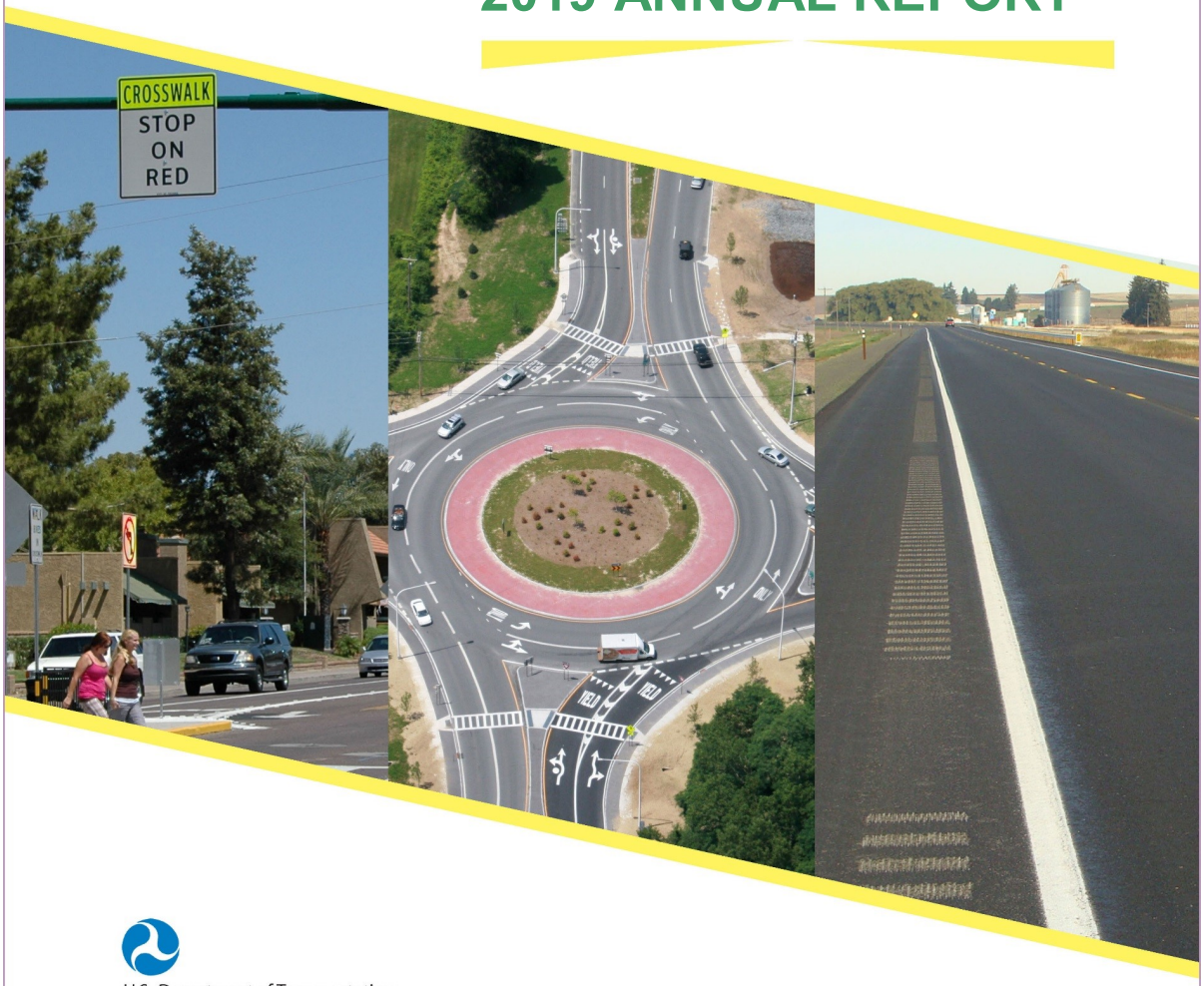
MICHIGAN

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2019 ANNUAL REPORT



U.S. Department of Transportation
Federal Highway Administration

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23 U.S.C. 148(h)(4) states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section[HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.”

23 U.S.C. 409 states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.”

Executive Summary

The 2019 HSIP Annual Report for the Michigan Department of Transportation (MDOT) will be for the one year time period of FY 2018 which commenced on October 1, 2017 and ended on September 30, 2018. This report addresses safety improvements funded through MDOT on both trunkline and non-trunkline roadways.

Introduction

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. As per 23 U.S.C. 148(h) and 23 CFR 924.15, States are required to report annually on the progress being made to advance HSIP implementation and evaluation efforts. The format of this report is consistent with the HSIP Reporting Guidance dated December 29, 2016 and consists of five sections: program structure, progress in implementing highway safety improvement projects, progress in achieving safety outcomes and performance targets, effectiveness of the improvements and compliance assessment.

Program Structure

Program Administration

Describe the general structure of the HSIP in the State.

The general structure of the HSIP is to select cost effective safety improvements, as identified in Michigan's Strategic Highway Safety Plan (SHSP), to address locations with correctable fatality (K) and serious injury (A) crashes. Projects are selected and identified during the annual Call for Projects process for local and non-local roadways. The selected projects are designed and implemented via the Region offices and Local Agency Programs oversight. Before and After studies are conducted to evaluate the effectiveness of a particular countermeasure.

Where is HSIP staff located within the State DOT?

Other-TSMO (Transportation Systems Management and Operations)

The HSIP Trunkline program is managed out of the MDOT Central Office in the Bureau of Field Services - TSMO Division - Traffic and Safety Section - Safety Programs/Pavement Markings

The HSIP Local Agency Non-Trunkline Program is managed out of the MDOT Central office in the Bureau of Highway Development - Development Services Division - Local Agency Programs (Local Safety).

How are HSIP funds allocated in a State?

- Other-Central Office via Statewide Formula via MDOT Regions
- Other-Central Office via Statewide Competitive Application Process for Local Agencies
- Other-Central Office via Funding Set Aside

The Lansing Central Office manages a separate Call for Projects process for both the state owned and locally owned roadways. There is also a funding set aside amount directly for state owned roadway pavement markings and delineation.

The Local Agency Call for Projects is a competitive application process between all of the Local Agencies of Michigan and cycles on a two-year call for projects.

The Statewide Trunkline Call for Projects has specific funding targets for each of the 7 MDOT Regions. The funding targets are calculated based on lane miles, traffic volumes, and Fatality and Serious Injuries that occur within each particular Region.The State Trunkline Call for Projects cycles on a five year call for projects.

Describe how local and tribal roads are addressed as part of HSIP.

For the local roadway network, HSIP funds (~$15.1 M) are administered by the Local Agency Programs Safety Engineer located in the Central Office. The HSIP funds were allocated to two separate Call for Projects: $6 M for High Risk Rural Roads (HRRR) and $9 M for Highway Safety Improvement Program (HSIP). Typically, only the construction phase is eligible for federal aid. Preliminary engineering costs were eligible for federal participation if it was for a project identified on the Transparency (5%) Report, by the Local Safety Initiative, in a Road Safety Audit (RSA) or in a traffic signal optimization project. Otherwise, preliminary engineering was not eligible for federal safety funds. Projects are federally funded at 80 or 90 percent up to an amount not to exceed $600,000 of Federal funding, with a 20 or 10 percent Local Agency match, respectively.

All Local Agencies within Metropolitan Planning Organizations (MPO) areas must coordinate with their MPO to ensure inclusion of their project in the area's Transportation Improvement Plan (TIP). Those agencies that are part of a rural task force are to notify their members that they applied for these funds. Rural task force approval is not necessary. MDOT Local Agency Programs (LAP) coordinates with MDOT Planning to ensure these projects are included in the Statewide Transportation Improvement Plan (STIP).

The planning and selection of projects for the local roadway system is very similar to that of the state trunkline. Local agencies were invited by a June 2, 2016 memorandum (HRRR) and a June 21, 2016 memorandum (HSIP) to submit proposed projects for consideration as part of an annual Call for Projects (CFP). All local agencies (counties, cities, and villages) are able to apply for the funds. Townships and tribal organizations are also eligible to receive the safety funds but must work with their respective county for submittal of the application. The emphasis of the local FY 2018 CFP was to address those locations with correctable fatality and injury crashes to support the department's efforts of reducing fatalities and serious injuries striving for Toward Zero Deaths. Per the CFP, the Local Agency was to provide a Time of Return (TOR) analysis showing how the proposed improvement would address fatalities and all injuries. In the TOR, all crash types and severity levels correctable by the proposed improvement can be included. A maximum of five years of available crash data is to be used in the TOR analysis. For FY 2018 projects, 2010 to 2014 (or the current availability) crash data was used.

Eligible projects must meet current standards and warrants. Project types may include replacement, installation or elimination of guardrail, removal of fixed objects from clear zones, traffic and pedestrian signal optimization, installation and upgrades of traffic signals, access management, horizontal and vertical curve modifications, sight distance and drainage improvements, bridge railing replacement or retrofit, roadway intersection improvements specifically to improve safety, mid-block pedestrian crossings, improvements to school zones, shoulder and centerline rumble strips, and improved permanent signing and pavement markings.

For the FY 2018 CFP, a greater emphasis was placed on the identification of correctable fatalities and serious injuries, both in the selection and the prioritization of safety projects. In addition, in FY 2018, a small portion of the local safety funds were allocated to five subprograms: Centerline and Shoulder Rumble Strips ($200 K), Guardrail Upgrades and Clear Zone Improvements ($600 K), High Friction Surface Treatment ($100 K), Road Safety Audits ($50 K) and Non-motorized Facility/Pedestrian Improvements ($100 K). Local agencies were informed that this money is reserved for the listed strategic improvements and encouraged to submit conforming projects.

Identify which internal partners (e.g., State departments of transportation (DOTs) Bureaus, Divisions) are involved with HSIP planning.

- Design
- Maintenance
- Operations
- Planning

- Traffic Engineering/Safety
- Other-Local Agency Programs
- Other-TSMO

N/A

Describe coordination with internal partners.

MDOT's Safety Programs Unit provides support and coordination to internal partners within the Department. Each of the seven Regions is comprised of a Traffic Safety and Operations Engineer as well as Traffic and Safety Engineers located in the Transportation Service Center (TSC) offices. Employees within the Safety Programs Unit distribute the High Crash List and Pavement Friction Analysis to the Region and TSC staff for their use in project selection. Road Safety Audits and 3R/4R Safety Reviews are conducted with various internal partners located within the Central, Region, and TSC offices. In addition, the Safety Programs Unit supports the Regions and TSC's with special data requests in the development of their safety program including various types of GIS mapping.

HSIP funding partnering is also coordinated between the Safety Programs Unit and Local Agency Programs.

Identify which external partners are involved with HSIP planning.

- Academia/University
- FHWA
- Local Government Agency
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)
- Other-County Road Association of Michigan
- Other-Office of Highway Safety Planning

N/A

Describe coordination with external partners.

MDOT coordinates with various Colleges and Universities to provide research opportunities on existing and up and coming safety countermeasures. MDOT coordinates with FHWA on existing and proposed federal legislation and standards. MDOT also coordinates with the County Road Association, Regional Planning Organizations, and Local Government Agencies to help communicate safety initiatives and safety countermeasures. Overall, MDOT is vigilant about coordination with external partners specifically to promote Toward Zero Deaths (TZD) initiatives as a member of the Governors Traffic Safety Advisory Council (GTSAC). MDOT assists the Office of Highway Safety Planning (OHSP) and the GTSAC in planning Engineering sessions for the Annual Michigan Traffic Safety Summit. MDOT provides scholarship opportunities to Local Agencies to attend the Traffic Safety Summit to help educate them on TZD Initiatives and to help reduce fatalities and serious injuries on every roadway in Michigan.

https://www.michigan.gov/documents/msp/Summit_2019_Program_07b_649295_7.pdf

Describe HSIP program administration practices that have changed since the last reporting period.

In 2018, MDOT added a Delineation Template in order to systemically treat Trunkline Freeway and Non-Freeway locations to help reduce lane departure crashes. Project types include the following:

Freeway Delineation:

1. Mainline Freeway Shoulder Delineation
2. Freeway to Freeway Traveled Way Connections
3. Interchange Delineation (Focus on non-lighted interchanges first)
4. Interchange Guardrail Delineation
5. Mainline Guardrail Delineation

Non-Freeway Delineation:

1. Divided Highways Including Directional Turn arounds
2. Rural two-lane roadways roadside Delineation
3. Two-way/Two Lane Curved Roadway Sections
4. Guardrail Delineation (focus on rural two-lane roadways)

Describe other aspects of HSIP Administration on which the State would like to elaborate.

For the State Trunkline Program, safety funds are administered by the Safety Template Program Manager in Traffic and Safety (Central Office). For FY 2018, $21.5 M in safety funding was available, of which $15.6 M was allocated to the seven MDOT Regions as funding targets. The allocations were based on the percentage of fatalities and serious injuries, lane miles and Vehicle Miles Traveled in each Region. The goal is that all Regions receive a minimum of 5 percent of the Safety Target.The funding was increased in March of 2018 from the original $19 M.

Beyond the allocated $15.6 M, an additional $4.5 M of the safety funds was reserved by the Traffic and Safety area to apply to projects in any Region at their discretion. The Regions were permitted to submit candidate projects with total costs exceeding their funding targets; the central office review team then selected the projects to be funded in each Region, taking into account priorities expressed by the Regional staffs, and use their discretionary funds to apply to worthy projects that exceeded a particular Region’s funding target. All project phases; preliminary engineering, construction engineering, right of way and construction are eligible for safety funding.

In addition to the $20.1 M of project funding described above, in which project selection was approved by central office staff, each Region was given $200,000 for low-cost safety improvements to be chosen at the discretion of the Region staff. The Regions use this pot of money for a variety of minor roadside safety improvements which can be performed in a timely manner by state forces or contract agencies. Individual Safety Work Authorizations (SWA) are the most cost effective method of funding these types of improvements and can be initiated quickly throughout the fiscal year in response to safety needs. Federal funds are used for those improvements meeting funding criteria.

Once the FY 2018 program was developed, it was reviewed and approved by the Project Screening Committee (PSC). The PSC consists of Region and Central Office Program Managers and Planning staff who help develop the MDOT’s Five Year Plan for approval by the Transportation Commission. The PSC ensures coordination between Regions on various corridors and between the programs.

In FY 2018 an additional Delineator template was created containing $1.5 M per year. This template provided Regions with additional funding used to install freeway and non-freeway types of delineation.

In FY 2018, the use of HSIP funding continued in the administration of the pavement marking program. Under 23 U.S.C. 148(e)(1)(c), HSIP funds may be obligated for any project to maintain minimum levels of retroreflectivity of traffic signs and pavement markings, without regard to whether that project is included in an applicable State SHSP. Prior to FY 2013 Surface Transportation Safety funding was used in the placement of pavement markings in the Annual Pavement Marking Program.The funding was increased in March of 2018 from the original amount to add an additional $1 M to the program for FY 2018.

Local Safety HSIP administration is explained above in Question #6.

Program Methodology

Does the State have an HSIP manual or similar that clearly describes HSIP planning, implementation and evaluation processes?

Yes
FileName:
MDOT HSIP Manual August 2019.pdf

The MDOT HSIP Manual was recently updated in 2019.

Select the programs that are administered under the HSIP.

- Other-Pavement Markings
- Other-Highway Safety Call for Projects
- Other-Local Safety Call for Projects
- Other-Local Safety High Risk Rural Roads
- Other-Delineation

N/A

Program: Other-Pavement Markings

Date of Program Methodology:9/1/2015

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
	Lane miles	Functional classification

What project identification methodology was used for this program?

- Other-Retroreflectivity of pavement marking

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-funding set aside per each Region

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Available funding:1
Cost Effectiveness:2

N/A

Program: Other-Highway Safety Call for Projects

Date of Program Methodology:9/15/2011

What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway	
Other-Focus on fatal and serious injury crashes along with fixes based on crash types and patterns	Volume Lane miles	Median Horizontal Functional Roadside features	width curvature classification

What project identification methodology was used for this program?

- Excess expected crash frequency using SPFs
- Expected crash frequency with EB adjustment
- Level of service of safety (LOSS)
- Probability of specific crash types
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Competitive application process
- selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Ranking based on B/C:3
Available funding:1
Cost Effectiveness:2

N/A

Program: Other-Local Safety Call for Projects

Date of Program Methodology:5/8/2015

What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway

All crashes	Traffic Volume	Horizontal curvature Functional classification Roadside features	

What project identification methodology was used for this program?

- Crash frequency
- Excess expected crash frequency using SPFs
- Expected crash frequency with EB adjustment
- Level of service of safety (LOSS)
- Probability of specific crash types
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Competitive application process
- selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Ranking based on B/C:2
Available funding:1
Cost Effectiveness:3
Other-Funding set asides for specific countermeasures:4

N/A

Program: Other-Local Safety High Risk Rural Roads

Date of Program Methodology:3/22/2016

What is the justification for this program?

- FHWA focused approach to safety

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes	Traffic Volume	Horizontal curvature Functional classification Roadside features

What project identification methodology was used for this program?

- Crash frequency
- Excess expected crash frequency using SPFs
- Expected crash frequency with EB adjustment
- Level of service of safety (LOSS)
- Probability of specific crash types
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Competitive application process
- selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Ranking based on B/C:2
Available funding:1
Cost Effectiveness:3

N/A

Program: Other-Delineation

Date of Program Methodology:10/1/2017

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
Other-Lane departure crashes	Volume	Roadside features

What project identification methodology was used for this program?

- Probability of specific crash types

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-funding set aside

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Available funding:1
Cost Effectiveness:2

N/A

What percentage of HSIP funds address systemic improvements?

42

HSIP funds are used to address which of the following systemic improvements?

- Add/Upgrade/Modify/Remove Traffic Signal
- Cable Median Barriers
- Clear Zone Improvements
- High friction surface treatment
- Horizontal curve signs
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing
- Other-funding set-asides for Local Agency Projects
- Pavement/Shoulder Widening
- Rumble Strips
- Safety Edge
- Traffic Control Device Rehabilitation
- Upgrade Guard Rails
- Wrong way driving treatments

Systemic projects selected through the Local Safety Call for Projects (CFP) process are awarded a higher federal funding percentage (90 percent federal with 10 percent local match) as compared to non-systemic projects which have a base funding percentage of 80 percent federal with a 20 percent local match. It should be noted that all selected projects that address a fatal or serious (Type A) injury crash are funded at 90 percent federal participation. Additionally, the local safety CFP has set asides for High Friction Surface Treatment, Rumble Strips, Clear Zone improvements, and Guardrail upgrade projects that are systemic in nature. Of the Federal HSIP funds obligated on the local system in fiscal year 2018, approximately 7 percent of funds went towards systemic projects.

The Trunkline Call for Projects (CFP) allowed for up to 25 percent of systemic funded projects. Along with the Annual CFP, MDOT elects to construct longitudinal and special pavement markings as part of the HSIP program. Overall, in FY 2018, 50 percent of the total HSIP Trunkline Program funds (Safety, Pavement Markings, and Delineation) was used for systemic type projects. 7 percent of Trunkline Safety CFP project funds were systemic type fixes. See attached Low-cost Safety Improvement Projects that is used to select systemic type projects.

Overall, 42 percent of HSIP project funds selected were considered to be systemic type fixes (Trunkline Safety, Pavement markings, Delineation, and Local Safety).

What process is used to identify potential countermeasures?

- Crash data analysis
- Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)
- Engineering Study
- Road Safety Assessment
- SHSP/Local road safety plan
- Other-High Crash List
- Other-Transparency Report
- Other-Fatality and Serious Injury Region-wide Maps
- Other-3R/4R Safety Reviews
- Other-Pavement Friction Analysis
- Other-Customer Concerns
- Other-Local Safety Initiative

N/A

Does the State HSIP consider connected vehicles and ITS technologies?

No

Currently, MDOT does not consider ITS technologies as part of the HSIP program. Connected vehicles and ITS technologies are funded via a separate funding source out of the MDOT TSMO Division. The ITS program promotes advanced technologies, electronic and telecommunication to improve safety and travel time on the multi-modal transportation system. Michigan's Connected Vehicles program is intended as a complementary program to efforts in California, Minnesota and Florida, along with international efforts in Ontario, Canada and Wales, United Kingdom, aimed at providing an incubator for testing of a variety of on board and road side elements and applications.

Does the State use the Highway Safety Manual to support HSIP efforts?

Yes

Please describe how the State uses the HSM to support HSIP efforts.

Michigan DOT utilizes Part B of the HSM through continued development and use of AASHTOWare Safety Analyst for the trunkline roadways. The locations that are determined from Safety Analyst are then provided to Region and Transportation Service Center offices. As they evaluate the locations on the list, Michigan’s own HSM spreadsheet is utilized to develop a substantive perspective. The quantitative performance of alternatives allowed in the spreadsheet have come from what will soon been three separate research efforts to better understand safety performance in Michigan. Regionally, it was found that there are differences resulting in the latest version of our HSM spreadsheet to account for this in the analysis. Road Safety Audits have been performed both informally and formally that utilize the Michigan HSM spreadsheet based on suggested improvements. Training on the Interactive Highway Safety Design Model (IHSDM) was completed in 2016 and 2018. Since then, a build of the software has been provided throughout MDOT and is available for use external to the agency. The latest version of the software is being evaluated to incorporate the research outputs for non-freeway urban and rural site types. In Safety Analyst, the emphasis areas of Bicycle, Pedestrian, Run-off-Road, Alcohol, Commercial Vehicle, Work Zone and light condition have been built in to provide additional functionality. Safety Analyst was also used as one of the deciding factors in the determination of the locations for increasing speed limits.

The Trunkline Safety Call for Projects requires that a HSM analysis be completed for all qualifying non-freeway, non-systemic projects. The Local Safety Call for Projects allows the HSM to be submitted for additional project support. An internal MDOT HSM training was conducted in June of 2019 including an updated analysis spreadsheet.

Describe program methodology practices that have changed since the last reporting period.

in 2018, MDOT added a Delineation Template in order to systemically treatment Trunkline Freeway and Non-Freeway locations to help reduce lane departure crashes. The following project types are implemented with the delineation template.

Freeway Delineation:

1. Mainline Freeway Shoulder Delineation
2. Freeway to Freeway Traveled Way Connections
3. Interchange Delineation (Focus on non-lighted interchanges first)
4. Interchange Guardrail Delineation
5. Mainline Guardrail Delineation

Non-Freeway Delineation:

1. Divided Highways Including Directional Turn arounds
2. Rural two-lane roadways roadside Delineation
3. Two-way/Two Lane Curved Roadway Sections
4. Guardrail Delineation (focus on rural two-lane roadways)

Describe other aspects of the HSIP methodology on which the State would like to elaborate.

The annual Trunkline process for submitting safety projects starts with a Call for Projects (CFP) issued to the seven MDOT Regions from the Safety Template Program Manager. The FY 2018 Safety Call request was made to the Regions on September 17, 2012. In response to the CFP, the Regions identify locations where safety improvements (i.e. add a center left turn lane, right turn lane, geometric improvements to accommodate signalization, median protection, etc.) could be made. These locations are to be identified through the current Transparency (5%) Report, Fatality and Serious Injury Regionwide Maps, High Crash List, 3R/4R Safety Reviews, customer concerns, and Pavement Friction Analyses. Upon location identification an engineering study is conducted by the Region to determine the appropriate safety improvement. The emphasis of the Safety Call was to address those locations with correctable fatality and serious injury crashes to support the department's efforts of reducing fatalities and serious injuries and support the vision of Toward Zero Deaths (TZD). Emphasis was directed toward implementation of countermeasures to deter wrong way movements onto freeways. If the TOR criteria could not be met as outlined below for the Wrong Way Movement (WWM) countermeasures, the Regions were allowed to use the 25 percent allocation of their Region target for systemic treatments.

All safety projects and proposed candidates must address a focus area of the Michigan Strategic Highway Safety Plan (SHSP). Submitted concepts must meet a maximum Time-of-Return (TOR) to qualify for safety funding. The TOR is a cost benefit analysis of proposed safety improvement which considers all crash types and severity levels that are correctable by the proposed safety improvement. A minimum of the latest three years of available crash data is to be used in the TOR analysis. For FY 2018 project, in which 2009 to 2011 (or most current data available) crash data was used .The following TOR criteria was established:

- Stand alone safety improvement - TOR of 7 years or less
  • Stand alone safety improvement for location on the current Transparency (5%) or High Crash Report – TOR of 10 years or less.
  • Safety improvement in conjunction with another Construction project (Bridge, R&R, etc.) - TOR of 9 years or less.

Each Region's submittal was reviewed by the Central office review team to ensure all criteria was met. The Regions were permitted to submit candidate projects with total costs exceeding their funding targets. The review team, taking into account priorities expressed by the Regions, used the TOR values as a means to develop project rankings (lowest to highest TOR value) within each Region and the TOR values for projects beyond funding targets to allocate the $4.5 M funds statewide. For FY 2018, funding was included in programmed preliminary engineering for outer year safety projects to conduct a road safety audit (RSA). For guidance, a RSA should be conducted for all proposals exceeding $750,000 in programmed construction costs. Each Region was required to conduct at least one RSA for a FY 2018 improvement projects. The RSA

should be done prior to 30 percent completion of the plans. The purpose of the RSA is to ensure that the appropriate safety fixes are incorporated into the overall design based on crash patterns within the project limits. Continuing in FY 2018 each Region was required to allocate up to a certain percent of their funding target for low cost safety improvements. This amount is in addition to the Safety Work Authorizations (SWA funding). The focus is to be on system wide safety improvements done by work authorization or through the letting process. A TOR justification is not required if the proposed improvement is selected from the list of approved and proven safety system wide fixes (Eligibility Guidelines for Low Cost Safety Improvement Projects-see attachment). For FY 2018 through 2020 this percentage was increased to 25 percent. New for FY 2020 is the allocation of $1 million toward additional low cost safety improvements for regions meeting or exceeding their target amount in project proposals. To accommodate this change, the $2 million of discretionary funding as described above has been reduced from $2 million to $1 million. For FY 2021 to FY 2025 the percentage submitted shall be a minimum of 25 percent up to a maximum of 50 percent over a five-year rolling average period.

In an effort to incorporate the Highway Safety Manual (HSM) into MDOT's business process all safety projects submitted for FY 2019 to present, except for freeway improvements, shall have the HSM predictive analysis performed on them. A comparison of future conditions with and without the proposed improvement shall be provided. Starting for FY 2020 and continuing for FY 2021 to FY 2025, all submitted concepts must address two or more fatal and/or serious injury crashes and align with their Region Toward Zero Deaths plan.

See Question #6 for the HSIP methodology for Local HSIP/HRRR Safety.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

The State Fiscal year ran from October 1, 2017 to September 30, 2018.

Enter the programmed and obligated funding for each applicable funding category.

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$53,887,381	$49,103,948	91.12%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 154)	$0	$0	0%
Penalty Funds (23 U.S.C. 164)	$0	$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$10,898,706	$11,251,261	103.23%
Totals	$64,786,087	$60,355,209	93.16%

How much funding is programmed to local (non-state owned and operated) or tribal safety projects?

$15,933,651

How much funding is obligated to local or tribal safety projects?

$15,716,450

Michigan intentionally programs more local HSIP funds than the program has allocated to allow for flexibility if a project needs to be delayed to a different fiscal year. Projects are moved to later fiscal year as needed.

How much funding is programmed to non-infrastructure safety projects?

$550,000

How much funding is obligated to non-infrastructure safety projects?

$550,000

Non-infrastructure projects for FY 2018 included funding for Road Safety Audits for each of the 7 Regions and Local Safety Initiative crash review for various Local Agencies in Michigan.

How much funding was transferred in to the HSIP from other core program areas during the reporting period under 23 U.S.C. 126?

$0

How much funding was transferred out of the HSIP to other core program areas during the reporting period under 23 U.S.C. 126?

$0

Discuss impediments to obligating HSIP funds and plans to overcome this challenge in the future.

Overall, the time frame to obligate a specific project is longer due to MPO required approvals. During the end of the fiscal year when there is bid savings from earlier projects coming under budget, some Regions cannot use said money for a new project due to the lengthy approval process of the MPO.

MDOT promotes the Toward Zero Deaths campaign to the citizens of Michigan, however not being able to use HSIP funds for educational and promotional materials has made this social media campaign challenging, as we have to seek other funding sources within the department, which are also constrained.

Describe any other aspects of the State's progress in implementing HSIP projects on which the State would like to elaborate.

During the reporting period, FY 2018, 1.08 percent of the programmed funds and 1.18 percent of the obligated funds of the HSIP State Trunkline system were directed to non-infrastructure safety items such as Road Safety Audits and the Local Safety Initiative.

On the Local Agency side no HSIP funds were directed toward tribal safety projects. Overall, 24.6 percent of the total programmed and 26.0 percent of the total obligated federal HSIP/HRRR funds were directed to local safety projects.

Overall, 16.8 percent of programmed funds used were State and Local, while 18.6 percent of obligated funds used were State and Local.

General Listing of Projects

List the projects obligated using HSIP funds for the reporting period.

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Walker Road at Poor Farm Road	Roadway	Rumble strips - transverse	1	Intersections	$126000	$222570	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Minor Collector	500	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
Pioneer Road	Roadway	Roadway widening - curve	0.38	Miles	$153000	$155224.7	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	777	55	County Highway Agency	Spot	Lane Departure	Reduce Fs and As
Territorial Road	Shoulder treatments	Widen shoulder - paved or other	1.25	Miles	$403315.65	$409154.04	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	1,983	45	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As
Genesee Road at Vienna Road	Intersection traffic control	Intersection flashers - add stop sign-mounted	1	Intersections	$24513.53	$27237.26	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	2,076	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
Bard Road	Roadway	Roadway widening - travel lanes	2	Miles	$301500	$372616.58	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	1,550	55	County Highway Agency	Spot	Lane Departure	Reduce Fs and As
Almena Drive at KL Avenue	Intersection geometry	Intersection geometrics - modify skew angle	1	Intersections	$456602.01	$507335.57	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	3,745	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
Shippy Road	Shoulder treatments	Widen shoulder - paved or other	1.9	Miles	$600000	$709499.2	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	480	55	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As
90th Avenue	Alignment	Vertical alignment or elevation change	0.8	Miles	$556555.5	$618428.5	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	709	55	County Highway Agency	Spot	Lane Departure	Reduce Fs and As
Eastman Road at Shaffer Road	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$505492.5	$577379.85	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	4,478	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
Poseyville Road	Shoulder treatments	Widen shoulder - paved or other	2	Miles	$640000	$1077570.7	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	3,535	55	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
8 Intersections in Monroe County	Intersection traffic control	Systemic improvements - stop-controlled	8	Intersections	$75202.44	$83558.27	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	6,013	55	County Highway Agency	Systemic	Intersections	Reduce Fs and As
Miller Road at CR 489	Intersection geometry	Intersection geometry - other	1	Intersections	$243000	$276504.45	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	1,300	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
County Road 432, 433, 437, 438, 439, 440, 441, 442, 453, 455	Roadway signs and traffic control	Sign sheeting - upgrade or replacement	604	Signs	$84436.83	$93818.71	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	300	55	County Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
County Road 436 (H-42)	Alignment	Vertical alignment or elevation change	1.56	Miles	$600000	$833701.2	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	400	55	County Highway Agency	Spot	Lane Departure	Reduce Fs and As
Constantine Road	Roadway	Roadway widening - travel lanes	0.98	Miles	$260766.1	$285992.78	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Local Road or Street	1,181	55	County Highway Agency	Spot	Lane Departure	Reduce Fs and As
Mast Road	Roadside	Removal of roadside objects (trees, poles, etc.)	2.8	Miles	$466809.75	$540952	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	3,435	55	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As
Brown City Road	Intersection geometry	Intersection geometry - other	2	Intersections	$594052.65	$660058.5	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Minor Collector	231	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
Ridge Road at Hack Road	Roadway	Pavement surface - high friction surface	0.13	Miles	$14795.5	$29591	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	7,424	55	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As
Clark Road	Intersection traffic control	Intersection flashers - add overhead (continuous)	1	Intersections	$10836	$12040	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	7,600	45	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
Guardrail in Cass County	Roadside	Barrier- metal	4	Locations	$107637.53	$124576.95	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	2,590	55	County Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Mackinaw Trail	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$284062.5	$315625	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	15,725	45	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As

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Q Avenue at 10th Street	Intersection traffic control	Intersection traffic control - other	1	Intersections	$243000	$267379.5	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	11,500	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
9th Street at KL Avenue and Quail Run Drive	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	2	Intersections	$136000	$194454	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	13,000	45	County Highway Agency	Spot	Intersections	Reduce Fs and As
Portage Road at Lakeview Drive	Intersection geometry	Intersection geometrics - miscellaneous/other/unspecified	1	Intersections	$352800	$506380.5	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	16,175	25	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
Oakland Drive at Vanderbilt Avenue	Intersection traffic control	Intersection flashers - add overhead (continuous)	1	Intersections	$32130	$40162.5	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	6,650	40	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
44th Street at Stauffer Avenue	Intersection traffic control	Modify traffic signal - modernization/replacement	1	Intersections	$173572.88	$192858.75	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	30,500	40	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
Fuller Avenue at Fulton Street	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$88416	$101368	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	15,500	35	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
Madison Avenue at Alger Street	Intersection traffic control	Modify traffic signal - modernization/replacement	1	Intersections	$347479.2	$383557.25	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	12,808	35	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
Michigan Street	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	4	Intersections	$149040	$165985	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	16,430	35	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
Pedestrian Upgrades	Pedestrians and bicyclists	Pedestrian signal - modify existing	38	Intersections	$600000	$718422	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	5,000	35	City or Municipal Highway Agency	Systemic	Pedestrians	Reduce Fs and As
Pine Island Drive	Intersection geometry	Auxiliary lanes - add left-turn lane	0.26	Miles	$378000	$411330.4	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	8,038	55	County Highway Agency	Spot	Intersections	Reduce Fs and As
Lee Road at Whitmore Lake Road	Intersection traffic control	Modify control - modifications to roundabout	1	Intersections	$600000	$997299.24	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	24,000	45	County Highway Agency	Spot	Intersections	Reduce Fs and As
9 Mile Road	Pedestrians and bicyclists	Medians and pedestrian refuge areas	3	Locations	$109141.65	$174807.5	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	25,500	35	City or Municipal	Spot	Pedestrians	Reduce Fs and As

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												Highway Agency			
Ryan Road and Hoover Road	Intersection traffic control	Modify traffic signal - modernization/replacement	3	Intersections	$465705	$549715	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	33,000	45	City or Municipal Highway Agency	Spot	Intersections	Reduce Fs and As
Oakville Waltz Road and Luna Pier Road	Roadway	Rumble strips - unspecified or other	5.23	Miles	$513900	$574108	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,070	50	County Highway Agency	Spot	Lane Departure	Reduce Fs and As
N. Territorial Road	Roadside	Removal of roadside objects (trees, poles, etc.)	8.34	Miles	$420510.15	$482008	HSIP (23 U.S.C. 148)	Rural	Major Collector	6,551	50	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As
Seventh Street	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists	2.11	Miles	$79238.78	$144429.45	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	11,300	35	City or Municipal Highway Agency	Spot	Bicyclists	Reduce Fs and As
Mack Avenue	Roadway	Roadway - restripe to revise separation between opposing lanes and/or shoulder widths	5.38	Miles	$600000	$708044	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	12,800	30	City or Municipal Highway Agency	Spot	Lane Departure	Reduce Fs and As
Mt. Elliot Street and Conant Street	Roadway	Roadway - restripe to revise separation between opposing lanes and/or shoulder widths	3.61	Miles	$600000	$675275	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	11,300	30	City or Municipal Highway Agency	Spot	Lane Departure	Reduce Fs and As
curve warning signs, stop signs and stop ahead signs	Roadway signs and traffic control	Curve-related warning signs and flashers	284	Signs	$100000	$100000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	5,000	55	multiple counties and cities	Systemic	Roadway Departure	Reduce Fs and As
State Road	Roadway signs and traffic control	Curve-related warning signs and flashers	5.52	Miles	$40304.7	$44783	HSIP (23 U.S.C. 148)	Rural	Major Collector	3,923	55	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As
Coleman Road	Roadside	Barrier- metal	0.25	Miles	$70320	$87900	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,143	55	County Highway Agency	Spot	Roadway Departure	Reduce Fs and As
Rives Junction Road	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists	0.71	Miles	$225899.46	$282374.33	HSIP (23 U.S.C. 148)	Urban	Major Collector	3,150	55	County Highway Agency	Spot	Pedestrians	Reduce Fs and As
M-47 and Garfield Road	Intersection geometry	Splitter island - install on one or more approaches	1	Intersections	$59996	$88405.5	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	2,533	50	County Highway Agency	Spot	Intersections	Reduce Fs and As
Lapeer Road and Allen Road	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$405537.3	$732942.9	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	9,070	55	County Highway Agency	Spot	Intersections	Reduce Fs and As

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Bay Region Freeway Delineation	Roadway delineation	Delineators post-mounted or on barrier	89	Miles	$371250	$371250	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	0	70	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Grand Region Freeway Delineation	Roadway delineation	Delineators post-mounted or on barrier	41	Miles	$307000	$307000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	0	70	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
North Region M-22 Non-Freeway Delineation - Onekema	Roadway delineation	Delineators post-mounted or on barrier	52	Miles	$267000	$267000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	0	65	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
North Region M-22 Non-Freeway Delineation - M-204 to M-20	Roadway delineation	Delineators post-mounted or on barrier	25	Miles	$207603	$207603	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	0	65	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
University Freeway Delineation - Lansing TSC	Roadway delineation	Delineators post-mounted or on barrier	26	Miles	$367513	$367513	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	0	70	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
University Non-Freeway Delineation - US-12 at Devils Lake	Roadway delineation	Delineators post-mounted or on barrier	13	Miles	$103000	$103000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	0	55	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
University Freeway Delineation - Brighton TSC	Roadway delineation	Delineators post-mounted or on barrier	10	Miles	$77281	$77281	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	70	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Bay Region pavement marking Retroreflectivity readings and condition assessment	Roadway delineation	Improve retroreflectivity	1328	Miles	$12201	$12201	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Bay Longitudinal pavement marking application	Roadway delineation	Longitudinal pavement markings - remarking	4978	Miles	$2357960.11	$2357960.11	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Bay special pavement marking application	Roadway delineation	Roadway delineation - other	1535	Locations	$416769.68	$416769.68	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's

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Grand Pavement marking retroreflectivity readings and condition assessment	Roadway delineation	Improve retroreflectivity	1166	Miles	$12314	$12314	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Grand Long line pavement marking application	Roadway delineation	Longitudinal pavement markings - remarking	4961	Miles	$2453352.12	$2453352.12	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Grand special pavement marking application	Roadway delineation	Roadway delineation - other	2855	Locations	$874089.26	$874089.26	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Metro Pavement marking retroreflectivity readings and condition assessment	Roadway delineation	Improve retroreflectivity	728	Miles	$11543	$11543	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Metro Longitudinal pavement marking application	Roadway delineation	Longitudinal pavement markings - remarking	2739	Miles	$2506019.15	$2506019.15	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Metro special pavement marking application	Roadway delineation	Roadway delineation - other	4015	Locations	$1261822.82	$1261822.82	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
North Pavement marking retroreflectivity readings and condition assessment	Roadway delineation	Improve retroreflectivity	541	Miles	$13740	$13740	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
North Longitudinal pavement marking application	Roadway delineation	Longitudinal pavement markings - remarking	4911	Miles	$1583865.48	$1583865.48	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
North Special pavement marking application	Roadway delineation	Roadway delineation - other	609	Locations	$270777.5	$270777.5	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Southwest Pavement marking retroreflectivity readings and condition assessment	Roadway delineation	Improve retroreflectivity	686	Miles	$7750	$7750	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Southwest Longitudinal pavement marking application	Roadway delineation	Longitudinal pavement markings - remarking	3349	Miles	$1685971.3	$1685971.3	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Southwest Special pavement marking application	Roadway delineation	Roadway delineation - other	1424	Locations	$384597.4	$384597.4	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Superior Pavement marking retroreflectivity readings and condition assessment	Roadway delineation	Improve retroreflectivity	1031	Miles	$13287	$13287	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Superior Longitudinal pavement marking application	Roadway delineation	Longitudinal pavement markings - remarking	4586	Miles	$1567086.75	$1567086.75	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
Superior Special pavement marking application	Roadway delineation	Roadway delineation - other	875	Locations	$416096.19	$416096.19	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
University Pavement marking retroreflectivity readings and condition assessment	Roadway delineation	Improve retroreflectivity	962	Miles	$10166	$10166	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
University Longitudinal pavement marking application	Roadway delineation	Longitudinal pavement markings - remarking	4112	Miles	$2112526.33	$2112526.33	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's

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University Special pavement marking application	Roadway delineation	Roadway delineation - other	2072	Locations	$576594.12	$576594.12	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
M-150 at Bristol Road Center Left Turn Lane	Intersection geometry	Auxiliary lanes - add left-turn lane	0.2	Miles	$745660.54	$745660.54	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	13,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's
M-46 from Hidden Oaks Drive to Pine River Center Left Turn Lane and Sidewalk	Intersection geometry	Auxiliary lanes - add two-way left-turn lane	0.7	Miles	$2181609.22	$2181609.22	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	6,500	35	State Highway Agency	Spot	Intersections	Reduce F's and A's
I-75 and US-23 Median and Wrong Way Delineation	Roadway signs and traffic control	Roadway signs and traffic control - other	25	Locations	$621484.16	$621484.16	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	0	0	State Highway Agency	Systemic	Intersections	Reduce F's and A's
Bay Region Systemic Safety Improvements rumble strips, delineation	Roadway	Rumble strips - unspecified or other	25	Locations	$215243.09	$215243.09	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
I-96 WB On-Ramp At M-44 Connector (Plainfield Ave) Widen and extend WB on-ramp	Interchange design	Extend existing lane on ramp	0.39	Miles	$1861165.68	$1861165.68	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	37,000	70	State Highway Agency	Spot	Intersections	Reduce F's and A's
North US-131 at Hall and Wealthy Install Wrong Way Traffic system	Advanced technology and ITS	Advanced technology and ITS - other	1	Locations	$66000	$66000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	125,000	70	State Highway Agency	Spot	Intersections	Reduce F's and A's
US-10/US-31 from Brye Rd to US-31 Radar speed signs	Speed management	Radar speed signs	4.34	Miles	$35000	$35000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	20,000		State Highway Agency	Spot	Data	Reduce F's and A's
US-31/US-10 at Brye Road Install Dilemma Zone System	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspecified	1	Locations	$27830	$27830	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	20,000		State Highway Agency	Spot	Intersections	Reduce F's and A's

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
US-31 and I-96 Planting living snow fence along ROW	Roadside	Roadside - other	1.01	Miles	$92507.1	$92507.1	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	25,000	70	State Highway Agency	Spot	Roadway Departure	Reduce F's and A's
I-196BL W 88th Avenue to I-196 Traffic Flow Improvement	Interchange design	Extend existing lane on ramp	0.99	Miles	$3246260.95	$5861260.95	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	30,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's
US-31 at Port Sheldon Install dilemma zone system	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspecified	1	Locations	$27830	$27830	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	23,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's
M-3 City of Eastpoint Median Pedestrian Refuge Islands	Pedestrians and bicyclists	Medians and pedestrian refuge areas	0.32	Miles	$459034.32	$461732.98	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	30,000	40	State Highway Agency	Spot	Pedestrians	Reduce F's and A's
I-94 Various Locations High Friction Surface Treatment	Roadway	Pavement surface - high friction surface	0.81	Miles	$446512.72	$446512.72	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	70	State Highway Agency	Spot	Lane Departure	Reduce F's and A's
US-24 between M-59 and James K. Blvd Midblock pedestrian crosswalk installation	Pedestrians and bicyclists	Medians and pedestrian refuge areas	0.74	Miles	$857979.03	$857979.03	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	35,000	45	State Highway Agency	Spot	Lane Departure	Reduce F's and A's
Metro Region Wrong Way Signs, Pavement Markings, Stop Bars	Roadway signs and traffic control	Roadway signs and traffic control - other	31	Locations	$336555.27	$336555.27	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	0	State Highway Agency	Systemic	Intersections	Reduce F's and A's
US-24 (SB) at Van Born center left-turn lane and signal upgrade	Intersection geometry	Intersection geometrics - miscellaneous/other/unspecified	1	Locations	$805581.48	$805581.48	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	65,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's
US-131 at Lears Road, Harbor Drive, and M-32 Installation of	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspecified	3	Intersections	$94000	$94000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	12,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Dilemma Zone Detection															
US-131and M-186 Roundabout	Intersection traffic control	Modify control - no control to two-way stop	1	Intersections	$2229763.08	$2229763.08	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	7,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's
US-31/M-72/M-37 Corridor - Traverse City Pavement Marking Installation (Stop Bars)	Roadway delineation	Roadway delineation - other	12.1	Miles	$150790.26	$150790.26	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Intersections	Reduce F's and A's
M-55 and Cadillac Rd offset right turn lane and passing flare	Intersection geometry	Auxiliary lanes - add right-turn lane	0.21	Miles	$268037.63	$268037.63	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	10,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's
Various trunklines in North Region High Friction Surface Treatment	Roadway	Pavement surface - high friction surface	1.54	Miles	$574147.77	$574147.77	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
I-194 N Dickman Ramp Install Wrong Way Traffic Detection System	Advanced technology and ITS	Advanced technology and ITS - other	1	Locations	$33500	$33500	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	25,000	70	State Highway Agency	Spot	Intersections	Reduce F's and A's
M-60 at Pine Lake Road High Friction Surface Treatment	Roadway	Pavement surface - high friction surface	0.74	Miles	$256866.94	$256866.94	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	6,000	55	State Highway Agency	Spot	Lane Departure	Reduce F's and A's
M-96 at G Avenue right turn lane improvements	Intersection geometry	Auxiliary lanes - modify right-turn lane offset	0.22	Miles	$140923.77	$140923.77	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	11,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's
M-152 at County Line Road guardrail installation	Roadside	Roadside - other	0.27	Miles	$110001.27	$110001.27	HSIP (23 U.S.C. 148)	Rural	Major Collector	4,000	55	State Highway Agency	Spot	Lane Departure	Reduce F's and A's

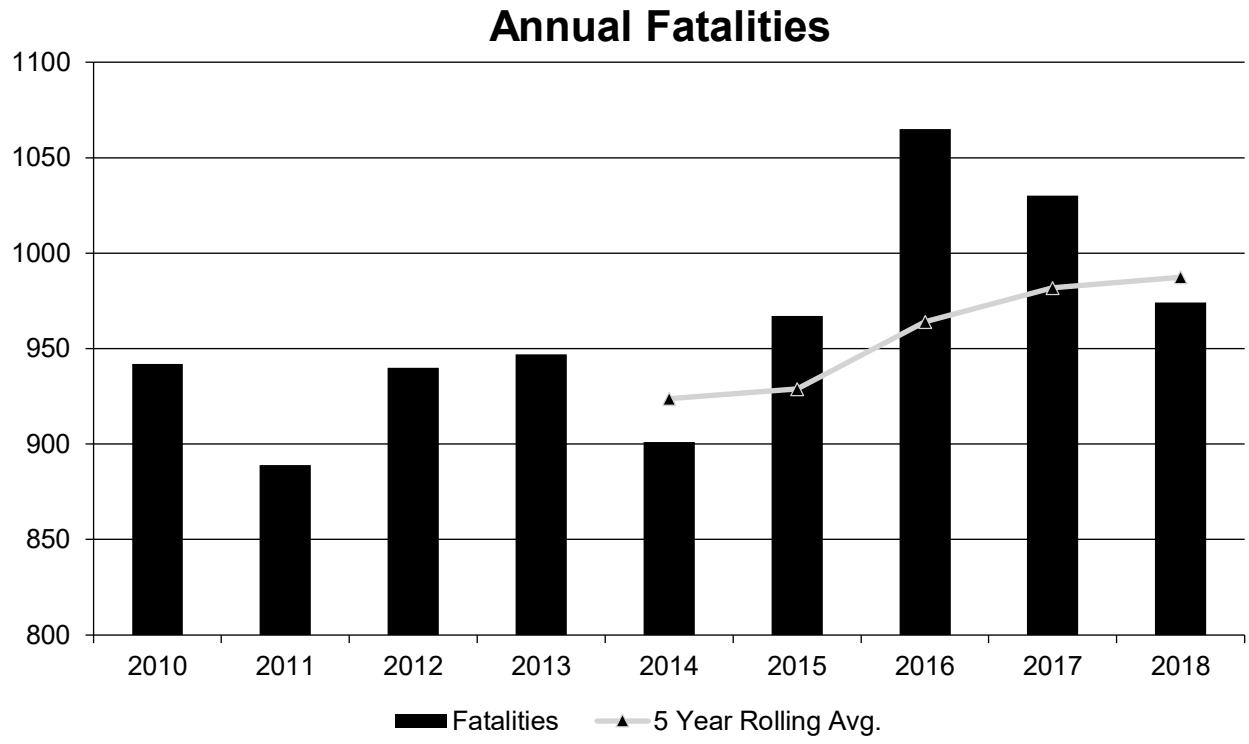
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
I-75BS / Mackinac Trail / 3 Mile Rd Roundabout	Intersection traffic control	Modify control - traffic signal to roundabout	1	Intersections	$3120972.96	$3241804.28	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	15,000	45	State Highway Agency	Spot	Intersections	Reduce F's and A's
M-28 Installation of Sinusoidal Rumble Strips on Shoulders	Roadway	Rumble strips - edge or shoulder	51.8	Miles	$315020.04	$315020.04	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	0	0	State Highway Agency	Systemic	Lane Departure	Reduce F's and A's
US-127 - I-496 to Clinton County Line cable median barrier	Roadside	Barrier - cable	3.52	Miles	$821823.75	$821823.75	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	45,000	70	State Highway Agency	Spot	Lane Departure	Reduce F's and A's
WB I-96 from M-52 to Gramer Rd Cable median barrier	Roadside	Barrier - cable	2.67	Miles	$187786.61	$294061.61	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	50,000	70	State Highway Agency	Spot	Lane Departure	Reduce F's and A's
EB I-94 exit ramp at Sargent Road Wrong Way Traffic Detection System	Advanced technology and ITS	Advanced technology and ITS - other	1	Locations	$35500	$35500	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	48,000	70	State Highway Agency	Spot	Intersections	Reduce F's and A's
I-96 W of M-59 to Ingham County Line Cable Median Barrier	Roadside	Barrier - cable	8.7	Miles	$864639.21	$864639.21	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	60,000	70	State Highway Agency	Spot	Lane Departure	Reduce F's and A's
US-24 from N of Buhl to Newport center left turn lane	Intersection geometry	Auxiliary lanes - add two-way left-turn lane	0.49	Miles	$2399087.14	$2419778.14	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	20,000	55	State Highway Agency	Spot	Intersections	Reduce F's and A's

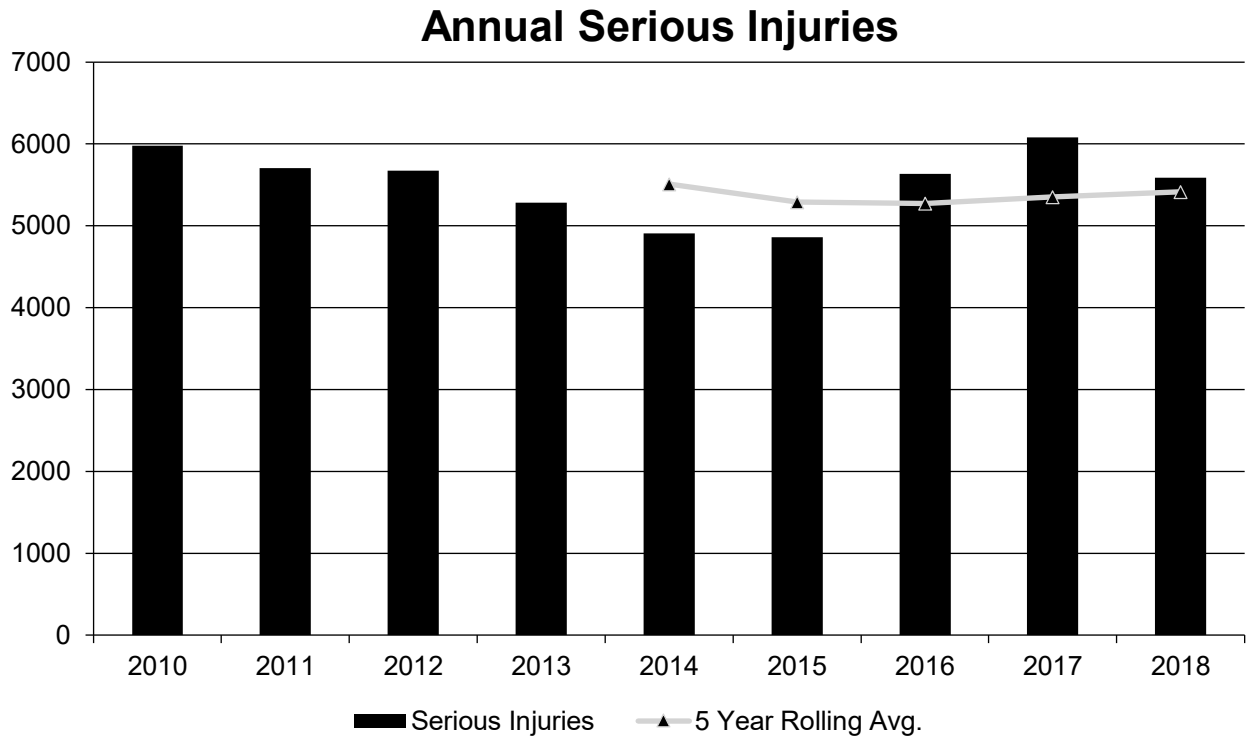
Safety Performance

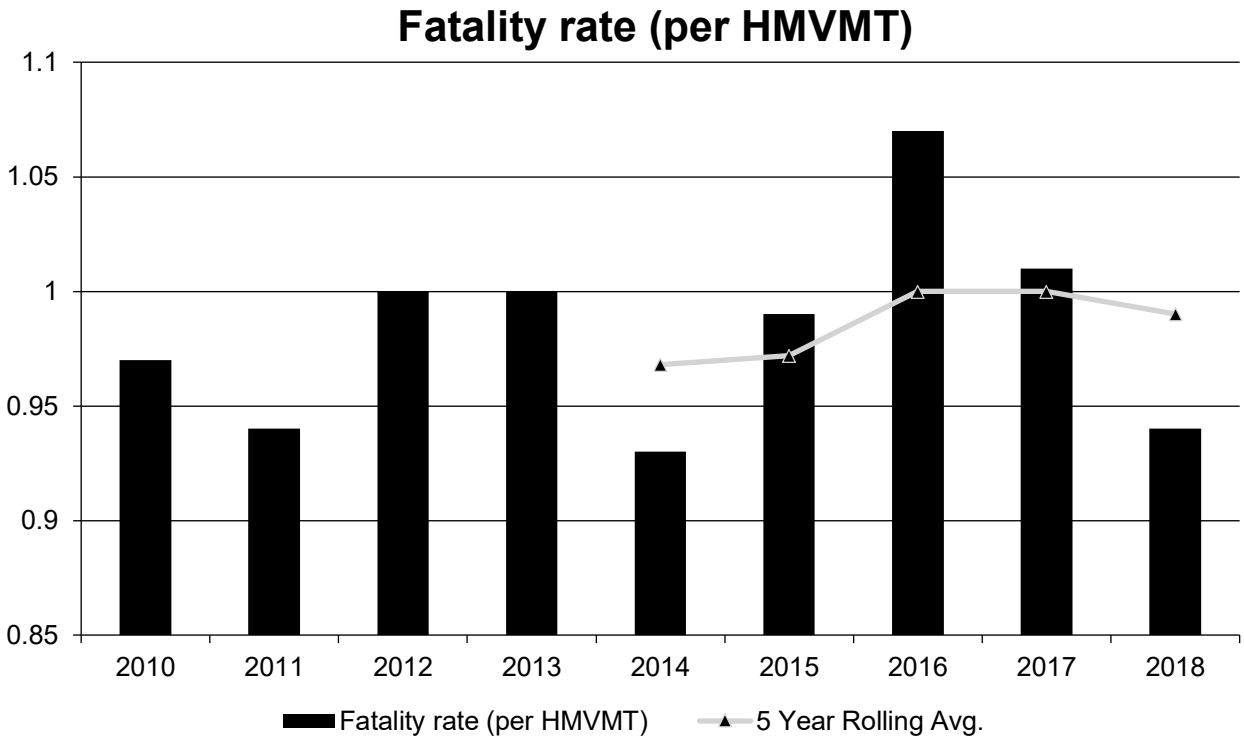
General Highway Safety Trends

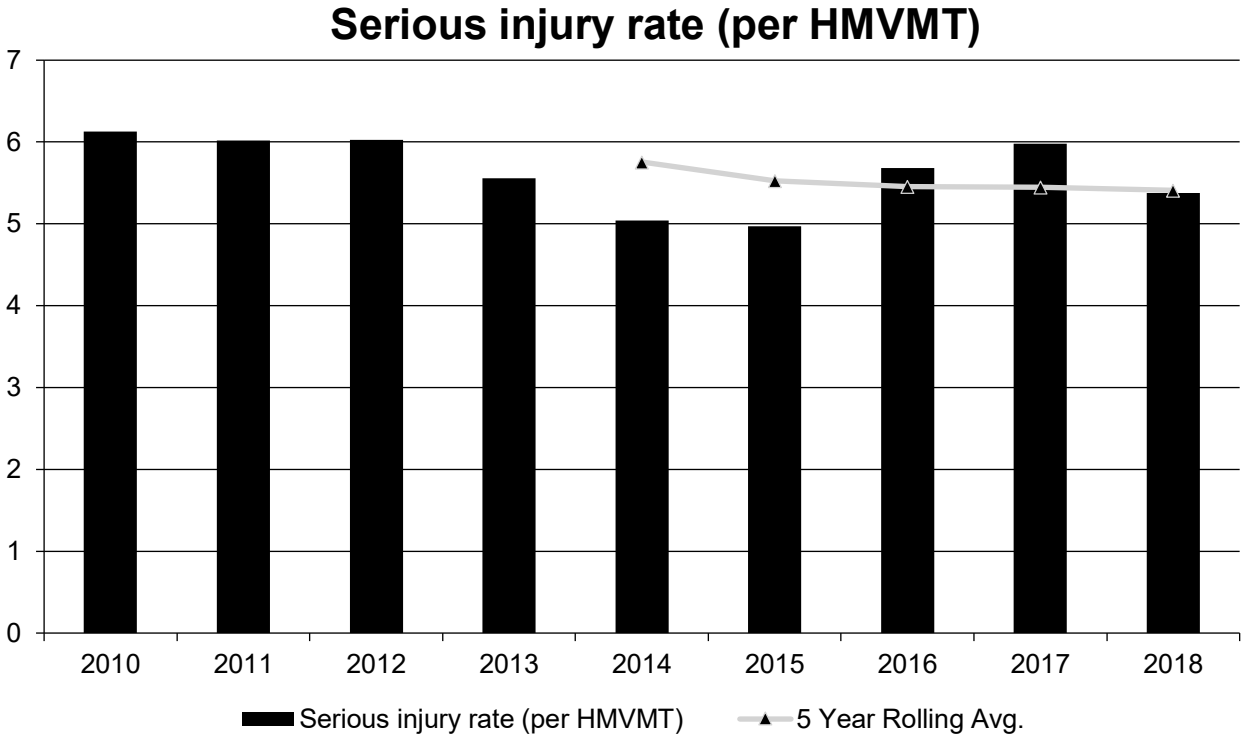
Present data showing the general highway safety trends in the State for the past five years.

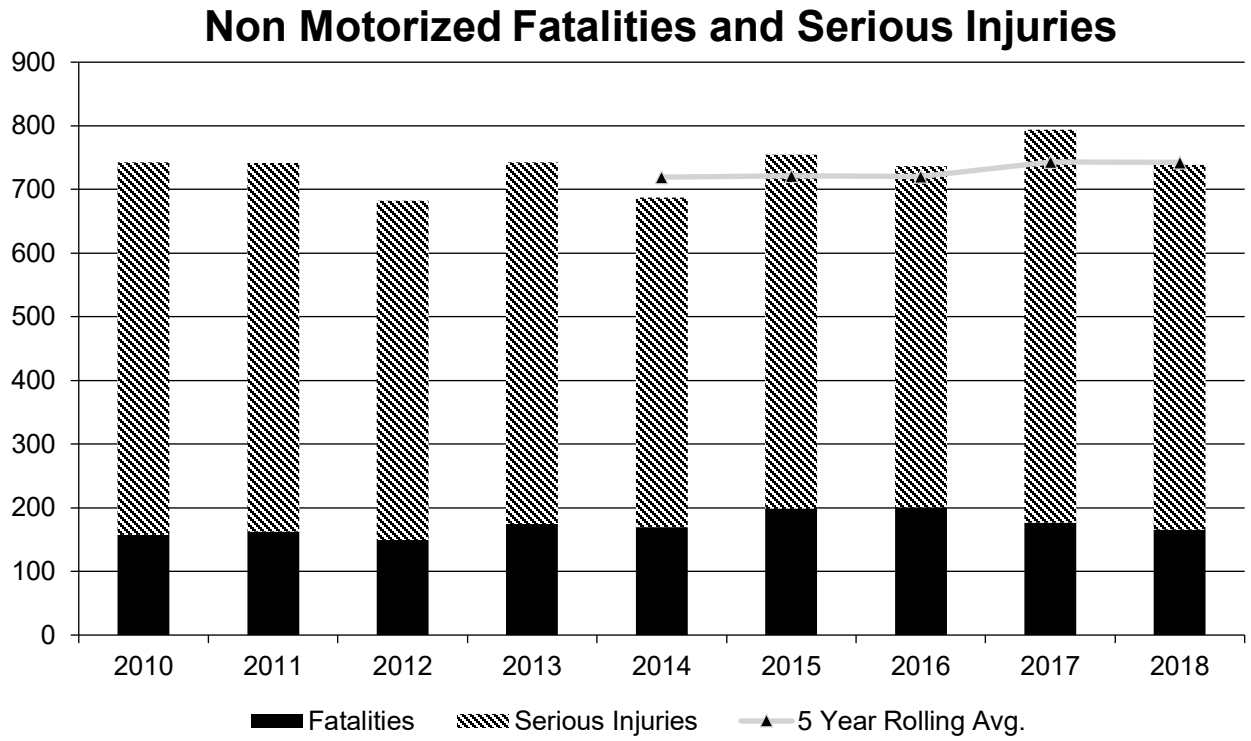
PERFORMANCE MEASURES	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fatalities	942	889	940	947	901	967	1,065	1,030	974
Serious Injuries	5,980	5,706	5,676	5,283	4,909	4,865	5,634	6,084	5,586
Fatality rate (per HMVMT)	0.970	0.940	1.000	1.000	0.930	0.990	1.070	1.010	0.940
Serious injury rate (per HMVMT)	6.130	6.020	6.030	5.560	5.040	4.970	5.680	5.980	5.380
Number non-motorized fatalities	157	162	149	175	170	199	201	177	166
Number of non-motorized serious injuries	586	580	533	568	517	556	536	617	573


Annual Fatalities
1100
1050
1000
950
900
850
800
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
7000
6000
5000
4000
3000
2000
1000
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.1
1.05
1
0.95
0.9
0.85
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
7
6
5
4
3
2
1
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



FARS data was used to set the 2020 performance targets. All other data in this report was taken from the State of Michigan Crash database (Road Classification, Roadway Ownership, SHSP Emphasis Areas, etc)

Describe fatality data source.

FARS

FARS data is used to calculate the 2020 performance targets. All other data included in the report uses Michigan's Statewide Crash database for reporting (Emphasis Areas, Road Classification, Road Ownership, etc)

To the maximum extent possible, present this data by functional classification and ownership.

Year 2018

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial (RPA) - Interstate	19	108.4	0.36	2.05
Rural Principal Arterial (RPA) - Other Freeways and Expressways	9.8	53.8	0.38	2.12
Rural Principal Arterial (RPA) - Other	50.2	207	1.22	5.01
Rural Minor Arterial	90.4	434	1.34	6.44

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Minor Collector	13.2	70.2	1.41	7.56
Rural Major Collector	136.4	620.6	1.69	7.69
Rural Local Road or Street	75.8	420.6	3.08	17.22
Urban Principal Arterial (UPA) - Interstate	77.4	398.6	0.44	2.27
Urban Principal Arterial (UPA) - Other Freeways and Expressways	29.4	177.2	0.46	2.79
Urban Principal Arterial (UPA) - Other	210.2	1,203.2	1.19	6.83
Urban Minor Arterial	158.4	986.4	1.01	6.28
Urban Minor Collector	1.2	3	1.19	4.6
Urban Major Collector	50.2	291.6	1.6	5.82
Urban Local Road or Street	58.2	383.8	0.8	5.27

Year 2018

Roadways	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
State Highway Agency				
County Highway Agency				
Town or Township Highway Agency				
City or Municipal Highway Agency				
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency				
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)				
Urban Local Road or Street				
Indian Tribe Nation				
Non-Trunkline (County, City, Local Owned Roadways)	562.6	3,113.8	1.2	6.64
Trunkline (State Owned Roadways)	418.4	2,284	0.79	4.32

VMT was updated for 2017 and 2018 in the calculation of the above rates.

Provide additional discussion related to general highway safety trends.

In review of the 5-Year Rolling Average Statewide, state trunkline and local roadways, fatalities have seen an increase of 6.9 percent over the 5 year span. State trunkline fatalities had an overall increase of 4.7 percent while local roadway fatalities had an overall increase of 8.7 percent.

Serious injuries statewide have seen a decrease of 1.7 percent over the 5 year rolling average. State trunkline serious injuries had an overall increase of 1.3 percent while local roadway serious injuries had an overall decrease of 3.8 percent.

In regard to rates, the fatality and serious injury rates are lower on state trunkline than on local roadways. Overall, the fatality rate increased 2.4 percent while the serious injury rate decreased 5.9 percent. The state trunkline saw a 1.4 percent decrease in the fatality rate and a 4.7 percent serious injury rate decrease. The local roadways saw a 6.7 percent fatality rate increase and a 5.6 percent serious injury rate decrease.

For both statewide and state trunkline the fatality rate has been at or below 1.0 fatality per 100 million vehicle miles traveled for 2010-2014 to 2014-2018. The local roadway fatality rate was below 1.20 during the entire analysis time period, while the state trunkine fatality rate was below 0.80 for the same time period.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2020 Targets *

Number of Fatalities:999.4

Describe the basis for established target, including how it supports SHSP goals.

To determine a forecasted value for the five-year rolling average for the first four measures listed above, the decision was made to use the model created by UMTRI like that used for establishing CY 2019 targets in 2018.The change model created by UMTRI predicts 966 fatalities in CY 2019, and 962 in 2020. While serious injuries have fluctuated over the past three years, the linear relationship of the ratio of serious injuries and fatalities (A/K) is still evident. However, this trend suggests greater reduction in serious injuries. Therefore, a quadratic trend is being used that projects a flattening pattern. The model predicts 5,181 serious injuries in CY 2018, and 5,117 in 2019. This supports the SHSP by identifying Michigan's key safety needs and guide investment decisions to achieve significant reductions in traffic fatalities and serious injuries on public roadways.

Number of Serious Injuries:5520.4

Describe the basis for established target, including how it supports SHSP goals.

To determine a forecasted value for the five-year rolling average for the first four measures listed above, the decision was made to use the model created by UMTRI like that used for establishing CY 2019 targets in 2018.The change model created by UMTRI predicts 966 fatalities in CY 2019, and 962 in 2020. While serious injuries have fluctuated over the past three years, the linear relationship of the ratio of serious injuries and fatalities (A/K) is still evident. However, this trend suggests greater reduction in serious injuries. Therefore, a quadratic trend is being used that projects a flattening pattern. The model predicts 5,181 serious injuries in CY 2018, and 5,117 in 2019. This supports the

SHSP by identifying Michigan's key safety needs and guide investment decisions to achieve significant reductions in traffic fatalities and serious injuries on public roadways.

Fatality Rate:0.970

Describe the basis for established target, including how it supports SHSP goals.

VMT values have been predicted for CYs 2018, 2019 and 2020. Using the fatal and serious injury values, along with the respective predicted VMT, the forecasted fatality rates are 0.91 for CY 2019, and 0.89 for CY 2020, and annual serious injury rates of 4.90 for CY 2019, and 4.75 for CY 2020. Results from the UMTRI model (the fatality and serious injury relationship) were also used to generate non-motorized forecasted annual values of 710 for CY 2019, and 699 for CY 2020. This supports the SHSP by identifying Michigan's key safety needs and guide investment decisions to achieve significant reductions in traffic fatalities and serious injuries on public roadways.

Serious Injury Rate:5.340

Describe the basis for established target, including how it supports SHSP goals.

VMT values have been predicted for CYs 2018, 2019 and 2020. Using the fatal and serious injury values, along with the respective predicted VMT, the forecasted fatality rates are 0.91 for CY 2019, and 0.89 for CY 2020, and annual serious injury rates of 4.90 for CY 2019, and 4.75 for CY 2020. Results from the UMTRI model (the fatality and serious injury relationship) were also used to generate non-motorized forecasted annual values of 710 for CY 2019, and 699 for CY 2020. This supports the SHSP by identifying Michigan's key safety needs and guide investment decisions to achieve significant reductions in traffic fatalities and serious injuries on public roadways.

Total Number of Non-Motorized Fatalities and Serious Injuries:735.8

Describe the basis for established target, including how it supports SHSP goals.

To determine a forecasted value for the five-year rolling average for the first four measures listed above, the decision was made to use the model created by UMTRI like that used for establishing CY 2019 targets in 2018.The change model created by UMTRI predicts 710 fatalities and serious injuries in CY 2019, and 699 in 2020. This supports the SHSP by identifying Michigan's key safety needs and guide investment decisions to achieve significant reductions in traffic fatalities and serious injuries on public roadways.

MDOT acknowledges the increasing trend of fatalities and serious injuries that are occurring on our roadway network. Emphasis has been put on the departments strategy of Toward Zero Deaths, which MDOT hopes will improve the safety culture in Michigan as well as reduce fatalities and serious injuries that occur on our roadways every year. See attached Assessing Safety Performance HSIP 2020 Target summary document.

Describe efforts to coordinate with other stakeholders (e.g. MPOs, SHSO) to establish safety performance targets.

Michigan DOT, the Michigan Office of Highway Safety Planning (OHSP), and the University of Michigan Transportation Research Institute (UMTRI) collaborated to establish the safety performance targets for Michigan. This collaboration included meetings with the analysis team along with input from MPO's and FHWA.

The OSHP is a division under the Michigan State Police. The Director of OHSP serves as the chair to the Governor's Traffic Safety Advisory Commission (GTSAC) in Michigan.

Does the State want to report additional optional targets?

No

N/A

Describe progress toward meeting the State's 2018 Safety Performance Targets (based on data available at the time of reporting). For each target, include a discussion of any reasons for differences in the actual outcomes and targets.

Using the updated fatal information from FARs through 2017 and the updated VMT from the CY 2020 targets setting process 4 of the 5 CY 2018 final measures would meet either the target or base. In response to changes in FARs data the 2016 base for Fatalities and Non-motorized Fatalities & Serious Injuries were revised from the original numbers provided in 2017. In addition, an update to the 2016 travel data revised the base Serious Injury Rate.

The numbers are draft due to the draft 2018 travel data, which may impact the final CY 2018 values for the two rates. The table below summarizes the progress of meeting the 2018 Safety Performance Targets.

Safety Performance Measure	Baseline Through Calendar Year 2016	Calendar Year 2018 State Safety Target	Final Calendar Year 2018	% difference From Target	Meet Either Target or Base
Fatalities	964.0	1,003.2	987.4	1.6	Yes
Fatality Rate	1.00	1.02	0.99	2.9	Yes
Serious Injuries	5,273.4	5,136.4	5,415.6	-5.4	No
Serious Injury Rate	5.45	5.23	5.41	-3.4	Yes
Non-motorized Fatalities & Serious Injuries	720.8	743.6	742.4	0.2	Yes

Applicability of Special Rules

Does the HRRR special rule apply to the State for this reporting period?
No

N/A

Provide the number of older driver and pedestrian fatalities and serious injuries 65 years of age and older for the past seven years.

PERFORMANCE MEASURES	2012	2013	2014	2015	2016	2017	2018
Number of Older Driver and Pedestrian Fatalities	138	160	126	133	172	155	159

PERFORMANCE MEASURES	2012	2013	2014	2015	2016	2017	2018
Number of Older Driver and Pedestrian Serious Injuries	418	413	434	393	506	558	509

Data has been updated with 2018 crash data information based on the State of Michigan Crash database.

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Other-Decrease of both fatal and serious injuries on a five-year rolling average

MDOT acknowledges the increasing trend of fatalities and serious injuries that are occurring on our roadway network. MDOT is focusing on projects that affect the roadway networks in large areas including pavement markings, delineation, and other systemic treatments.

Based on the measures of effectiveness selected previously, describe the results of the State's program level evaluations.

MDOT conducted a Before and After Study for trunkline projects in fiscal years 2009, 2010, and 2011 in 2018. See attached report and summary below.

The majority of project locations experienced a reduction in the number of crashes between the before and after periods however, a significant portion were not found to be statistically significant. This is due, in part, to limitations of available crash data, the length of time it takes to move a safety project through MDOT's Safety Call for Projects, currently 5 years, and the variability of crashes and traffic operations in general. Moving forward, MDOT Safety Programs is improving their HSIP programming considering innovative ideas for safety improvements along with focusing their efforts on project data retention including the original time of return (TOR) form, intended targeted crashes, and crash data used to justify the original safety project. In the future MDOT Safety Programs will continue to conduct before and after studies utilizing the data-driven approach to safety decisions focusing on the Towards Zero Deaths initiative.

What other indicators of success does the State use to demonstrate effectiveness and success of the Highway Safety Improvement Program?

- # RSAs completed
- Increased awareness of safety and data-driven process
- Increased focus on local road safety
- Other-Before and After Studies
- Other-Additional Systemic Treatments based on crash data

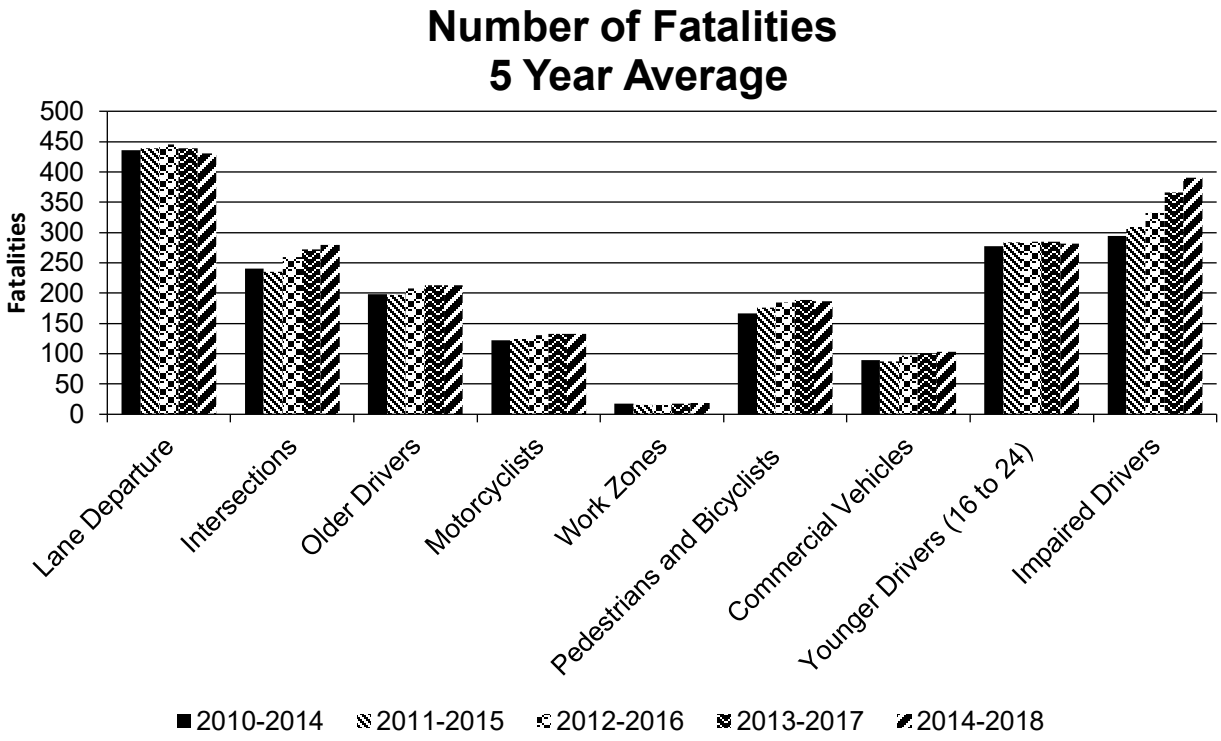
N/A

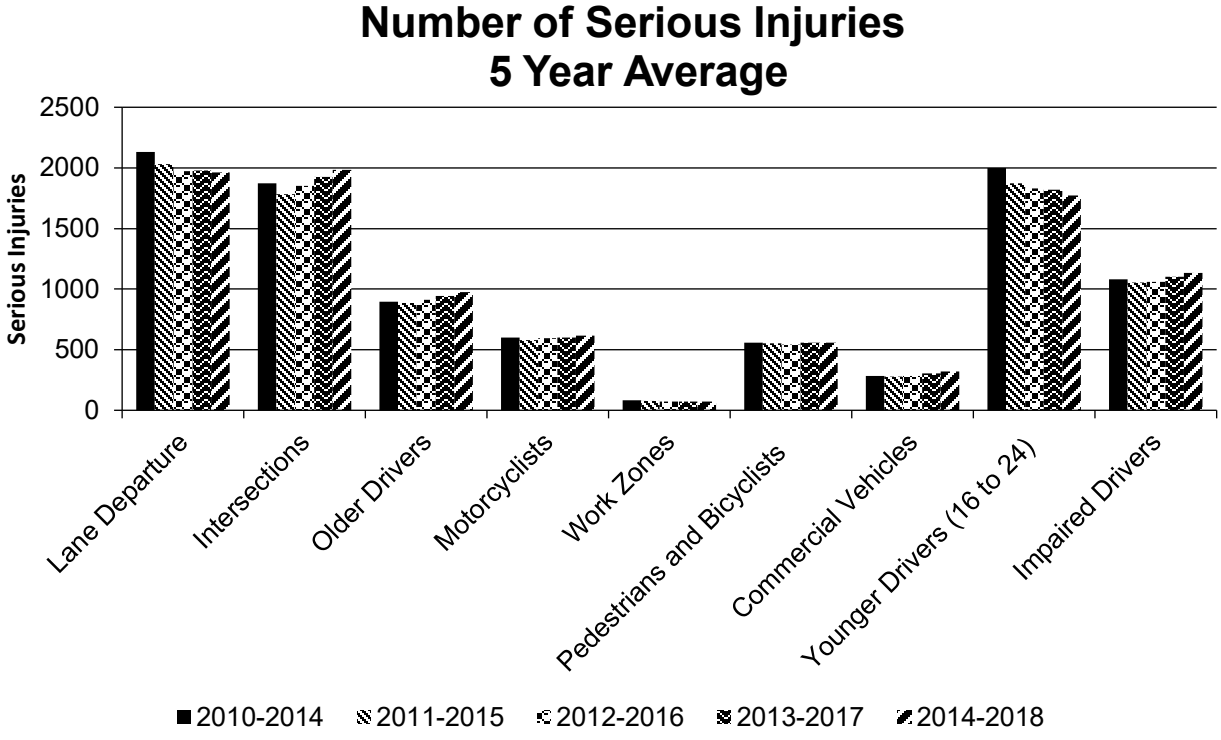
Effectiveness of Groupings or Similar Types of Improvements

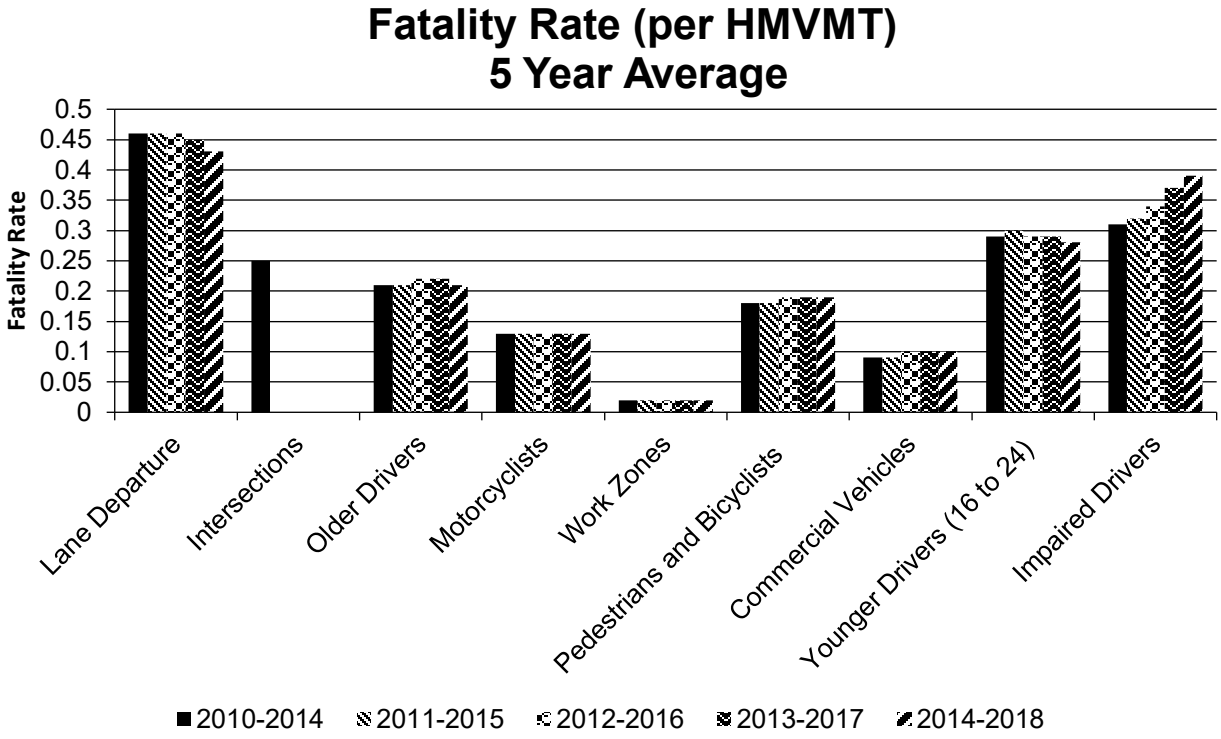
Present and describe trends in SHSP emphasis area performance measures.

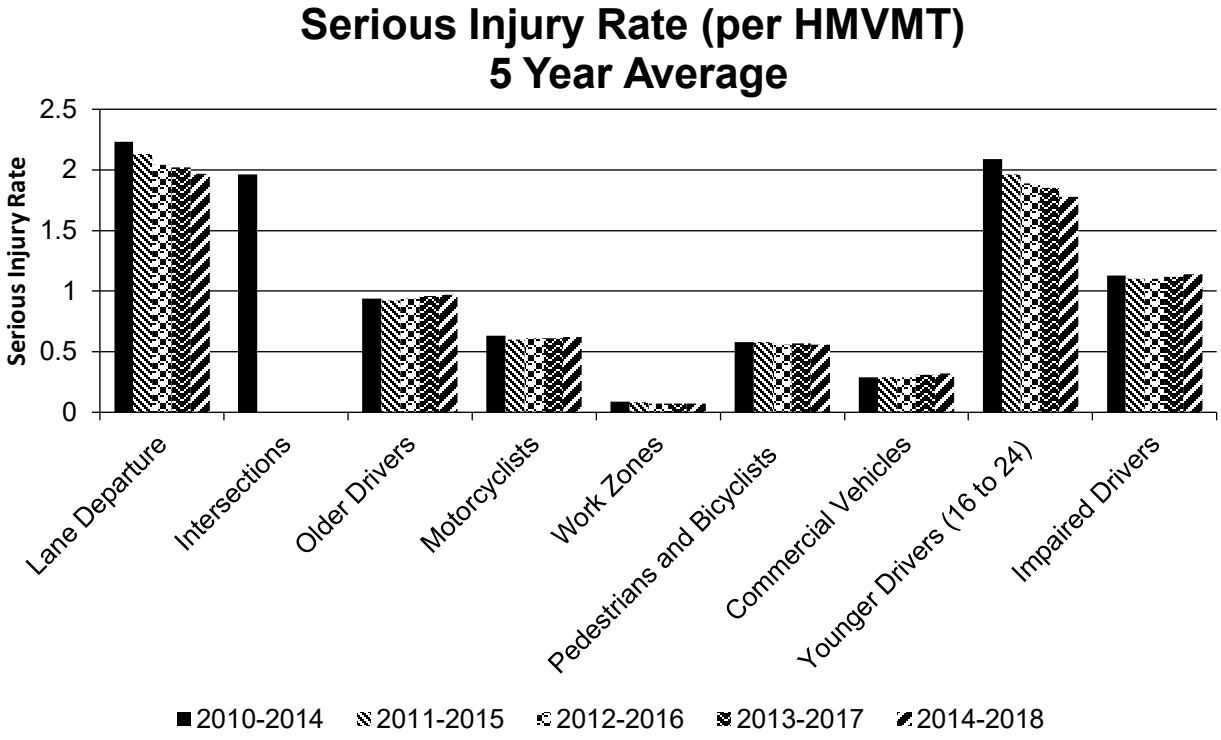
Year 2018

SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Lane Departure		430	1,963	0.43	1.97
Intersections		279.4	1,985.2		
Older Drivers		212.6	972.8	0.21	0.97
Motorcyclists		133.2	617.6	0.13	0.62
Work Zones		18.8	70.2	0.02	0.07
Pedestrians and Bicyclists		187	559.8	0.19	0.56
Commercial Vehicles		103.4	321.8	0.1	0.32
Younger Drivers (16 to 24)		281.8	1,774.2	0.28	1.78
Impaired Drivers		390.2	1,134.4	0.39	1.14


Number of Fatalities
5 Year Average
Fatalities
500
450
400
350
300
250
200
150
100
50
0
Lane Departure
Intersections
Older Drivers
Motorcyclists
Work Zones
Pedestrians and Bicyclists
Commercial Vehicles
Younger Drivers (16 to 24)
Impaired Drivers
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018


Number of Serious Injuries
5 Year Average
Serious Injuries
2500
2000
1500
1000
500
0
Lane Departure
Intersections
Older Drivers
Motorcyclists
Work Zones
Pedestrians and Bicyclists
Commercial Vehicles
Younger Drivers (16 to 24)
Impaired Drivers
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018





N/A

Has the State completed any countermeasure effectiveness evaluations during the reporting period?

No

N/A

Project Effectiveness

Provide the following information for previously implemented projects that the State evaluated this reporting period.

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
N/A														

See attached Before and After Study for Trunkline locations for fiscal years 2009, 2010, and 2011.

MDOT is also planning on conducting a Before and After study in fiscal year 2019 for Local roadway safety projects (both HSIP and HRRR) that were constructed in fiscal years 2013 and 2014.

Describe any other aspects of HSIP effectiveness on which the State would like to elaborate.

MDOT's implementation of the Systemic Approach to Safety has impacted the citizens throughout Michigan by helping improving the safety on the state trunkline network. By continuing this efforts through construction projects this proactive approach to safety will assist in the State of Michigan's efforts of saving lives and minimizing injuries moving toward the ultimate goal of Zero Deaths.

As reported in previous HSIP Reports the department undertook two system wide initiatives in FY 2008: freeway median barrier and non-freeway rumble strips. Both initiatives address lane departure, which is part of one of the 11 focus areas in the SHSP, Traffic Safety Engineering. Lane departure related crashes accounted for at least 400 fatalities statewide in 2018 (41 percent of all fatalities). A primary objective for this focus area is to identify cost effective strategies that help reduce unintentional lane departures, as well as alert the driver should a lane departure occur. The secondary objective is to assist the driver in returning to the travel lane safely and minimize departure consequences by creating roadside clear zones.In 2018 MDOT added $1.5 M to construct delineation on Freeway and Non-Freeway Roadways. We also added an additional $1 M to our annual pavement markings program to help reduce lane departure crashes. In 2018 installed sinusoidal mumble strips as a pilot project. Analysis of the functionality of the effectiveness of the installation will be conducted during FY 2019 and 2020.

Rumble strips are proving to be a cost-effective countermeasure to lane-departure crashes on Michigan's state highways. MDOT is reaching out to local agencies to increase their understanding of the benefits of rumble strips and to encourage interest in installing them on county, city and township roads either systemwide or at specific sites. To support this effort, MDOT has developed concise, user-friendly design and installation guidelines for use by local agencies. MDOT also created Safety Guides for Local Agencies regarding Cost Effective Proven Safety Countermeasures.

https://mdotjboss.state.mi.us/TSSD/getTSDocument.htm?docGuid=ddb32e1d-ed1b-4b23-a234-18eef0b2a0b0&fileName=Making%20our%20Roadways%20Safer%20One%20Countermeasure%20at%20a%20Time%202019%20Michigan%20Edition.pdf

https://mdotjboss.state.mi.us/TSSD/getTSDocument.htm?docGuid=7a5d30ec-3a2b-475f-b5bf-1e3ac5858e9a&fileName=Common%20Safety%20Countermeasures%20for%20Local%20Agencies.pdf

MDOT is piloting various locations of Wrong Way warning system throughout the state in areas where wrong way drivers are being detected. These systems will be analyzed on their effectiveness to move forward with implementation. https://www.michigan.gov/mdot/0,4616,7-151-9620_11057-484050--,00.html

MDOT has fully embraced implementation of TZD as a safety program in and of itself and has developed several related action plans. Each of the 7 Regions have developed TZD implementation plans focusing on the highest concentration of crash types including, lane departure, intersections, and pedestrian/bicylce. The Traffic and Safety Section created and is actively tracking a TZD Strategic Plan for the purpose of increasing "awareness of MDOT's TZD efforts within the State of Michigan by 1) identifying effective strategies to distribute the TZD logo and create logo recognition, and 2) gaining TZD partnerships. This Strategic Plan is designed to capture a widespread audience including: MDOT Employees and State agencies/employees, Local Agencies (County, City, Village, Township, etc.), private organizations, and the general public."

Communication is a key aspect of implementing TZD and in addition to the Region TZD plans, MDOT has developed a number of tools and resources. A sample of the TZD-focused resources include a website, rest area posters, internal and external newsletter articles, crash statistics postcard, safety fact sheet with actionable items for pedestrians, bicyclists, motorcyclists and drivers and a safety programs brochure. MDOT also communicates the year-to-date fatalities across a number of different media including a weekly email listserv, messaging on our digital messaging signs and social media outlets. This effort has let to numerous related news stories by media outlets across the state. www.michigan.gov/ZeroDeaths MDOT created a "Crash vs. Accident" poster and campaign that was distributed throughout the state in our Region and TSC Offices as well as our Rest Areas. https://www.michigan.gov/documents/mdot/Crash_Accident_Posters_630244_7.pdf

Research is also a key factor in reaching our TZD goals. MDOT conducts multiple research projects per year. In 2018 several projects were completed were the list below. These research projects help MDOT Safety Programs access our current safety program and goals in order to improve the overall safety of Michigan's roadways.

2019 Michigan Highway Safety Improvement Program
1.Safety Performance Functions for Rural Road Segment and Rural Intersections in Michigan
https://www.michigan.gov/documents/mdot/OR14-027_-_MDOT_Rural_SPF_-_FINAL_REPORT_May_11_2018_623286_7.pdf

2. Assessment of Countermeasure Gaps, Predictive Crash Analysis and Engineering Safety Programs in Michigan

3. Evaluating the Impacts of Speed Limit Increases on Identified Case Studies
https://www.michigan.gov/documents/mdot/SPEED_LIMIT_FINAL_REPORT_-_SPR_-_1648_616270_7.pdf

4. Developing Michigan Pedestrian and Bicycle Safety Models
https://www.michigan.gov/documents/mdot/SPR-1651_-_Final_Report_Developing_Michigan_Pedestrian_and_Bicycle_Safety_Models_626802_7.pdf

The following projects will be completed in FY 2019 or 2020.

1. Sponsorship of the TRB Roundtable on Preparing for Automated Vehicles and Shared Mobility Services
2. Measure the Operational Cost and Benefit of Speed Feedback Signs

Compliance Assessment

What date was the State's current SHSP approved by the Governor or designated State representative?

03/15/2017

What are the years being covered by the current SHSP?

From: 2017 To: 2019

When does the State anticipate completing it's next SHSP update?

2020

The 2019-2022 SHSP will be approved by the Governor's Traffic Safety Advisory Commission and the Governor in the first quarter of fiscal year 2020. Any future SHSP will be on a 4-year cycle to coincide with the Gubernatorial cycle in Michigan.

http://www.michigan.gov/documents/msp/SHSP_2013_08_web_412992_7.pdf

Provide the current status (percent complete) of MIRE fundamental data elements collection efforts using the table below.

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
ROADWAY SEGMENT	Segment Identifier (12)	100	100					100	100	100	100
	Route Number (8)	100									
	Route/Street Name (9)	100	100								
	Federal Aid/Route Type (21)										
	Rural/Urban Designation (20)	100	100					100	100		
	Surface Type (23)	100	100					100			
	Begin Point Segment Descriptor (10)	100	100								
	End Point Segment Descriptor (11)	100	100								
	Segment Length (13)	100	100								
	Direction of Inventory (18)										
	Functional Class (19)	100	100					100	100	100	100
	Median Type (54)	80	95								

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	Access Control (22)										
	One/Two Way Operations (91)	95	10								
	Number of Through Lanes (31)		80					100			
	Average Annual Daily Traffic (79)	100	95								
	AADT Year (80)	100	95								
	Type of Governmental Ownership (4)	100	100					100			
INTERSECTION	Unique Junction Identifier (120)			100	100						
	Location Identifier for Road 1 Crossing Point (122)			100	100						
	Location Identifier for Road 2 Crossing Point (123)			100	100						
	Intersection/Junction Geometry (126)										
	Intersection/Junction Traffic Control (131)										
	AADT for Each Intersecting Road (79)										
	AADT Year (80)			100	95						
	Unique Approach Identifier (139)										
INTERCHANGE/RAMP	Unique Interchange Identifier (178)					100	100				
	Location Identifier for Roadway at Beginning of Ramp Terminal (197)					100	100				
	Location Identifier for Roadway at Ending Ramp Terminal (201)					100	100				

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	Ramp Length (187)					100	100				
	Roadway Type at Beginning of Ramp Terminal (195)					100	100				
	Roadway Type at End Ramp Terminal (199)						100				
	Interchange Type (182)					100	100				
	Ramp AADT (191)					98	100				
	Year of Ramp AADT (192)					98	100				
	Functional Class (19)					100	100				
	Type of Governmental Ownership (4)					100	100				
Totals (Average Percent Complete):		**76.39**	**70.83**	**50.00**	**49.38**	**90.55**	**100.00**	**66.67**	**33.33**	**40.00**	**40.00**

*Based on Functional Classification

MIRE FDE percent completes remain uncharged for 2018.

Describe actions the State will take moving forward to meet the requirement to have complete access to the MIRE fundamental data elements on all public roads by September 30, 2026.

MDOT plans on beginning the collection of MIRE FDE in 2020 using the Roadsoft program updated by Michigan Technological University.

Did the State conduct an HSIP program assessment during the reporting period?

No

MDOT conducted a HSIP program evaluation with the final report in February of 2017.

MDOT plans to conduct a HSIP program assessment in 2021.

When does the State plan to complete its next HSIP program assessment.

2021

Optional Attachments

Program Structure:

FY 2018 HSIP Local Safety Program Call Letter.pdf
FY 2018 Trunkline CFP.pdf
HRRR_2018_Call Letter 06-02-16.pdf
MDOT HSIP Manual August 2019.pdf
Low Cost Eligibility Guidelines.pdf
Project Implementation:

Safety Performance:

MDOT 2020 PM1 Safety Targets.pdf
Evaluation:

MDOT HSIP FY2009 2010 2011 Before After Repot - Final (Signed).pdf
Compliance Assessment:

Glossary

5 year rolling average: means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).

Emphasis area: means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.

Highway safety improvement project: means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.

HMVMT: means hundred million vehicle miles traveled.

Non-infrastructure projects: are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.

Older driver special rule: applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.

Performance measure: means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.

Programmed funds: mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

Roadway Functional Classification: means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.

Strategic Highway Safety Plan (SHSP): means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

Systematic: refers to an approach where an agency deploys countermeasures at all locations across a system.

Systemic safety improvement: means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.

Transfer: means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.