2013 to 2017, to 101.8 billion vehicle miles traveled in 2017.

MICHIGAN ROAD CONDITIONS

The share of Michigan's major roads with pavements in poor condition has increased due to a lack of adequate state and local funding, providing a rough ride and costing motorists in the form of additional vehicle operating costs.

- The Michigan Transportation Asset Management Council (TAMC) found in its [Michigan's 2017 Roads and Bridges Annual Report](#) that 40 percent of federal-aid eligible roads and highways in Michigan have pavements in poor condition, an increase from 2006 when 25 percent were rated in poor condition.

- The [TAMC report](#) found that under current funding the share of federal-aid eligible roads in the state in poor condition will decrease slightly by 2027 to 37 percent.
- Based on 2017 pavement condition data from the Federal Highway Administration, the chart below details pavement conditions on major roads in the state's largest urban areas:

Location	Poor	Mediocre	Fair	Good
Ann Arbor	30%	25%	17%	28%
Detroit	44%	26%	14%	16%
Flint	44%	21%	13%	22%
Grand Rapids	24%	26%	17%	33%
Kalamazoo - Battle Creek	26%	27%	19%	29%
Lansing	34%	26%	18%	22%
Muskegon	19%	19%	17%	46%
Saginaw-Bay City-Midland	22%	16%	30%	32%
MICHIGAN STATEWIDE	24%	20%	15%	41%

BRIDGE CONDITIONS IN MICHIGAN

One-in-nine locally and state-maintained bridges in Michigan show significant deterioration and are rated structurally deficient. This includes all bridges that are 20 feet or more in length.

- Statewide, eleven percent of Michigan's bridges are structurally deficient. 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.
- The [TAMC report](#) found that under current funding the share of Michigan bridges rated in poor condition (which is a rating similar to structurally deficient) will increase from 10 percent in 2017 to 14 percent in 2027.
- Forty-three percent of Michigan's bridges (4,815 out of 11,180) were built in 1969 or earlier. Bridges 50 years or older often require significant rehabilitation or replacement.
- The Federal Highway Administration estimates that it would cost \$607 million to replace or rehabilitate all structurally deficient bridges in Michigan.
- The chart below details the number and share of structurally deficient bridges in the state's largest urban areas and statewide:

Location	Percent Structurally Deficient	Number Structurally Deficient	Total Bridges
Ann Arbor	17%	43	258
Detroit	9%	225	2,581
Flint	14%	53	371
Grand Rapids	4%	36	950
Kalamazoo-Battle Creek	10%	46	483
Lansing	13%	88	652
Muskegon	10%	14	141
Saginaw-Bay City-Midland	20%	120	603
Michigan-Statewide	11%	1,175	11,180

MICHIGAN TRAFFIC CONGESTION

Increasing levels of traffic congestion cause significant delays in Michigan, particularly in larger urban areas, choking commuting and commerce. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to the consumer.

- The chart below details the number of hours lost to congestion annually for the average driver in Michigan's largest urban areas. It also includes the cost of congestion per motorist, in the form of lost time and wasted fuel.

Location	Hours Lost to Congestion	Annual Cost Per Driver
Ann Arbor	29	\$671
Detroit	54	\$1,278
Flint	26	\$616
Grand Rapids	41	\$923
Kalamazoo - Battle Creek	21	\$491
Lansing	25	\$554
Muskegon	17	\$376
Saginaw-Bay City-Midland	15	\$349

TRAFFIC SAFETY AND FATALITY RATES IN MICHIGAN

Improving safety features on Michigan's roads and highways would likely result in a decrease in the number of traffic fatalities and serious crashes.

- A total of 4,905 people were killed in Michigan traffic crashes from 2013 to 2017, an average of 981 fatalities per year.

- Michigan's overall traffic fatality rate of 1.01 fatalities per 100 million vehicle miles of travel in 2017 was below the national average of 1.16.
- The fatality rate on Michigan's non-interstate rural roads in 2017 was nearly double that on all other roads in the state (1.55 fatalities per 100 million vehicle miles of travel vs. 0.83).
- The following chart indicates the average number of people killed annually in vehicle crashes in Michigan's major urban areas from 2014 to 2016.

Location	Average Fatalities 2015-2017
Ann Arbor	31
Detroit	358
Flint	40
Grand Rapids	103
Kalamazoo - Battle Creek	73
Lansing	43
Muskegon	15
Saginaw-Bay City-Midland	40

- 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; upgrading roads from two lanes to four lanes; and better road markings and traffic signals.

FEDERAL TRANSPORTATION FUNDING IN MICHIGAN

The current federal surface transportation program, which expires in 2020, falls far short of providing the level of funding needed to meet the nation's highway and transit needs. Boosting federal surface transportation spending will require that Congress provide a long-term and sustainable source of funding to support the federal Highway Trust Fund.

- Signed into law in December 2015, the [Fixing America's Surface Transportation Act \(FAST Act\)](#), provides modest increases in federal highway and transit spending, allows states greater long-term funding certainty and streamlines the federal project approval process. But, the FAST Act does not provide adequate funding to meet the nation's need for highway and transit improvements and does not include a long-term and sustainable funding source.

TRANSPORTATION AND ECONOMIC GROWTH IN MICHIGAN

The efficiency of Michigan's transportation system, particularly its highways, is critical to the state's economy. A key component in business efficiency and success is the level and ease of access to customers, markets, materials and workers. The design, construction and maintenance of infrastructure in Michigan is a significant source of employment in the state.

- Annually, \$1 trillion in goods are shipped to, from and within sites in Michigan, mostly by truck.
- Seventy percent of the goods shipped annually to and from sites in Michigan are carried by trucks and another 15 percent are carried by courier services or multiple mode deliveries, which include trucking.
- The design, construction and maintenance of transportation infrastructure in Michigan supports 94,107 full-time jobs across all sectors of the state economy. These workers earn \$4.1 billion annually.
- Approximately 1.9 million full-time jobs in Michigan in key industries like tourism, retail sales, agriculture and manufacturing are dependent on the state's transportation infrastructure network.
- 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.
- 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 accessibility was ranked the number one site selection factor in a 2017 survey of corporate executives by [Area Development Magazine](#). Labor costs and the availability of skilled labor, which are both impacted by a site's level of accessibility, were rated second and third, respectively.

Sources of information for this report include the Federal Highway Administration (FHWA), the Michigan Department of Transportation (MDOT), the American Association of State Highway and Transportation Officials (AASHTO), the Bureau of Transportation Statistics (BTS), the U. S. Census Bureau, the Congressional Budget Office (CBO), the Michigan Transportation Asset Management Council (TAMC), the Texas Transportation Institute (TTI), the American Road & Transportation Builders Association (ARTBA) and the National Highway Traffic Safety Administration (NHTSA). All data used in the report are the most recent 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. Modernizing Michigan's transportation system is critical to providing mobility and economic competitiveness in the Great Lakes State.

Supporting quality of life and a robust economy in Michigan requires that the state provide a safe, efficient and well-maintained transportation system. Inadequate transportation investment, which will result in deteriorated transportation facilities and diminished access and safety, will negatively affect economic competitiveness and reduce access and mobility in Michigan.

In late 2015, Michigan's governor signed into law a [road funding package](#) that relies on a combination of increased user fees, registration fees and general funds. While this funding will allow the state to make progress in improving the condition and efficiency of its transportation system, and to complete a host of needed projects, the funding is not sufficient to fully address the significant deterioration on the system.

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

This report examines the condition, use and safety of Michigan's roads, highways and bridges and future mobility needs. Sources of information for this report include the Michigan Department of Transportation (MDOT), 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).

Population, Travel and Economic Trends

Michigan residents and businesses require a high level of personal and commercial mobility.

Population increases and economic growth in Michigan have resulted in an increase in vehicle miles of travel (VMT) and an increase in the demand for mobility. To foster quality of life and spur continued economic growth in Michigan, it will be critical that the state provide a safe and modern transportation system that can accommodate future growth in population, tourism, business, recreation and vehicle travel.

Michigan's population is nearing pre-recession levels after beginning to fall in 2005 and dropping each year until 2011.¹ The state's population has increased each year from 2011 to 2018 and is currently at 10 million residents.² Michigan had approximately 7.1 million licensed drivers in 2017.³

After decreasing by 14 percent between 2000 and 2009, when adjusted for inflation, Michigan's gross domestic product, a measure of the state's economic output, increased by 21 percent from 2009 to 2017.⁴

Vehicle travel in Michigan increased by seven percent between 2013 and 2017, reaching 101.8 billion vehicle miles of travel in 2017.⁵ By 2040, vehicle travel in Michigan is projected to increase another 20 percent.⁶

Condition of Michigan's Roads

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

The share of Michigan's major roads with pavements in poor condition are increasing due to a lack of adequate state and local funding, providing a rough ride and costing motorists in the form of additional vehicle operating costs.

The Michigan Transportation Asset Management Council (TAMC) found in its [Michigan's 2017 Roads and Bridges Annual Report](#) that 40 percent of federal-aid eligible roads and highways in Michigan have pavements in poor condition, an increase from 2006 when 25 percent were rated in poor condition.⁷ The [TAMC report](#) found that under current funding the share of federal-aid eligible roads in the state in poor condition will decrease slightly by 2027 to 37 percent.⁸

The Michigan Department of Transportation annually provides data to the FHWA on the condition of major state and locally maintained roads and highways. Based on 2017 FHWA data, the chart below details pavement conditions on major urban roads in Michigan's largest urban areas.⁹

Chart 1. Pavement conditions on major roads in Michigan's largest urban areas.

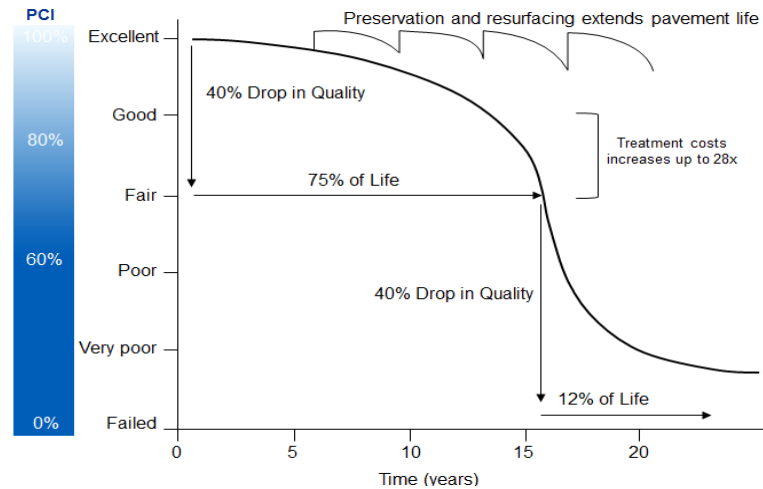
Location	Poor	Mediocre	Fair	Good
Ann Arbor	30%	25%	17%	28%
Detroit	44%	26%	14%	16%
Flint	44%	21%	13%	22%
Grand Rapids	24%	26%	17%	33%
Kalamazoo - Battle Creek	26%	27%	19%	29%
Lansing	34%	26%	18%	22%
Muskegon	19%	19%	17%	46%
Saginaw-Bay City-Midland	22%	16%	30%	32%
MICHIGAN STATEWIDE	24%	20%	15%	41%

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 even more prone to deterioration because the slow-moving or standing loads occurring at these sites subject the pavement to higher levels of stress. It is critical that roads are fixed before they require major repairs because reconstructing roads costs approximately four times more than resurfacing them.¹⁰ As roads

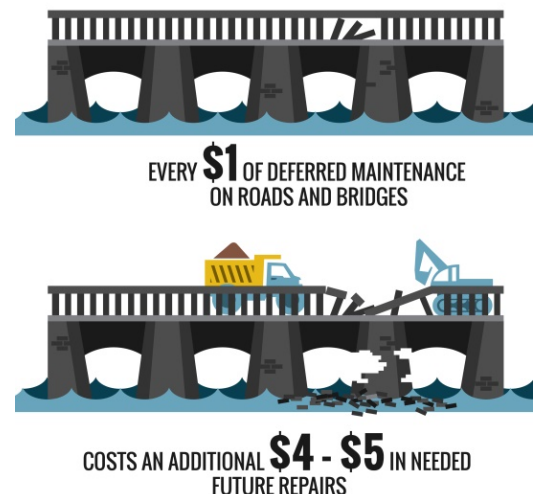
and highways continue to age, they will reach a point of deterioration where routine paving and maintenance will not be adequate to keep pavement surfaces in good condition and costly reconstruction of the roadway and its underlying surfaces will become necessary.

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.¹¹



SOURCE: NY LTAP CENTER

TRIP
a national transportation research group

The Costs to Motorists of Roads in Deteriorated Condition

TRIP has calculated the additional cost to motorists of driving on roads in poor, mediocre or fair condition. When roads are in poor, mediocre or fair condition – which may include potholes, rutting or rough surfaces – the cost to operate and maintain a vehicle increases. These additional vehicle operating costs (VOC) include accelerated vehicle depreciation, additional vehicle repair costs, increased fuel consumption and increased tire wear. TRIP estimates that additional VOC borne by Michigan motorists as a result of deteriorated road conditions is \$4.6 billion annually, or \$646 per driver.¹² The costs are typically higher in the state's largest urban areas. The chart below details the annual VOC per driver in the state's largest urban areas and the cumulative statewide cost.

Chart 3. Average annual vehicle operating cost per driver.

Location	VOC
Ann Arbor	\$642
Detroit	\$824
Flint	\$797
Grand Rapids	\$565
Kalamazoo - Battle Creek	\$601
Lansing	\$708
Muskegon	\$454
Saginaw-Bay City-Midland	\$520
MICHIGAN STATEWIDE	\$4.6 Billion

Source: TRIP, based on FHWA data.

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.¹³

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 2018 VOC and then using the HDM model to estimate the additional VOC paid by drivers as a result of substandard roads.¹⁴ Additional research on the impact of road conditions on fuel consumption by the Texas Transportation Institute (TTI) is also factored in to 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.

Eleven percent of Michigan's locally and state maintained bridges are rated as structurally deficient.¹⁵ A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid posted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

The [TAMC report](#) found that under current funding the share of Michigan bridges rated in poor condition (a rating similar to structurally deficient) will increase from 10 percent in 2017 to 14 percent in

2027.¹⁶ The Federal Highway Administration estimates that it would cost \$607 million to replace or rehabilitate all structurally deficient bridges in Michigan.¹⁷

The chart below provides bridge conditions in the state's largest urban areas and statewide.¹⁸

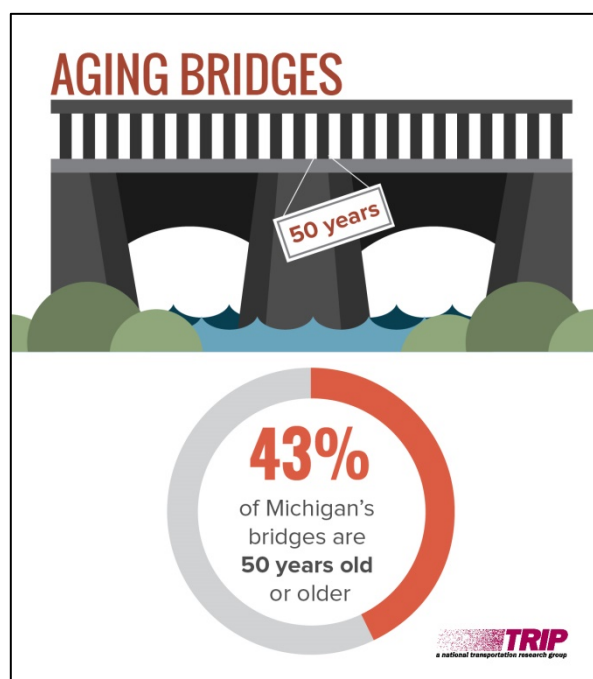
Chart 4. Bridge conditions in Michigan's largest urban areas and statewide.

Location	Percent Structurally Deficient	Number Structurally Deficient	Total Bridges
Ann Arbor	17%	43	258
Detroit	9%	225	2,581
Flint	14%	53	371
Grand Rapids	4%	36	950
Kalamazoo-Battle Creek	10%	46	483
Lansing	13%	88	652
Muskegon	10%	14	141
Saginaw-Bay City-Midland	20%	120	603
Michigan-Statewide	11%	1,175	11,180

Source: TRIP analysis of Federal Highway Administration data.

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.

Forty-three percent of Michigan's bridges (4,815 out of 11,180) were built in 1969 or earlier.¹⁹ Bridges 50 years or older often require significant rehabilitation or must be replaced.



Traffic Congestion in Michigan

Increasing levels of traffic congestion cause significant delays in Michigan, particularly in larger urban areas, choking commuting and commerce. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to the consumer.

The chart below details the number of hours lost to congestion annually for the average driver in the state's largest urban areas. It also includes the annual congestion cost per motorist in the form of lost time and wasted fuel.

Chart 5. Annual hours lost to congestion and congestion-related costs for the average driver in Michigan's largest urban areas.

Location	Hours Lost to Congestion	Annual Cost Per Driver
Ann Arbor	29	\$671
Detroit	54	\$1,278
Flint	26	\$616
Grand Rapids	41	\$923
Kalamazoo - Battle Creek	21	\$491
Lansing	25	\$554
Muskegon	17	\$376
Saginaw-Bay City-Midland	15	\$349

Source: TRIP Estimate Based on Analysis of Texas Transportation Institute and Federal Highway Administration data.

Increasing levels of congestion add significant costs to consumers, transportation companies, manufacturers, distributors and wholesalers and can reduce the attractiveness of a location when a company is considering expansion or where to locate a new facility.

Traffic Safety in Michigan

A total of 4,905 people were killed in Michigan traffic crashes from 2013 to 2017, an average of 981 fatalities per year.²⁰

Chart 6. Traffic Fatalities in Michigan from 2013 – 2017.

Year	Fatalities
2013	947
2014	901
2015	963
2016	1,064
2017	1,030
TOTAL	4,905

Source: National Highway Traffic Safety Administration.

The following chart indicates the average number of people killed annually in vehicle crashes in Michigan's major urban areas from 2015 to 2017.

Chart 7. Average Number of Traffic Fatalities Per Year from 2015 to 2017 in Michigan's largest urban areas.

Location	Average Fatalities 2015-2017
Ann Arbor	31
Detroit	358
Flint	40
Grand Rapids	103
Kalamazoo - Battle Creek	73
Lansing	43
Muskegon	15
Saginaw-Bay City-Midland	40

Source: TRIP analysis of 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 1.01 fatalities per 100 million vehicle miles of travel in 2017 is lower than the national average of 1.16.²¹ The traffic fatality rate on the state's rural roads is disproportionately high. The fatality rate on Michigan's non-interstate rural roads in 2017 was nearly double that on all other roads in the state (1.55 fatalities per 100 million vehicle miles of travel vs. 0.83).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 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 TTI](#) found that improvements completed recently by TxDOT 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).²³ TTI estimates that the improvements on these roads are likely to save 880 lives over 20 years.²⁴

Transportation Funding in Michigan and Needed Projects

In late 2015, Michigan's governor signed into law a [road funding package](#) that relies on a combination of increased user fees, registration fees and general funds. While the 2015 transportation funding package will allow the state to increase investment in road, highway and bridge repairs and to complete numerous needed projects, the funding is not sufficient to reverse the significant deterioration on the system, or to allow the state to proceed with numerous projects to support economic development and quality of life.

As a result of the funding increase, state funding for local roads and bridges, state roads and bridges, and transit will increase from \$2.2 billion in 2015 to almost \$3.7 billion in 2023.²⁵ The chart below details the amount (in millions) of state funding for local roads and bridges, state roads and bridges, and transit.

Chart 8. Annual funding for local roads, state roads and transit (in millions).

Year	State Funding for Local Roads/Bridges	State Funding for State Roads/Bridges	State Funding for Transit	Total Program State + Local
2015	1,043	923	276	2,242
2016	1,074	756	293	2,123
2017	1,364	967	319	2,649
2018	1,469	1,052	359	2,880
2019	1,642	1,143	350	3,135
2020	1,798	1,246	354	3,398
2021	1,906	1,317	359	3,583
2022	1,937	1,330	360	3,626
2023	1,968	1,342	360	3,670

Source: MDOT response to TRIP survey.

The 2015 transportation legislation provide an additional \$484 million in transportation revenue in 2017, increasing to \$649 million annually in 2021.²⁶ The legislation also provided income-tax revenues for transportation starting in 2019.

Chart 9. Additional transportation funding (in millions) provided by 2015 legislation.

Year	Additional User Fees	Income-tax Revenue
2016	N/A	N/A
2017	484	N/A
2018	628	N/A
2019	639	150
2020	644	325
2021	649	600

Source: MDOT response to TRIP survey.

The income-tax revenue provided by the 2015 legislation is not dedicated in the state's Constitution - as road-user fees are - and the appropriation could be changed. After 2020, income-tax revenues are expected to continue at \$600 million per year, and the fuel-tax rate will rise with the Consumer Price Index in 2022.²⁷

Additional transportation funding provided by the 2015 legislation will allow Michigan to move forward with numerous projects that otherwise may have remained unfunded. The list below details a sampling of projects in Michigan's major urban areas and throughout the state that are either underway or will be underway or completed no later than 2023, partly due to increased revenue.

Chart 10. Projects that will be completed or underway by 2023, partially as a result of increased funding.

Detroit Regional Area			
County	Route	Location	Improvement
MACOMB	M-3 N	11 MILE ROAD TO 14 MILE ROAD	Reconstruction
OAKLAND	I-696 W	I-275 TO LAHSER	Road Rehabilitation
OAKLAND	M-24	S. OF GOLDENGATE TO N. OF HARRIET	Road Rehabilitation
OAKLAND	US-24 S	LONG LAKE TO ORCHARD LAKE RD AND MAPLE RD. INTERSE	Road Rehabilitation
WAYNE	I-275 S	S. OF M-153 TO 5 MILE ROAD	Road Rehabilitation
WAYNE	I-275 S	NORTHLINE ROAD (S. OF I-94) TO M-153	Road Rehabilitation
WAYNE	I-375BS E	S. OF I-75/I-375 INTERCHANGE TO JEFFERSON AVE.	Reconstruction
WAYNE	I-75 N	AT MILWAUKEE AVE (S17 OF 82251)	Bridge Replacement
WAYNE	I-75 N	OVER THE ROUGE RIVER AND FORT STREET	Bridge Rehabilitation
WAYNE	I-75 N	M-102 (8 MILE ROAD) OVER I-75	Bridge Replacement
WAYNE	I-94	CASS AVENUE, DETROIT, WAYNE COUNTY	Bridge Replacement
WAYNE	I-94 E	E OF I-96 TO E OF CONNER AVENUE	Reconstruction
WAYNE	I-94 E	E. GRAND BLVD OVER I-94	Bridge Replacement
WAYNE	I-94 E	AT GRAND RIVER AVE (S17 OF 82024)	Bridge Replacement
WAYNE	I-94 E	AT CONRAIL RAILROAD (X01 OF 82025)	Bridge Replacement
WAYNE	I-94 E	AT CONRAIL RAILROAD (X02 OF 82024)	Bridge Replacement
WAYNE	I-94 E	AT FORTENAC ST (S08 OF 82024)	Bridge Replacement
WAYNE	I-94 E	FROM ST. AUBIN TO FRONTENAC	Reconstruction
WAYNE	I-94 E	FROM ST. AUBIN TO FRONTENAC	Reconstruction
WAYNE	I-94 W	FROM I-96 TO CONNER	Queue Warning System
WAYNE	I-94 W	PELHAM TO EAST OF M-39	Road Rehabilitation
WAYNE	US-24	GRAND RIVER TO N. OF 8 MILE ROAD	Reconstruction
WAYNE	US-24	CARTER TO PENNSYLVANIA	Road Rehabilitation
Grand Rapids Regional Area			
ALLEGAN	I-196 (SB)	130TH AVENUE NORTH TO US-31	Reconstruction
IONIA	I-96 W	BLISS ROAD EAST TO SUNFIELD HIGHWAY	Reconstruction
KENT	I-96 E	THORNAPPLE RIVER DRIVE EAST TO WEST OF WHITNEYVILL	Road Rehabilitation
OTTAWA	I-196 E	WEST OF 32ND AVE.EAST TO EAST OF OTTAWA/KENT CO. LINE	Reconstruction
OTTAWA	I-196 E	BYRON ROAD EAST TO 32ND AVENUE	Reconstruction
OTTAWA	US-31 N	OVER THE GRAND RIVER	Bridge Rehabilitation
Lansing Regional Area			
CLINTON	I-69 S	12 BRIDGES BETWEEN AIRPORT RD AND I-96	Bridge CPM
CLINTON	I-69	I-96 TO AIRPORT ROAD	Reconstruction
CLINTON	US-127 S	US-127 FROM S. OF M-43 TO ~ 875' S. OF CLARK RD	Road Rehabilitation
EATON	I-496	I-496 FROM I-96 TO LANSING ROAD	Reconstruction
EATON	I-69 N	0.5 MILES SOUTH OF CALHOUN/EATON CO LINE TO NYE HWY.	Road Rehabilitation
INGHAM	I-496	I-496WB RAMP OVER CSX	Bridge Replacement
INGHAM	M-99	M-99 FROM ~1,700 FT NORTH OF HOLT HWY TO EDGEWOOD	Reconstruction
JACKSON	M-60 E	EB AND WB OVER I-94	Bridge Replacement
JACKSON	EAST I-94	I-94 AT ELM ROAD	Reconstruction
JACKSON	I-94 E	I-94 UNDER LANSING AVE	Reconstruction
JACKSON	I-94 E	MICHIGAN AVE TO M-60	Reconstruction
JACKSON	US-127 N	NORTH OF HENRY ROAD TO JACKSON/INGHAM COUNTY LINE	Road Rehabilitation
LENAWEE	US-223	US-127 & US-223 FROM US-12 TO STODDARD ROAD	Road Rehabilitation
LIVINGSTON	I-96	I-96 FROM CHILSON TO DORR	Road Rehabilitation
LIVINGSTON	M-59	WEST OF LAKENA RD TO THE COUNTY LINE	Road Rehabilitation
MONROE	I-75	UNDER LAPLAISANCE ROAD OVER I-75	Bridge Replacement
MONROE	I-75	I-75 FROM ERIE RD TO OTTER CREEK RD	Reconstruction
MONROE	I-75 N	4 BRIDGES ON I-75 IN MONROE COUNTY	Bridge Replacement
WASHTENAW	I-94 W	WASHTENAW/JACKSON COUNTY LINE TO FREER	Road Rehabilitation
WASHTENAW	US-23 BR	I-94 BL TO M-14	Road Rehabilitation

Michigan Statewide			
County	Route	Location	Improvement
ALGER	M-28	FROM ONOTA ST. TO THE ALGER/SCHOOLCRAFT COUNTY LINE	Road Rehabilitation
ARENAC	US-23	I-75 TO M-13	Road Rehabilitation
BAY	I-75	BEAVER RD TO COTTAGE GROVE	Road Rehabilitation
BAY	M-13	OVER THE EAST CHANNEL OF THE SAGINAW RIVER	Bridge Replacement
BAY	US-10 W	7 MILE RD TO BAY CITY	Reconstruction
BERRIEN	I-94 E	BRITAIN AVENUE TO I-196	Reconstruction
BERRIEN	I-94 E	ST. JOSEPH RIVER TO BRITAIN AVENUE.	Reconstruction
BERRIEN	I-94 W	I-196 TO 0.7 MILES WEST OF M-140	Road Rehabilitation
BERRIEN	I-94 W	OVER SQUAW CREEK, SOUTH OF US-12	Road Rehabilitation
BERRIEN	M-51	CHESTNUT LANE TO M-60BR	Reconstruction
BERRIEN	US-31 N	US-12 (EXIT 3) TO MATTHEW ROAD	Road Rehabilitation
CALHOUN	I-69 SB	N DRIVE NORTH (EXIT 42) TO EATON COUNTY LINE	Reconstruction
CHARLEVOIX	US-31	BARNARD ROAD/NORWOOD ROAD NORTH TO BARNARD ROAD	Reconstruction
CHEBOYGAN	I-75 NB	FROM LEVERING RD TO SOUTH OF HEBRON TOWN HALL RD	Road Rehabilitation
CHEBOYGAN	SB I-75	FROM SOUTH OF HEBRON TOWN HALL RD NORTH TO US-31	Road Rehabilitation
GENESEE	I-69	FENTON ROAD TO M-54	Reconstruction
GRAND TRAVERSE	US-31	MURCHIE BRIDGE EAST TO GARFIELD AVENUE	Reconstruction
GRATIOT	US-127	GREAT LAKES CENTRAL RAILROAD CROSSING TO BAGLEY RD.	Road Rehabilitation
ISABELLA	M-20	US-127 BUSINESS ROUTE (MISSION ST) TO US-127	Reconstruction
KALAMAZOO	I-94	EAST OF LOVERS LANE TO EAST OF PORTAGE ROAD	Major Widening
KALAMAZOO	I-94	PORTAGE ROAD TO SPRINKLE ROAD	Major Widening
MENOMINEE	US-41	FROM MENOMINEE TO WALLACE	Road Rehabilitation
ROSCOMMON	I-75 N	MAPLE VALLEY ROAD TO 9 MILE HILL ROAD	Road Rehabilitation
ROSCOMMON	US-127 SB	US-127 BUSINESS ROUTE TO RIVER ROAD	Road Rehabilitation
SAGINAW	I-75	2 BRIDGES IN SAGINAW COUNTY	Reconstruction
SAGINAW	M-46	2 BRIDGES IN SAGINAW COUNTY	Bridge Replacement
SAGINAW	US-127 N	HESS TO SOUTH I-675 INTERCHANGE	Road Rehabilitation
ST. CLAIR	I-69 EB	COX DOTY DRAIN TO M-19	Reconstruction
ST. CLAIR	I-69 W	M-19 TO TAYLOR ROAD	Road Rehabilitation
VAN BUREN	I-94 E	WEST OF M-51 TO 40TH STREET	Road Rehabilitation

Source: MDOT

Despite additional transportation funding provided by the 2015 legislation, numerous needed transportation projects in Michigan remain unfunded. The list below details projects in Michigan's major urban areas and throughout the state that lack adequate funding to proceed.

Chart 11. Needed projects that lack sufficient funding to proceed.

Detroit Area			
County	Route	Location	Improvement
MACOMB	I-94	8 Mile to 11 Mile	Reconstruct
MACOMB	M-3	14 Mile to Remick	Reconstruct
OAKLAND	I-75	M-15 to County Line	Rehabilitation
OAKLAND	I-75	Giddings to M-15	Rehabilitation
OAKLAND	I-96	County Line to I-275	Rehabilitation
OAKLAND	M-1	Oakridge to 14 Mile Road	Reconstruct
OAKLAND	M-14	Sheldon to Newburgh	Reconstruct
OAKLAND	M-24	Harriet to Davison	Rehabilitation
OAKLAND	M-5	S. of 12 Mile to N. of 15 Mile Road	Rehabilitation
OAKLAND	M-59	Pontiac Lake Road to Airport Road	Reconstruct
WAYNE	I-275	Northline Road to County Line	Rehabilitation
WAYNE	I-94	County Line to I-275	Rehabilitation
WAYNE	I-94	Wayne to Beech Daly	Reconstruct
WAYNE	I-96	Schaefer to Roosevelt	Reconstruct
WAYNE	M-1	Tuxedo to S. of 8 Mile Road	Reconstruct
WAYNE	M-10	McNichols to S. of I-75	Rehabilitation
WAYNE	M-10	55 Bridges on/over M-10	Rehabilitation
WAYNE	M-153	Sheldon to Lotz	Reconstruct
WAYNE	M-39	Plymouth Road to Ford Road	Reconstruct
WAYNE	M-39	M-153 to S. of I-94	Rehabilitation
WAYNE	M-39	37 Bridges on/over M-39	Rehabilitation
WAYNE	M-59	Romeo Plank to I-94	Reconstruct
WAYNE	US-12	Pershing to Henry Ruff	Rehabilitation
WAYNE	US-12	I-96 to Cass (Corktown area)	Reconstruct
WAYNE	US-24	Van Born to Ford Road	Reconstruct
Grand Rapids Area			
IONIA	I-96 EB	Sunfield Highway to the Grand River	Reconstruct
KENT	I-196 EB	Fuller Avenue to Maryland Avenue	Reconstruct
KENT	I-96	Under Fruit Ridge Avenue	Reconstruct
KENT	I-96 EB	M-44 (East Beltline) to Cascade Road	Reconstruct
KENT	M-37	South of 84th Street north to 76th Street (Caledonia)	Reconstruct
KENT	US-131 NB	M-11 north to Hall Street	Reconstruct
KENT	US-131 NB	Hall Street north to S-Curve	Reconstruct
MASON	US-31 NB	Meisenheimer Road north to US-10	Rehabilitation
MECOSTA	US-131 Old	County Line north to 14 Mile Road	Rehabilitation
MONTCALM	M-46	Miles Road east to M-66 (East Junction)	Rehabilitation
MUSKEGON	M-46	US-31 east to Maple Island Road	Rehabilitation
MUSKEGON	US-31	at M-46	Reconstruct
NEWAYGO	M-37	M-82 (N JCT) north to the White River	Rehabilitation
OTTAWA	US-31 SB	Quincy Street to Ferris Street	Rehabilitation

Lansing Area			
County	Route	Location	Improvement
CLINTON	I-69	Airport Road to US-127	Reconstruct
CLINTON	I-69	US-127 to Shiawassee county line	Reconstruct
EATON	I-69	Island Highway to Vermontville Highway	Reconstruct
EATON	I-69	Vermontville Hwy to I-96	Reconstruct
HILLSDALE	M-49	Village of Camden	Reconstruct
HILLSDALE/LENAWEE	US-127	CHURCH RD TO US-223, HILLSDALE AND LENAWEЕ CO	Rehabilitation
INGHAM	I-496	Lansing Road to the Grand River	Reconstruct
INGHAM	US-127	Jackson co line to Barnes	Reconstruction
INGHAM	US-127	I-96 to I-496 third lane	Reconstruct
INGHAM	US-127	12 Bridges on US-127	Reconstruct
JACKSON	I-94	west ave interchange	Reconstruct
JACKSON	I-94	County line to Michigan Ave	Reconstruct
JACKSON	I-94BL	MICHIGAN AVE, DWIGHT ST TO BENDER ST, JACKSON	Rehabilitation
LENAWEE	M-34	Hazen Creek to M-52	Rehabilitation
LENAWEE	M-50	Sunset to River Raisin in Tecumseh	Reconstruct
LENAWEE	US-223	Rome Road to Industrial Drive	Rehabilitation
LIVINGSTON	I-96 BL	National to I-96	Rehabilitation
LIVINGSTON	M-59	East City Limits of Howell to Old US-23	Reconstruct
LIVINGSTON	US-23	M-36 interchange	Reconstruction
LIVINGSTON	US-23	M-36 to I-96	Rehabilitation
MONROE	US-23	School to Ida Center	Reconstruct
WASHTENAW	I-94	Freer to Parker	Rehabilitation
WASHTENAW	I-94	Parker to M-14	Rehabilitation
WASHTENAW	I-94	US-23 to Wayne co line	Rehabilitation
WASHTENAW	I-94	11 Bridge on/over I-94	Reconstruct/CPM
WASHTENAW	I-94	M-14 to US-23	Reconstruct
WASHTENAW	I-94	12 Bridges on/over I-94	Reconstruct
WASHTENAW	I-94 BL	US-23 BR to Carpenter Road	Rehabilitation
WASHTENAW	M-14	I-94 to US-23	Reconstruct
WASHTENAW	US-12	Maple Street to I-94	Rehabilitation

Michigan Statewide			
County	Route	Location	Improvement
ALPENA	US-23	Hamilton Road to the N. Alpena Co. Line	Reconstruction
ANTRIM	US-131	Elder Rd to Alba Rd	Reconstruction
ARENAC	US-23	Standish south CL to Grove Str	Reconstruct
BAY	US-10 WB	Midland/Bay COL to 7 Mile Road	Reconstruct
BENZIE	US-31	East of Honor from Goose Rd to Reynolds Rd	Rehabilitation
BERRIEN	I-94BL	Glenlord Rd to M-63	Rehabilitation
BERRIEN	M-139	I-94 to I-94BL	Rehabilitation
BERRIEN	M-63	City of St. Joseph	Reconstruction
BERRIEN	M-63	St. Joseph River to I-196	Rehabilitation
BERRIEN	US-12	Galien River to Dayton Lake	Rehabilitation
BERRIEN	US-12	Mayflower Road to Barron Lake Road	Rehabilitation
BRANCH	M-66	M-60 to D Drive S	Rehabilitation
BRANCH	US-12	Michigan Avenue to Willowbrook Road	Reconstruction
CALHOUN	I-94	M-311 to Old 27	Rehabilitation
CALHOUN	M-311	M-60 to M-96	Rehabilitation
CALHOUN	M-60	Homer to Jackson County	Rehabilitation
CASS	M-60	Barron Lake Road to Vandalia	Rehabilitation
CASS	M-62	Eau Claire to Dowagiac	Rehabilitation
CASS	M-62	Indiana State Line to Cassopolis	Rehabilitation
CASS	M-62	US-12 to M-60	Rehabilitation
CHEBOYGAN	US-23	Mill Creek Discovery Park Drive to Nipigon Rd	Reconstruction
CLARE	US-127	US-10 BR to US-10	Rehabilitation
CLARE	US-127	over US-127 Business Route and M-61	Reconstruct
CLARE	US-127	Long Lake Rd north to Clare/Roscommon COL	Rehabilitation
DELTA	US-2	Hyde to Escanaba	Reconstruct
DELTA	US-2	N. 30th Street to Danforth Rd	Reconstruct
DICKINSON	US-2	US-141 south Jct to C St Norway	Reconstruct
DICKINSON	US-2	Michigan Ave to US-141 south junction in Iron Mountain	Reconstruct
EMMET	M-68	Crooked River Bridge to King Rd	Rehabilitation
EMMET	US-131	Bear River Road to Lears Road	Reconstruction
EMMET	US-31	Graham Rd to Blumke Rd	Rehabilitation
EMMET	US-31	Division Road to Graham Road	Reconstruction
GENESEE	I-475	Flint River to Carpenter Rd, Flint	Reconstruct
GENESEE	I-475	6 Bridges on I-475, Flint	Reconstruct
GENESEE	I-475	Bristol Rd to Thread Creek, Flint	Reconstruct
GENESEE	I-75	Court Street north to I-475 north JCT	Reconstruct
GENESEE	I-75	10 Bridges on/over I-75, Flint	Reconstruct/CPM
GENESEE	I-75	Oakland / Genesee COL to US-23	Rehabilitation
GENESEE	M-21	Thayer St to Cesar Chavez Dr, Flint	Reconstruct
GENESEE	M-21	Morrish Road to I-75	Rehabilitation
GENESEE	M-54	Hemphill to Atherton, Leith to Stuart	Rehabilitation
GENESEE	M-54	3 Bridges on M-54	Reconstruct
GRAND TRAVERSE	US-31	Benzie/GT Cnty Line to M-37 (Chums)	Reconstruction
GRATIOT	M-46	Montcalm COL to US-127 BR	Rehabilitation
GRATIOT	US-127	US-127/M-46 interchange area	Reconstruct
GRATIOT	US-127	3 Bridges US-127/M-46 interchange area	Reconstruct
GRATIOT	US-127	Clinton/Gratiot COL to M-57	Rehabilitation
IOSCO	US-23	Iosco S. Co. Line to Townline Road	Reconstruction
IOSCO	US-23	Tawas River to Tawas Beach Road	Reconstruction
KALAMAZOO	I-94	40th Street (Exit 88) to 6 1/2 mile road	Rehabilitation
KALAMAZOO	I-94BL	M-96 to I-94	Rehabilitation
KALAMAZOO	M-89	M-43/M-89 Intersection to the Kalamzoo/Calhoun Co. Line	Rehabilitation

KALKASKA	M-72	East of Kalkaska from US-131 east to County Line	Rehabilitation
KALKASKA	US-131	In Kalkaska from south limit to north limit	Reconstruction
LAPEER	I-69	Newark Rd to Lapeer COL	Reconstruct
LAPEER	I-69	Lake George Road to Newark Road	Reconstruct
LAPEER	M-24	Davis Rd to Tuscola / Lapeer COL	Rehabilitation
MANISTEE	US-31	In Manistee from Bascule Bridge north to M-55	Reconstruction
MIDLAND	US-10BR (Midland	M-20 (Jerome St) to Washington St	Reconstruct
ROSCOMMON	M-55	Dollina to M-18 S	Reconstruction
SAGINAW	M-46	Stephens to M-13	Reconstruct
SAGINAW	M-46	Center to Stephens	Reconstruct
SAGINAW	M-47	Tittabawassee Rd to Freeland	Reconstruct
SAGINAW	M-47	M-58 to Tittabawassee Rd	Reconstruct
ST. CLAIR	M-29	County Line to Palms Rd	Rehabilitation
ST. JOSEPH	M-60	M-66 WJCT to Branch County Line	Rehabilitation
ST. JOSEPH	M-60	Cass County to US-131	Rehabilitation
ST. JOSEPH	US-12	Sturgis	Rehabilitation
ST. JOSEPH	US-12	St. Joseph River to US-131	Rehabilitation
ST. JOSEPH	US-131	Three Rivers to City of Portage (U Ave)	Rehabilitation
ST. JOSEPH	US131BL, M-86	Three Rivers	Rehabilitation
VAN BUREN	I-196	Van Buren County Line to Van Buren Trail	Rehabilitation
VAN BUREN	I-94	M-51 to Mattawan	Rehabilitation
VAN BUREN	I-94	Under M-40, over South Branch of Paw Paw River (3 Bridges)	Reconstruct
VAN BUREN	M-140	CR 378 to Blue Star Hwy	Rehabilitation
VAN BUREN	M-43	Blue Star Hwy to Bangor	Rehabilitation

Source: MDOT

Federal Transportation Funding

Investment in Michigan'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.

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.

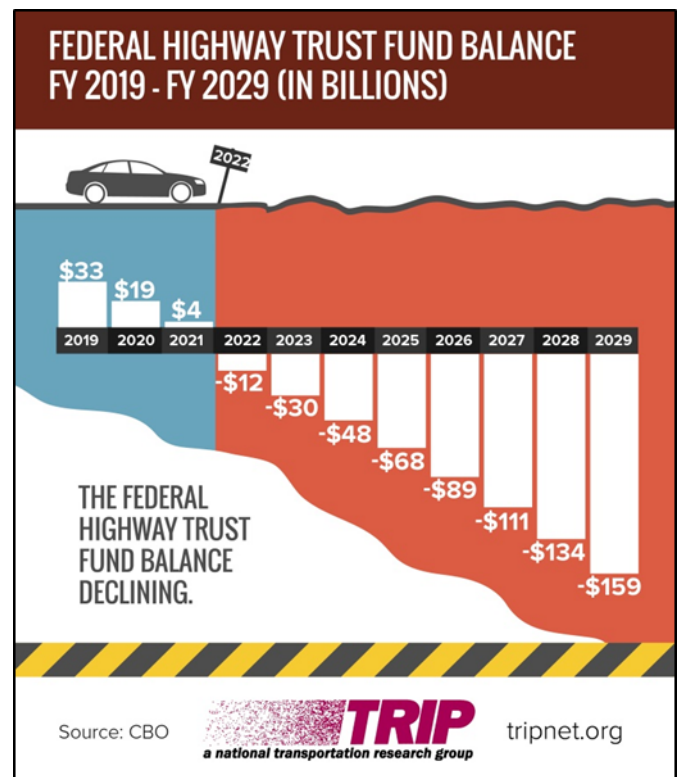
Most federal funds for highway and transit improvements in Michigan are provided by federal highway user fees, largely an 18.4 cents-per-gallon tax on gasoline and a 24.4 cents-per-gallon tax on diesel fuel. Since 2008 revenue into the federal Highway Trust Fund has been inadequate to support legislatively

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.²⁸ The \$44 billion balance currently in the Federal Highway Trust Fund, is expected to run a deficit starting in 2021, based on current revenues.

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

The five-year, \$305 billion FAST Act will provide a boost of approximately 15 percent in highway funding and 18 percent in transit funding over the duration of the program, which expires in 2020.²⁹ In addition to federal motor fuel tax revenues, the FAST Act will also be funded by \$70 billion in U.S. general funds, which will rely on offsets from several unrelated federal programs including the Strategic Petroleum Reserve, the Federal Reserve and U.S. Customs.

According to the [2015 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance](#) report submitted by the United States Department of Transportation (USDOT) to Congress, the nation faces an \$836 billion backlog in needed repairs and improvements to the nation's roads, highways and bridges.³⁰ The USDOT [report](#) found that the nation's current \$105 billion investment in roads, highways



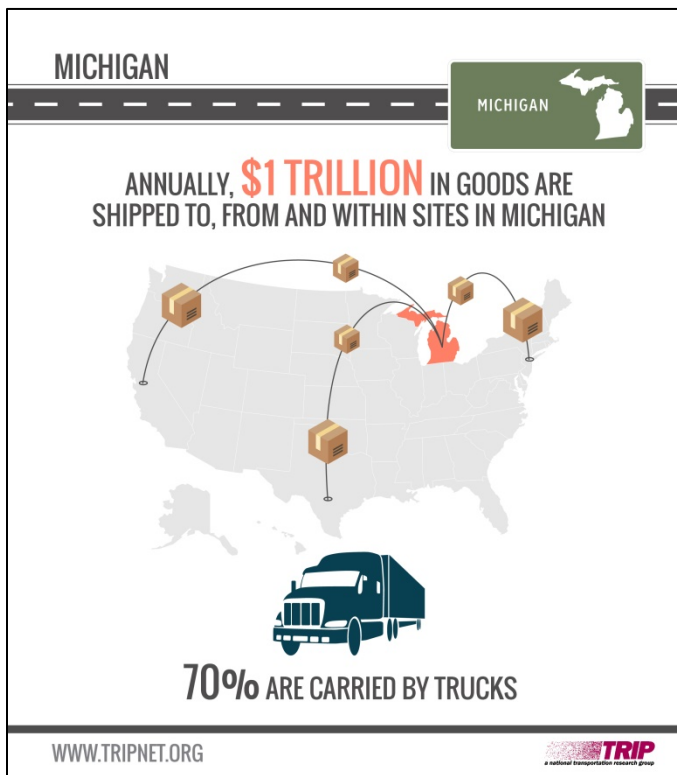
and bridges by all levels of government should be increased by 35 percent to \$142.5 billion annually to improve the conditions of roads, highways and bridges, relieve traffic congestion and improve traffic safety.

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.

Businesses have responded to improved communications and the need to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and e-commerce. The result of these changes has been a significant improvement in logistics efficiency as firms move from a push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system, which relies on smaller, more strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

Highways are vitally important to continued economic development in Michigan, particularly to the state's manufacturing, agriculture and tourism industries. 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.



Every year, approximately \$1 trillion in goods are shipped to, from and within sites in Michigan, mostly by trucks.³¹ Seventy percent of the goods shipped annually to and from sites in Michigan are carried by trucks and another 15 percent are carried by courier services or multiple-mode deliveries, which include trucking.³²

The design, construction and maintenance of transportation infrastructure in Michigan play a critical role in the state's economy, supporting the equivalent of 94,107 full-time jobs across all

sectors of the state economy, earning these workers approximately \$4.1 billion annually.³³ These jobs include 46,881 full-time jobs directly involved in transportation infrastructure construction and related activities as well as 47,226 full-time jobs as a result of spending by employees and companies in the transportation design and construction industry.³⁴

Transportation construction in Michigan annually contributes an estimated \$741 million in state and local income, corporate and unemployment insurance taxes and the federal payroll tax.

Approximately 1.9 million full-time jobs in Michigan 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 \$77 billion in wages and contribute an estimated \$14 billion in state and local income, corporate and unemployment insurance taxes, and the federal payroll tax.³⁵

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.

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 accessibility was ranked the number one site selection factor in a 2017 survey of corporate executives by [Area Development Magazine](#). Labor costs and the availability of skilled labor, which are both impacted by a site's level of accessibility, were rated second and third, respectively.³⁶

Conclusion

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

Michigan will need to modernize its surface transportation system by improving the physical condition of its transportation network and enhancing the system's ability to provide efficient, safe and reliable mobility for residents, visitors and businesses. Making needed improvements to the state's roads,

highways, bridges and transit systems could provide a significant boost to the economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access.

While the funding increase provided in 2015 will be helpful, Michigan still faces significant challenges in improving the condition of its roads and bridges and numerous projects to improve the condition and expand the capacity of Michigan's roads, highways, bridges and transit systems will not be able to proceed without a substantial boost in state or local transportation funding. If Michigan is unable to complete needed transportation projects it will hamper the state's ability to improve the condition and efficiency of its transportation system or enhance economic development opportunities and quality of life.

#

ENDNOTES

- ¹ Michigan Department of Community Health, 2016. <http://www.mdch.state.mi.us>. U.S. Census data, 2018.
- ² Ibid.
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- ⁴ TRIP analysis of Bureau of Economic Analysis data.
- ⁵ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2013 and 2017.
- ⁶ TRIP estimate based on analysis of FHWA and U.S. Census data.
- ⁷ Michigan Transportation Asset Management Council (2018). Michigan's Roads and Bridges Annual Report.
- ⁸ Ibid.
- ⁹ Federal Highway Administration (2019). 2017 Highway Statistics.
- ¹⁰ Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
- ¹¹ Pavement Maintenance, by David P. Orr, PE Senior Engineer, Cornell Local Roads Program, March 2006.
- ¹² TRIP calculation.
- ¹³ Highway Development and Management: Volume Seven. Modeling Road User and Environmental Effects in HDM-4. Bennett, C. and Greenwood, I. 2000.
- ¹⁴ Your Driving Costs. American Automobile Association. 2018.
- ¹⁵ Federal Highway Administration, National Bridge Inventory. Data is for 2017. (2018).
- ¹⁶ Michigan Transportation Asset Management Council (2018). Michigan's Roads and Bridges Annual Report.
- ¹⁷ Federal Highway Administration (2017). Bridge Replacement Unit Costs 2016. <https://www.fhwa.dot.gov/bridge/nbi/sd2016.cfm> TRIP estimate is based on ¾ of structurally deficient bridges being rehabilitated and ¼ being replaced.
- ¹⁸ TRIP analysis of Federal Highway Administration National Bridge Inventory data for 2017 (2018).
- ¹⁹ TRIP analysis of FHWA National Bridge Inventory data <https://www.fhwa.dot.gov/bridge/nbi.cfm>
- ²⁰ Federal Highway Administration National Highway Traffic Safety Administration, 2013-2017.
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- ²² Ibid.
- ²³ Adding Highway Shoulders, Width, Reduce Crash Numbers and Save Lives (August 9, 2012). Texas Transportation Institute.
- ²⁴ Ibid.
- ²⁵ Michigan Department of Transportation (2018). Response to TRIP survey.
- ²⁶ Ibid.
- ²⁷ Ibid.
- ²⁸ "Surface Transportation Reauthorization and the Solvency of the Highway Trust Fund," presentation by Jim Tymon, American Association of State Highway and Transportation Officials (2014).
- ²⁹ 2015 "Fixing America's Surface Transportation Act." (2015) American Road and Transportation Builders Association. <http://www.artba.org/newsline/wp-content/uploads/2015/12/ANALYSIS-FINAL.pdf>
- ³⁰ United States Department of Transportation (2015). 2015 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance. Executive Summary, Chapter 8. <https://www.fhwa.dot.gov/policy/2015cpr/es.cfm#8h>
- ³¹ TRIP analysis of Bureau of Transportation Statistics, U.S. Department of Transportation (2018). Freight Analysis Framework Version 4. <https://faf.ornl.gov/fafweb/>
- ³² Ibid.
- ³³ American Road & Transportation Builders Association (2015). The 2015 U.S. Transportation Construction Industry Profile. https://www.transportationcreatesjobs.org/pdf/Economic_Profile.pdf
- ³⁴ Ibid.
- ³⁵ Ibid.

³⁶ Area Development Magazine (2018). 32nd Annual Survey of Corporate Executives: Availability of Skilled Labor New Top Priority. <http://www.areadevelopment.com/Corporate-Consultants-Survey-Results/Q1-2018/32nd-annual-corporate-survey-14th-annual-consultants-survey.shtml>