MICHIGAN

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2023 ANNUAL REPORT

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Disclaimer

Protection of Data from Discovery Admission into Evidence

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. 407 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 2023 HSIP Annual Report for the Michigan Department of Transportation (MDOT) will be for the one year time period of FY 2022 which commenced on October 1, 2021 and ended on September 30, 2022. 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 trunkline and non-trunkline 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 Trunkline and Non-Trunkline roadways. There is also a funding set aside amount directly for Trunkline 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 Region. The State Trunkline Call for Projects cycles on a five-year call for projects platform.

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

For the local roadway network HSIP funds, originally, $15M was programmed. Due to additional funding from the Bipartisan Infrastructure Law (BIL), $21.3M were obligated by the Local Agency Programs Safety Engineer located in the Central Office. The HSIP funds were originally allocated to three separate Call for Projects: $6 M for High-Risk Rural Roads (HRRR), $7.5 M for General Highway Safety Improvement Program (HSIP), and $1.5 M for Streamlined Systemic 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 by the Local Safety Initiative (LSI), in a Road Safety Audit (RSA), or in a traffic signal optimization project. Otherwise, preliminary engineering was not eligible for federal safety funds.

General HSIP and HRRR Projects are federally funded up to an amount not to exceed $600,000 of Federal funding per project. Streamlined Systemic HSIP projects are federally funded up to an amount not to exceed $200,000. If multiple projects from one Local Agency are selected in the Streamlined Systemic HSIP program, multiple projects were programmed together, not to exceed $600,000, into one project to provide time and cost savings during the letting process. A maximum amount of $1.5M per Local Agency per fiscal year was allowed. HRRR and Streamlined Systemic HSIP projects were funded at 90 percent federal and 10 percent Local Agency match. General HSIP Projects are funded with a combined 90 or 80 percent federal and 10 or 20 percent Local Agency match. General HSIP Projects funded at 90 percent were required to address a roadway feature related to a fatality (K) and/or an incapacitating (A) injury within the limits of proposed work.

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 Local Agencies that are part of a rural task force are to notify their members that they applied for safety 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 April 2, 2020 memorandum to submit proposed projects for consideration as part of an annual Call for Projects (CFP). All Local Agencies (counties, cities, tribes and villages) are able to apply for the funds. MDOT asked the County Road Association of Michigan and the Michigan Municipal League to distribute this notice to their member agencies. Townships were also eligible to receive the safety funds but must work with their respective local agency for submittal of the application. The emphasis of the local FY 2022 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 2022 call for projects, 2014 to 2018(or the current availability) crash data was used.

Eligible projects must meet current design standards and warrants. Project types may be either systemic or spot locations and 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, or any other safety related work.

For the FY 2022 CFP, an emphasis was placed on the identification of correctable fatalities and serious injuries, both in the selection and the prioritization of safety projects. A portion of the local safety funds were allocated to seven subprograms in 2022: Projects with scopes that directly address areas with a concentration of K and A crashes ($11M), Safety Edge ($500 K), Non-motorized Facility/Pedestrian Improvements ($500 K),

High Friction Surface Treatment ($500 K), Road Safety Audits ($60 K), Guardrail Upgrades and Clear Zone Improvements ($750 K), and Safety Funds per MDOT Region ($500K). Each selected project could count towards multiple subprograms. Local agencies were informed of the listed subprograms and encouraged to submit projects based on the subcategories.

The Streamlined Systemic program allowed the submittal of five specific project types: Horizontal Curve Delineation, Edgeline Pavement Markings (on roadways that did not previously have striped edgelines), Rumble Strips/Corrugations (centerline and edgeline, or both), Signal backplates, and Stop Controlled Intersection Sign Upgrade projects.

There were not any funds directed to tribal organizations in 2022. Starting in 2021, the CFP letter (for FY 2023) was updated to clarify the eligibility of tribal organizations and tribal roadways. Federally recognized Tribes are allowed to submit applications for safety funds directly during the call for projects time frame instead of through their corresponding Local Agency.

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

- Design
- Districts/Regions
- Maintenance
- Operations
- Planning
- Traffic Engineering/Safety
- Other-Local Agency Programs
- Other-TSMO

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.

Internal training is also provided to new Traffic and Safety staff including the TOR form, HSM spreadsheet, Roadsoft, and general safety information related to the call for projects and MDOT standards and guidance.

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
- Other-Michigan's Local Technical Assistance Progam

- Other-State Highway Strategic Planning Action Teams

Describe coordination with external partners.

MDOT coordinates with various Colleges and Universities to provide research opportunities on existing and upcoming 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 will continue to assist the Office of Highway Safety Planning (OHSP) and the GTSAC in planning Engineering sessions for the Annual Michigan Traffic Safety Summit. MDOT has provided 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 in the past years of the Summit .

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 2022, $19.0 M in safety funding was available, of which $16.6 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. $1.0 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, each Region was given $200,000 for low-cost safety improvements to be chosen at the discretion of the Region staff.

Local Road Safety HSIP administration is explained under the previous Addressing Local Safety question. It should be reiterated that originally, $15M was programmed, but due to additional funding from the Bipartisan Infrastructure Law (BIL), $21.3M was obligated. The Local Road Safety program continues to communicate with Local Agencies on new and emerging technologies and crash reductions focusing on Vulnerable Road Users, High Risk Rural Roads and Systemic type projects.

Program Methodology

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

Yes

A HSIP Manual describing the planning, selection, and evaluation of HSIP projects for the state trunkline program, local roadways program (non-trunkline) and HRRR program was published in June of 2021. This manual is provided as part of the annual Call for Projects Process (CFP) and updated yearly to reflect changing CFP subcommittees, funding targets and any other changes that may be necessary.

The Local Agency HSIP manual is specific to local agencies and provides information on the local agency call for projects process and application process.

MDOT's Safety Manual was updated in October 2022 to include the Safe System Approach. It provides guidance relating to a variety of traffic safety and operational needs including Road Safety Audits, Local Safety Initiatives, Road Diets, Pedestrian and Bicycle Guidance, High Crash Analysis, Safety Call guidance, and Design Exception Crash Analysis.

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

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

Program: Other-Highway Safety Call for Projects

Date of Program Methodology:4/20/2016

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

- Other-Focus on fatal and serious injury crashes along with fixes based on crash types and patterns

Exposure

- Volume
- Lane miles

Roadway

- Median width
- Horizontal curvature
- Functional classification
- Roadside features

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

Program: Other-Local Safety Call for Projects

Date of Program Methodology:4/2/2020

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

- All crashes

Exposure

- Traffic
- Volume

Roadway

- 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

Program: Other-Local Safety High Risk Rural Roads

Date of Program Methodology:4/2/2020

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

- All crashes

Exposure

- Traffic
- Volume

Roadway

- 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

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

- Other-Lane departure crashes

Exposure

- Volume

Roadway

- 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

What percentage of HSIP funds address systemic improvements?

82

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

- Clear Zone Improvements
- High friction surface treatment
- Horizontal curve signs
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing
- Pavement/Shoulder Widening
- Rumble Strips
- Safety Edge
- Upgrade Guard Rails

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). For the Local system, 5.13% of projects were dedicated to specific systemic type fixes.

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 2022, 82 percent of the total HSIP Trunkline Program funds (Safety, Pavement Markings, and Delineation) was used for systemic type projects. Regions can use Low-cost Safety Improvement Projects to select systemic type projects.

Overall, 82 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

Does the State HSIP consider connected vehicles and ITS technologies?

Yes

Describe how the State HSIP considers connected vehicles and ITS technologies.

MDOT is considering connected vehicles and ITS technologies as part of the HSIP program. In response to the need for wider lane markings and proposed changes to national standards, MDOT has moved forward with six-inch-wide lane markings on all freeways in summer 2020. MDOT contractors also placed white dotted line extensions on exit and entrance ramps to provide further lane guidance to road users. The additional $200,000 investment for six-inch lane markings and $450,000 for dotted line extensions were done as part of MDOT's annual pavement marking restriping projects. Starting in 2021, MDOT moved its attention to non-freeways in changing all white non-freeway markings to six-inches. Starting in 2022, MDOT is converting all yellow markings to six-inch widths as well as part of a three year effort.

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 network analysis for the trunkline roadways. The locations that are determined 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 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 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 recommends 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 and additional training was conducted in 2023.

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 2022 Safety Call request was made to the Regions in April 2016. 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).

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 2022 project, in which 2013 to 2015 (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 .

For FY 2022, 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. 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.

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, each Region received $200,000 for FY 2022. A TOR justification is not required if the proposed improvement is selected from the list of approved and proven safety system wide fixes (outlined below). 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 2021 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. For FY 2021 to the present, all submitted concepts must address two or more fatal and/or serious injury crashes and align with their Region Toward Zero Deaths plan.

Eligibility Guidelines for Low Cost Safety Improvement Projects

Location: State Trunkline Highways

Funding: Highway Safety Improvement Program (HSIP) Funds

Purpose: To authorize low-cost, system-wide improvements on State Trunkline Highways

2023 Michigan Highway Safety Improvement Program

Description: Projects to be funded under this program are proven low-cost safety improvements not requiring a Time-of-Return (TOR) cost/benefit analysis, meet the eligibility requirements for funding, and are to be constructed through the contract letting or Safety Work Authorization processes. Example improvements are:

• Attaching guardrail to structure railings(does not include general gr upgrade)
• Re-grading side slopes to 1:4, or flatter, to eliminate the need for guardrail
• Obstacle removal, clear zone widening
• Improvements to sight vision corners
• Extending or modifying culverts to eliminate a fixed-object
• Pavement grooving/high-friction surface treatment
• Installing or reconstructing impact attenuators
• Installing delineators, including linear systems
• Installing channelization
• Installing warning/regulatory signs
• Reflective sign post strips for horizontal alignment signs
• Re-striping to provide an offset, left-turn lane
• Installing horizontal signing, pavement markings (i.e., STOP AHEAD markings in advance of a T-intersection)
• Eliminate drop-offs, edge-rutting/ Safety Edge
• Construct centerline or shoulder rumble strips
• Construct roadside access control/driveway consolidation
• Construct right-turn lanes, including offset
• Construct minor intersection widening
• Construct or widen shoulders
• Widen shoulders to accommodate shoulder rumble strips
• Construct passing flares
• Construct intersection curb control
• Sidewalk gap filling (Maintenance agreement required)

Local Road Safety HSIP methodology is explained under the previous Addressing Local Safety question. For the FY 2022 CFP, an emphasis was placed on the identification of correctable fatalities and serious injuries, both in the selection and the prioritization of safety projects. A portion of the local safety funds were allocated to seven subprograms in 2022: Projects with scopes that directly address areas with a concentration of K and A crashes ($11M), Safety Edge ($500 K), Non-motorized Facility/Pedestrian Improvements ($500 K), High Friction Surface Treatment ($500 K), Road Safety Audits ($60 K), Guardrail Upgrades and Clear Zone Improvements ($750 K), and Safety Funds per MDOT Region ($500K). Each selected project could count towards multiple subprograms. Local agencies were informed of the listed subprograms and encouraged to submit projects based on the subcategories.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

The State Fiscal year ran from October 1, 2021 to September 30, 2022.

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$64,793,661	$65,366,074	100.88%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$4,278,299	$4,010,168	93.73%
VRU Safety Special Rule (23 U.S.C. 148(g)(3))	$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	$7,265,730	$7,980,731	109.84%
Totals	$76,337,690	$77,356,973	101.34%

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

$20,875,178

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

$21,365,715

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

$1,097,007

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

$1,097,007

For FY 2022 the Local agency safety program had three non-infrastructure projects for Road Safety Audits which accounted for 0.22% of programmed and obligated funds of the total program.

During the reporting period, FY 2022, 2.2% percent of the programmed and obligated funds of the HSIP State Trunkline system were directed to miscellaneous (previously non-infrastructure) safety items such as Road Safety Audits and safety studies.

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 has very limited ability to influence this, as MPO’s set their own meeting and approval schedules.

MDOT promotes the Toward Zero Deaths campaign to the citizens of Michigan, however utilizing as much HSIP funds as possible for roadway safety improvements limits available HSIP funds for educational and promotional materials thus making this social media campaign challenging, as we have to seek other funding sources within the department, which are also constrained. As such, MDOT promotes and supports statewide TZD efforts as much as available funding allows.

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, 2022, 2.2 percent of the programmed and obligated funds of the HSIP State Trunkline system were directed to miscellaneous (previously non-infrastructure) safety items such as Road Safety Audits and safety studies.

Overall, 10.0 percent of obligated (10.0 percent programmed) funds used were from State and Local funding sources.

On the Local Agency side no HSIP funds were directed toward tribal safety projects. In FY 2022, 0.22% of the obligated funds for the Local system were directed to non-infrastructure safety for Road Safety Audits.

Overall, 32.22% percent of the total programmed and 32.69% percent of the total obligated federal HSIP/HRRR funds were directed to local safety projects due to additional funding from the IIJA BIL.

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
Various Routes, Macomb & Oakland Counties, install flexible delineators	Roadway delineation	Delineators post-mounted or on barrier	62.008	Miles	$487827	$487827	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Various Routes, entrance/exit ramps in Oakland & Wayne Counties, Install flexible delineators on Exit and Entrance ramps	Roadway delineation	Delineators post-mounted or on barrier	66.606	Miles	$262486	$262486	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
On non-freeways in the Traverse City TSC area, Install roadside delineators	Roadway delineation	Delineators post-mounted or on barrier	103.947	Miles	$203675	$203675	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
From the Schoolcraft/Alger County line to Grand Marais, Installation of delineators along project route.	Roadway delineation	Delineators post-mounted or on barrier	12.932	Miles	$23572	$23572	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	790	55	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Longitudinal pavement marking application on trunklines in Bay Region	Roadway delineation	Longitudinal pavement markings - remarking	1.399	Miles	$3926425	$3926425	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Special pavement marking application on trunklines in Bay Region	Roadway delineation	Roadway delineation - other	3.252	Miles	$443393	$443393	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Pavement marking retroreflectivity readings on	Roadway delineation	Improve retroreflectivity	2.557	Miles	$19645	$19645	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	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
trunklines in Grand Region															
Longitudinal pavement marking application on trunklines in Grand Region	Roadway delineation	Longitudinal pavement markings - remarking	1.486	Miles	$3014827	$3014827	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Special pavement marking application on trunklines in Grand Region	Roadway delineation	Roadway delineation - other	1.845	Miles	$760810	$760810	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Pavement marking retroreflectivity readings on trunklines in Metro Region	Roadway delineation	Improve retroreflectivity	0.337	Miles	$20435	$20435	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Longitudinal pavement marking application on trunklines in Metro Region	Roadway delineation	Longitudinal pavement markings - remarking	0.282	Miles	$3215369	$3215369	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Special pavement marking application on trunklines in Metro Region	Roadway delineation	Roadway delineation - other	0.099	Miles	$1188771	$1188771	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Longitudinal pavement marking application on trunklines in North Region	Roadway delineation	Longitudinal pavement markings - remarking	0.799	Miles	$2664666	$2664666	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Special pavement marking application on trunklines in North Region	Roadway delineation	Roadway delineation - other	0.799	Miles	$516933	$516933	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	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
Pavement marking retroreflectivity readings on trunklines in North Region	Roadway delineation	Improve retroreflectivity	0.799	Miles	$14974	$14974	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Longitudinal pavement marking application on trunklines in Southwest Region	Roadway delineation	Longitudinal pavement markings - remarking	1.309	Miles	$2150968	$2150968	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Special pavement marking application on trunklines in Southwest Region	Roadway delineation	Roadway delineation - other	2.829	Miles	$331467	$331467	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Longitudinal pavement marking application on trunklines in Superior Region	Roadway delineation	Longitudinal pavement markings - remarking	0.117	Miles	$2269916	$2269916	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Special pavement marking application on trunklines in Superior Region	Roadway delineation	Roadway delineation - other	0.096	Miles	$594320	$594320	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Pavement marking retroreflectivity readings on Superior Region trunklines	Roadway delineation	Improve retroreflectivity	0.107	Miles	$11163	$11163	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Longitudinal pavement marking application on University Region trunklines	Roadway delineation	Longitudinal pavement markings - remarking	1.608	Miles	$3653954	$3653954	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	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
Special pavement marking application on trunklines in University Region	Roadway delineation	Roadway delineation - other	1.659	Miles	$642157	$642157	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Durable pavement marking application on University Region trunklines	Roadway delineation	Longitudinal pavement markings – new	3.584	Miles	$370846	$370846	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
M-13 and Worth Road Intersection, Intersection improvements	Intersection geometry	Intersection geometry - other	1	Locations	$51174	$51174	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	9,092	55	State Highway Agency	Systemic	Intersections	Reduce Fs and As
I-75 / US-23 at Various Freeway Ramps, Tree Clearing	Roadside	Removal of fixed objects (trees, poles, etc.)	5.768	Miles	$155680	$155680	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	55,856	70	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
US-23 N at Thompson Road to Baldwin Road, Tree Windscreen	Roadside	Roadside - other	1.531	Miles	$191224	$191224	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	55,856	70	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
M-15 At Coldwater Road, Vertical Curve Grade Reduction	Alignment	Vertical alignment or elevation change	0.117	Miles	$594479	$594479	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	10,510	50	State Highway Agency	Spot	Intersections	Reduce Fs and As
M-20 at Greencrest Drive to Meridian Road (M-30), Installation of shoulder mumble strips	Shoulder treatments	Shoulder treatments - other	16.788	Miles	$92203	$92203	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	0	55	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
Various Routes - Grand Rapids TSC, Non-Freeway Intersection Signing Improvements	Roadway signs and traffic control	Roadway signs (including post) - new or updated	292.434	Miles	$563286	$563286	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	0	State Highway Agency	Systemic	Intersections	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
I-196 from Fuller to I-96, Install enhanced barrier delineation	Roadway delineation	Delineators post-mounted or on barrier	2.056	Miles	$7947	$7947	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	58,883	70	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
M-91 from East Dickerson Lake Rd to Stanton Rd, Shoulder widening and guardrail replacement	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	1.08	Miles	$567185	$567185	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	3,696	55	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
Various locations, Metro Region, Retrofit shoulder corrugations	Roadway	Rumble strips – edge or shoulder	26.25	Miles	$277571	$277571	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
US-31 at Townline Road to Richardson Road, Guardrail and slope flattening	Roadside	Barrier - other	25.26	Miles	$954523	$954523	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	0	0	State Highway Agency	Systemic	Roadway Departure	Reduce Fs and As
US-127 N from the Crawford south county line to I-75, Tree Clearing	Roadside	Removal of fixed objects (trees, poles, etc.)	6.303	Miles	$436215	$436215	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	10,594	75	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
Various Trunklines in North Region, High Friction Surface	Roadway	Pavement surface – high friction surface	0.723	Miles	$492355	$492355	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	0	0	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
Intersection of US-31 at M-22, Construction of a roundabout	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$837327	$837327	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	0	State Highway Agency	Spot	Intersections	Reduce Fs and As
North Region, Regionwide, Placement of edgeline mumble strips and permanent pavement markings	Roadway delineation	Longitudinal pavement markings – new	27.026	Miles	$176270	$176270	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	0	State Highway Agency	Systemic	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
Southwest Regionwide, Installation of speed feedback signs	Speed management	Dynamic Speed Feedback Signs	1.842	Miles	$55000	$55000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	0	0	State Highway Agency	Spot	Data	Reduce Fs and As
Southwest Region, US-12, Shoulder widening and intersection turn lanes	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	2.347	Miles	$1083706	$1083706	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	8,354	0	State Highway Agency	Spot	Roadway Departure	Reduce Fs and As
Southwest Regionwide, Installation of detection for actuation	Intersection traffic control	Intersection traffic control - other	14	Locations	$464927	$464927	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	0	0	State Highway Agency	Spot	Intersections	Reduce Fs and As
M-28 from FFH-13 (Wetmore) to M-94 (Shingleton), 8 FT HMA Shoulder Paving	Shoulder treatments	Pave existing shoulders	7.29	Miles	$1009516	$1009516	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	0	0	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
M-183 from 2.15 miles south of US-2 southerly to the town of Garden., Trenching and HMA paving of existing aggregate shoulders.	Shoulder treatments	Pave existing shoulders	6.123	Miles	$617809	$617809	HSIP (23 U.S.C. 148)	Rural	Major Collector	0	0	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
M-95 from Randville to Sagola, Trenching and paving of existing aggregate shoulders.	Shoulder treatments	Pave existing shoulders	6.072	Miles	$1053677	$1053677	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	4,600	55	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
M-26 from Erickson Drive to Janovosky Road, Pavement removal and grading	Intersection geometry	Intersection geometry - other	0.328	Miles	$104372	$104372	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	4,677	55	State Highway Agency	Spot	Intersections	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
US-41 from east of Pond Road to west of Heritage Drive, Intersection Improvements	Intersection geometry	Intersection geometry - other	1.538	Miles	$1187433	$1187433	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	55	State Highway Agency	Spot	Intersections	Reduce Fs and As
M-99 in Eaton Co., median opening removal	Access management	Median crossover - relocate/close crossover	2.235	Miles	$1587959	$1587959	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	8,904	55	State Highway Agency	Spot	Intersections	Reduce Fs and As
M-17 sidewalk gaps in Ann Arbor, Ypsilanti Twp & Ypsilanti, Construct sidewalk	Pedestrians and bicyclists	Install sidewalk	0.095	Miles	$189244	$189244	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	45	State Highway Agency	Systemic	Pedestrians	Reduce Fs and As
US-23 Geddes Rd to Ellsworth, Construct median cable barrier	Roadside	Barrier – cable	3.155	Miles	$1330219	$1330219	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	0	70	State Highway Agency	Spot	Lane Departure	Reduce Fs and As
Various Routes - Gaylord TSC, Non-freeway signing upgrade	Roadway signs and traffic control	Roadway signs (including post) - new or updated	66.624	Miles	$1593890	$1593890	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
US-2 at Crystal Falls TSC, Non-freeway signing upgrade	Roadway signs and traffic control	Roadway signs (including post) - new or updated	76.011	Miles	$933607	$933607	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
M-49 and M-99, Non-freeway sign updating project	Roadway signs and traffic control	Roadway signs (including post) - new or updated	27.042	Miles	$410390	$410390	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
M-49 , M-124, and M-50, non freeway sign replacement	Roadway signs and traffic control	Roadway signs (including post) - new or updated	48.799	Miles	$996841	$996841	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systemic	Lane Departure	Reduce Fs and As
Statewide, Statewide Crash Analysis	Miscellaneous	Data analysis	100	Locations	$300000	$300000	HSIP (23 U.S.C. 148)	N/A	Multiple/Varies	0	0	State Highway Agency	Non-Infrastructure	Data	Reduce Fs and As
Statewide, Wrong-Way Driver Detection System	Advanced technology and ITS	Wrong-way Driving Detection System	1	System	$250000	$250000	HSIP (23 U.S.C. 148)	N/A	Multiple/Varies	0	0	State Highway Agency	Non-Infrastructure	Intersections	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
Statewide, Procure one mobile barrier system (MBT-1) for maintenance operations.	Miscellaneous	Equipment	1	System	$499007	$499007	HSIP (23 U.S.C. 148)	N/A	Multiple/Varies	0	0	State Highway Agency	Non-Infrastructure	Work Zones	Reduce Fs and As
211844 Sign mounted flashing beacons and intersection pavement markings W Lake Road at Webster Road, Genesee County	Intersection traffic control	Intersection flashers –sign-mounted or overhead	0.201	Intersections	$17926	$22408	HSIP (23 U.S.C. 148)	Multiple/Varies	Major Collector	14,468	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211845 Construct center left turn lane Lapeer Road from Gale Road easterly 2200 feet, Genesee County	Intersection geometry	Intersection geometry - other	0.417	Miles	$821817	$1303875	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	5,938	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211846 Sign mounted flashing beacons Irish Rd at Coldwater and at Mt. Morrish, Linden Rd at Dodge Rd, Genesee Co	Intersection traffic control	Intersection flashers –sign-mounted or overhead	1	Intersections	$82547	$91718	HSIP (23 U.S.C. 148)	Multiple/Varies	Minor Arterial	10,531	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
213838 Construct a roundabout Morrish Road at Lennon Road, Genesee County	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$42500	$85000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Other	600	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
214017 Road Diet (4-3 lane conversion), cold milling and resurfacing Graham Road to Ballenger Highway, Genesee County	Roadway	Roadway narrowing (road diet, roadway reconfiguration)	1.063	Miles	$602464	$805748	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	10,531	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries

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
214018 Road Diet (4-3 lane conversion), resurfacing Hill Road to Linden Creek Parkway, Genesee County	Roadway	Roadway narrowing (road diet, roadway reconfiguration)	1.465	Miles	$279065	$364137	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	9,776	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
213867 Sign mounted flashing beacons, overhead flashing beacons Bay Port Road at Sebewaing Road, Huron County	Intersection traffic control	Intersection flashers –sign-mounted or overhead	1	Intersections	$0	$14140	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,228	55	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211918 Roundabout Lapeer Road at Abbotsford Road, St. Clair County	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$837750	$1284313	HSIP (23 U.S.C. 148)	Rural	Major Collector	2,016	50	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211785 Countdown pedestrian signals Multiple Routes, Various Locations, Kent County	Pedestrians and bicyclists	Pedestrian signal - other	40	Intersections	$158729	$176366	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	15,000	35	County Highway Agency	Systemic	Intersections	Reduce Fatalities and Serious Injuries
211896 Signal modernization, pavement markings, signing Eastern Avenue SE from Andover Street to 40th Street, city of Grand Rapids	Intersection traffic control	Modify traffic signal – modernization/replacement	1	Intersections	$471637	$561218	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	15,320	45	City or Municipal Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
214068 Signal modernization, pavement markings, pedestrian refuge island Burton Street from Clyde Park Ave to Eastern	Intersection traffic control	Modify traffic signal – modernization/replacement	1	Intersections	$386315	$429239	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	18,000	45	City or Municipal Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries

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
Ave, city of Grand Rapids															
214598 Signal upgrades Burton Street from Kalamazoo Avenue to Breton Road, city of Grand Rapids	Intersection traffic control	Modify traffic signal – modernization/replacement	2	Intersections	$307250	$341389	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	15,000	45	City or Municipal Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211899 Guardrail upgrades and shoulder paving Multiple Routes, Various Locations, Mecosta County	Roadside	Barrier- metal	5	Locations	$399923	$453039	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	1,326	55	County Highway Agency	Systemic	Intersections	Reduce Fatalities and Serious Injuries
211723 Pavement widening, headed-up left turn lanes, sidewalk Clark Street at Gratiot Avenue, village of New Haven, Macomb County	Roadway	Roadway widening - add lane(s) along segment	0.361	Miles	$124245	$187253	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	2,960	45	City or Municipal Highway Agency	Spot	Pedestrians	Reduce Fatalities and Serious Injuries
211897 Construct sidewalk, crosswalk markings, Rectangular Rapid Flashing Beacon Stephens Road from Ridgecroft Avenue to I-94, city of Eastpointe	Pedestrians and bicyclists	Rapid Rectangular Flashing Beacons (RRFB)	1	Crosswalks	$84353	$113268	HSIP (23 U.S.C. 148)	Urban	Major Collector	4,400	25	City or Municipal Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211908 Roundabout 9 Mile Road at Taft Road, city of Novi, Oakland County	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$802658	$1307295	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	8,926	35	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211909 Signal modernization, access	Intersection traffic control	Modify traffic signal – modernization/replacement	4	Intersections	$720037	$1375027	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	20,721	45	City or Municipal	Spot	Intersections	Reduce Fatalities

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
management, crosswalk markings Walton Boulevard between Concord Lane and Stirling Lakes Drive, Pontiac												Highway Agency			and Serious Injuries
211911 High Friction Surface Treatment Elizabeth Lake Road from Pinegrove Drive to Hickory Lane, Oakland County	Roadway	Pavement surface – high friction surface	0.402	Miles	$219395	$243772	HSIP (23 U.S.C. 148)			0		County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211912 High Friction Surface Treatment Cooley Lk Rd/Elizabeth Lk Rd, Fleet Ave to Pinegrove Ave, Oakland County	Roadway	Pavement surface – high friction surface	0.786	Miles	$299204	$332449	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	12,616	40	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211913 High Friction Surface Treatment Grange Hall Road near Joann Street, Oakland County	Roadway	Pavement surface – high friction surface	0.738	Miles	$109790	$121989	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	13,840	45	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211914 Shoulder widening, High Friction Surface Treatment, overlay Hickory Ridge Road from Clyde Road to Catherine Anne Road, Oakland County	Roadway	Pavement surface – high friction surface	0.45	Miles	$82982	$133917	HSIP (23 U.S.C. 148)	Rural	Major Collector	4,170	50	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211915 Trench widening for paved shoulder Frembes Road from Hatchery Road to US-24, Oakland County	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	0.749	Miles	$88832	$168789	HSIP (23 U.S.C. 148)	Urban	Major Collector	13,680	35	County Highway Agency	Spot	Pedestrians	Reduce Fatalities and Serious Injuries

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
214132 Intersection and Non-motorized Crossing Improvements Auburn Ave from Hill St to Carriage Circle Dr, city of Pontiac	Pedestrians and bicyclists	Modify existing crosswalk	1	Crosswalks	$726876	$955265	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	42,488	35	City or Municipal Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211928 Rapid rectangular flashing beacon, crosswalks, road diet Vernor Ave, Dix to east city limits, Chase, Gould to Diversey, Dearborn	Pedestrians and bicyclists	Rapid Rectangular Flashing Beacons (RRFB)	1	Locations	$94990	$128887	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	3,910	30	City or Municipal Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211932 Signal modernization Multiple Routes, Various Locations, city of Detroit	Intersection traffic control	Modify traffic signal – modernization/replacement	6	Intersections	$636319	$803886	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	85,100	35	City or Municipal Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211934 Signal modernization Multiple Routes, Various Locations, city of Detroit	Intersection traffic control	Modify traffic signal – modernization/replacement	5	Intersections	$523446	$619562	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	7,500	35	City or Municipal Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211836 Signal modernization, sidewalk Bagley Street at Long Rapids Road, Alpena County	Intersection traffic control	Modify traffic signal – modernization/replacement	1	Intersections	$261472	$352311	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	12,000	35	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211916 Slope flattening, curve signing, dual Stop signs E Houghton Lk: Doyle to N of CR 300; W Pine Dr: Harrison Rd to to Hillcrest	Roadway signs and traffic control	Curve-related warning signs and flashers	5.261	Miles	$274317	$442626	HSIP (23 U.S.C. 148)	Rural	Major Collector	5,527	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries

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
211838 Guardrail upgrades Various locations, Berrien County federal aid and non-federal aid routes	Roadside	Barrier- metal	25	Locations	$453796	$688176	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	976	55	County Highway Agency	Systemic	Roadway Departure	Reduce Fatalities and Serious Injuries
211769 Centerline and edgeline rumble strips Multiple Routes, Various Locations, Branch County	Roadway	Rumble strips –other	3.132	Miles	$99218	$110242	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	2,772	55	County Highway Agency	Systemic	Pedestrians	Reduce Fatalities and Serious Injuries
211841 Tree removal C Drive N from 13 Mile Road to M-96, Calhoun County	Roadside	Removal of fixed objects (trees, poles, etc.)	2.233	Miles	$133715	$148572	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	430	55	County Highway Agency	Spot	Pedestrians	Reduce Fatalities and Serious Injuries
211782 Signal Backplates Multiple Routes, Various Locations, city of Kalamazoo	Intersection traffic control	Modify traffic signal – add backplates with retroreflective borders	28	Intersections	$112226	$124695	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	8,000	45	City or Municipal Highway Agency	Systemic	Intersections	Reduce Fatalities and Serious Injuries
211871 Audible pedestrian speakers, high visibility crosswalks Multiple Routes, Various Locations, city of Kalamazoo	Pedestrians and bicyclists	Pedestrians and bicyclists – other	32	Intersections	$289165	$321295	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	8,000	45	City or Municipal Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211874 Signal optimization E Michigan Avenue at Mills St and at Riverview Dr, city of Kalamazoo	Intersection traffic control	Modify traffic signal – modernization/replacement	1	Intersections	$8000	$10000	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	17,191	35	City or Municipal Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211876 Emergency vehicle signal pre-emption Multiple Routes, Various	Intersection traffic control	Modify traffic signal – add emergency vehicle preemption	20	Intersections	$306729	$340810	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	15,000	40	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries

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
Locations, Comstock Township, Kalamazoo County															
211894 Shoulder widening, concrete median, centerline and shoulder rumble strips Sprinkle Road from E Main Street to G Avenue, Kalamazoo County	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	2.182	Miles	$568937	$781889	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	22,402	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211895 Trench widening for paved shoulder 12th Street from Ravine Road to D Avenue, Kalamazoo County	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	2.539	Miles	$340700	$1879971	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,998	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211919 Roundabout, sidewalk E Lafayette Road at N Franks Avenue (Middle School drive), city of Sturgis	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$612842	$890782	HSIP (23 U.S.C. 148)	Urban	Major Collector	950	55	City or Municipal Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211837 Vertical curve modification, crown correction, pave shoulders Dynamite Hill Rd from 1 mile west of Pinery Rd to Pinery Rd, Baraga County	Alignment	Vertical alignment or elevation change	1	Miles	$415373	$521789	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	500	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
209942 Install a Pedestrian Hybrid Beacon signal E Spicerville Highway approximately	Pedestrians and bicyclists	Pedestrian hybrid beacon	1	Locations	$137043	$175384	HSIP (23 U.S.C. 148)	Urban	Major Collector	2,500	25	City or Municipal Highway Agency	Systemic	Roadway Departure	Reduce Fatalities and Serious Injuries

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
250 feet west of M-50, in Eaton Rapids															
211847 Construct left turn lane, signal modernization Haslett Road at Park Lake Road, city of East Lansing, Ingham County	Roadway	Roadway widening - add lane(s) along segment	0.271	Miles	$599334	$918313	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	19,100	45	City or Municipal Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
213767 Construct center left turn lane Meridian Road at Grand River Avenue, Ingham County	Intersection geometry	Intersection geometry - other	0.142	Miles	$463365	$666572	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	12,600	45	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
214632 Roundabout Hagadorn Road at Sandhill Road, Ingham County	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$80000	$160000	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	4,000	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211779 Horizontal curve signing Multiple Routes, Various Locations, Jackson County	Roadway signs and traffic control	Curve-related warning signs and flashers	14	Locations	$255583	$311386	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	10,000	55	County Highway Agency	Systemic	Intersections	Reduce Fatalities and Serious Injuries
211848 Signal modernization S West Avenue at Morrell Street, city of Jackson, Jackson County	Intersection traffic control	Modify traffic signal – modernization/replacement	1	Intersections	$358892	$492972	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	12,272	30	City or Municipal Highway Agency	Spot	Pedestrians	Reduce Fatalities and Serious Injuries
211849 Signal modernization E Ganson Street at N Elm Street, city of Jackson, Jackson County	Intersection traffic control	Modify traffic signal – modernization/replacement	1	Intersections	$146101	$163212	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	12,272	30	City or Municipal Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211851 Radar activated flashing border Stop signs, stop bar pavement	Intersection traffic control	Intersection flashers –sign-mounted or overhead	11	Intersections	$77426	$86029	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	10,000	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries

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
markings Multiple Routes, Various Locations, Jackson County															
211852 Tree removal, pavement markings, signing upgrades Moscow Road from Masker Road to M-60, Jackson County	Roadside	Removal of fixed objects (trees, poles, etc.)	9.776	Miles	$210141	$233490	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	3,467	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211853 Tree removal, pavement markings, signing upgrades Rives Junction Road from Springport Road to Cook Street, Jackson County	Roadside	Removal of fixed objects (trees, poles, etc.)	6.621	Miles	$147375	$163751	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	5,553	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211855 Roundabout Springport Road at Rives Junction Road, Jackson County	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$455485	$483886	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	7,094	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211862 Road Safety Audit Page Avenue from S Dettman Road to Sager Road, Jackson County	Miscellaneous	Road safety audits	1	Locations	$16000	$20000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	13,500	45	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211864 Road Safety Audit Spring Arbor Road from Warren Avenue to Brown Street, Jackson County	Miscellaneous	Road safety audits	1	Locations	$16000	$20000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Other	11,500	45	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211867 Road Safety Audit Spring Arbor Road from M-60	Miscellaneous	Road safety audits	1	Locations	$16000	$20000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Other	8,500	45	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries

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
ramps to Warren Avenue, Jackson County															
213736 Edgeline pavement markings Multiple Routes, Various Locations, Jackson County	Roadway delineation	Longitudinal pavement markings – new	56	Miles	$79191	$88913	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	2,500	55	County Highway Agency	Systemic	Roadway Departure	Reduce Fatalities and Serious Injuries
214462 Curve Signing Multiple Routes, Various Locations, Jackson County	Roadway signs and traffic control	Curve-related warning signs and flashers	78	Curves	$267043	$381477	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	2,500	55	County Highway Agency	Systemic	Roadway Departure	Reduce Fatalities and Serious Injuries
214463 Signing Multiple Routes, Various Locations, Jackson County	Roadway signs and traffic control	Curve-related warning signs and flashers	12	Intersections	$59329	$65921	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	1,000	55	County Highway Agency	Systemic	Pedestrians	Reduce Fatalities and Serious Injuries
214464 High Friction Surface Treatment, signing, pavement markings Multiple Routes, Various Locations, Jackson County	Roadway	Pavement surface – high friction surface	4	Intersections	$170825	$189805	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	8,825	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211906 High Friction Surface Treatment, signing, pavement markings Multiple Routes, Various Locations, Monroe County	Roadway	Pavement surface – high friction surface	0.979	Miles	$252322	$340991	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	5,483	45	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211907 Hot mix asphalt overlay, rumble strips, signing, pavement markings Sterns Road from US-	Roadway	Rumble strips – edge or shoulder	2.385	Miles	$427993	$485041	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	7,521	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries

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
23 to Adler Road, Monroe County															
211925 Crosswalk markings, pedestrian signing, corridor lighting Hill Street Fifth Avenue to Washtenaw Ave City of Ann Arbor	Pedestrians and bicyclists	Pedestrians and bicyclists – other	0.937	Miles	$75391	$83767	HSIP (23 U.S.C. 148)	Urban	Major Collector	10,900	25	City or Municipal Highway Agency	Systemic	Intersections	Reduce Fatalities and Serious Injuries
211926 Centerline rumbles, signing upgrades, signal modernization Dexter Pinckney Rd from Island Lk Rd to the north County Line, Washtenaw Co	Roadway	Roadway - other	6.683	Miles	$279413	$310683	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	11,564	55	County Highway Agency	Systemic	Lane Departure	Reduce Fatalities and Serious Injuries
211926 Centerline rumbles, signing upgrades, signal modernization Dexter Pinckney Rd from Island Lk Rd to the north County Line, Washtenaw Co	Roadway	Roadway - other	6.683	Miles	$33195	$66390	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	11,564	55	County Highway Agency	Systemic	Lane Departure	Reduce Fatalities and Serious Injuries
214659 Roundabout N Zeeb Road at Miller Road, Washtenaw County	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$27353	$54706	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	6,902	45	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
215261 Left turn lanes, centerline rumble strips, curve delineation from Mast Road to Webster Church Road, Washtenaw County	Roadway	Roadway - other	2.658	Miles	$32633	$65266	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	8,693	50	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries

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
213784 Shoulder widening, high friction surface treatment, resurfacing M-13 to Mount Forest Road, Bay County	Roadway	Pavement surface – high friction surface	2.064	Miles	$38988	$42887	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Local Road or Street	893	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211814 High Friction Surface Treatment Seymour Road approximately 1500 feet north of Farrand Road, Genesee County	Roadway	Pavement surface – high friction surface	0.103	Miles	$242918	$267210	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Minor Arterial	12,452	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211829 Trench widening, pave shoulders, shoulder rumble strips Marsh Road between Arnold Road and Plank Road, St. Clair County	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	0.184	Miles	$158342	$174176	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Local Road or Street	1,200	45	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211829 Trench widening, pave shoulders, shoulder rumble strips Marsh Road between Arnold Road and Plank Road, St. Clair County	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	0.184	Miles	$6938	$7632	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Local Road or Street	1,200	45	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211831 Pave shoulders and install shoulder rumble strips Kilgore Rd from south of Mericle Rd to south of Beard Rd, St. Clair County	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	0.723	Miles	$141082	$155190	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Minor Collector	1,714	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211826 Paved shoulders, rumble strips, curve signing, upgraded pavement	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	1.559	Miles	$441621	$485783	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	3,900	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries

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
markings N Federal Road from Yankee Road to Eisenhower Road, Montcalm County															
213788 Shoulder paving, shoulder rumble strips Federal Road (CR 599) from Howard City to M-46, Montcalm County	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	1.724	Miles	$25632	$28195	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	7,300	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211704 Tree removal 28 Mile Rd, C Dr N to Rice Creek; P Dr S, 6 Mile to 7 Mile, Calhoun County	Roadside	Removal of fixed objects (trees, poles, etc.)	6.749	Miles	$398957	$438852	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	1,470	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211856 Tree removal Multiple Routes, Various Locations, Battle Creek Transportation Study Area	Roadside	Removal of fixed objects (trees, poles, etc.)	5.394	Miles	$320432	$352475	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	2,447	55	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211886 Install overhead flashing beacons U Drive N at 1 Mile Road, Calhoun County	Intersection traffic control	Intersection flashers –sign-mounted or overhead	1	Intersections	$16714	$18386	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	644	45	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211887 Install overhead flashing beacons L Drive N at 15 1/2 Mile Road / 16 Mile Road, Calhoun County	Intersection traffic control	Intersection flashers –sign-mounted or overhead	1	Intersections	$17074	$18781	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	534	55	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
211889 Tree removal Union City Road from M-60 to L Drive S, Calhoun County	Roadside	Removal of fixed objects (trees, poles, etc.)	6.099	Miles	$299273	$329200	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	1,384	55	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries

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
211824 Paved shoulders, superelevation corrections 24th St from D Avenue to AB Ave then along AB Ave to M-89, Kalamazoo County	Roadway	Superelevation / cross slope	3.375	Miles	$356125	$391737	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	2,930	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
213786 Non-freeway sign upgrades Cheeseman Road from US-2 to the city of St. Ignace, Mackinac County	Roadway signs and traffic control	Roadway signs (including post) - new or updated	5.105	Miles	$31688	$34857	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	447	55	County Highway Agency	Systemic	Roadway Departure	Reduce Fatalities and Serious Injuries
213786 Non-freeway sign upgrades Cheeseman Road from US-2 to the city of St. Ignace, Mackinac County	Roadway signs and traffic control	Roadway signs (including post) - new or updated	5.105	Miles	$1461	$1607	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	447	55	County Highway Agency	Systemic	Roadway Departure	Reduce Fatalities and Serious Injuries
213787 Vertical curve modification, construct paved shoulders, pavement markings County Road 356 at County Road 577, Menominee County	Roadway	Roadway - other	0.227	Miles	$7082	$11082	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	246	55	County Highway Agency	Spot	Roadway Departure	Reduce Fatalities and Serious Injuries
211813 Vertical curve modification Francis Road at Clark Road, Clinton County	Alignment	Vertical alignment or elevation change	1	Intersections	$293344	$322678	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	3,300	55	County Highway Agency	Spot	Pedestrians	Reduce Fatalities and Serious Injuries
210343 Mini-Roundabout Dearing at McCain Road, Jackson County	Intersection traffic control	Modify control – Compact/Mini-roundabout	1	Intersections	$308314	$339146	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	2,898	55	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries

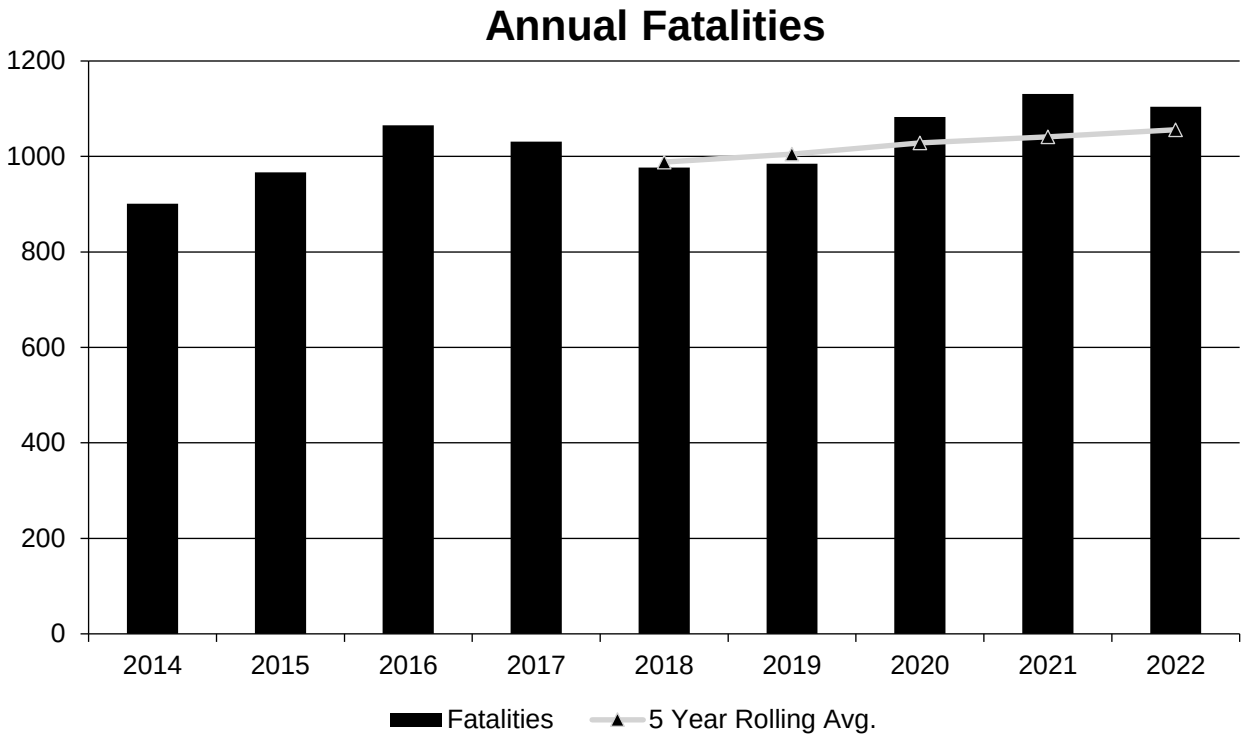
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
211823 Tree removal, pavement markings, signing upgrades N Concord Road from Spring Arbor Road to Hutchison Road, Jackson County	Roadside	Removal of fixed objects (trees, poles, etc.)	3.317	Miles	$106645	$117310	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	1,387	55	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries
213875 Tree removal, signing, pavement markings Multiple Routes, Various Locations, Jackson County	Roadside	Removal of fixed objects (trees, poles, etc.)	5.876	Miles	$593915	$653306	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	1,300	55	County Highway Agency	Spot	Intersections	Reduce Fatalities and Serious Injuries
211835 High Friction Surface Treatment, overhead flashing beacons, signing Pleasant Lake Rd from Schneider Rd to Parker Rd (n. jct), Washtenaw County	Roadway	Pavement surface – high friction surface	2.593	Miles	$210706	$231776	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	6,152	55	County Highway Agency	Spot	Lane Departure	Reduce Fatalities and Serious Injuries

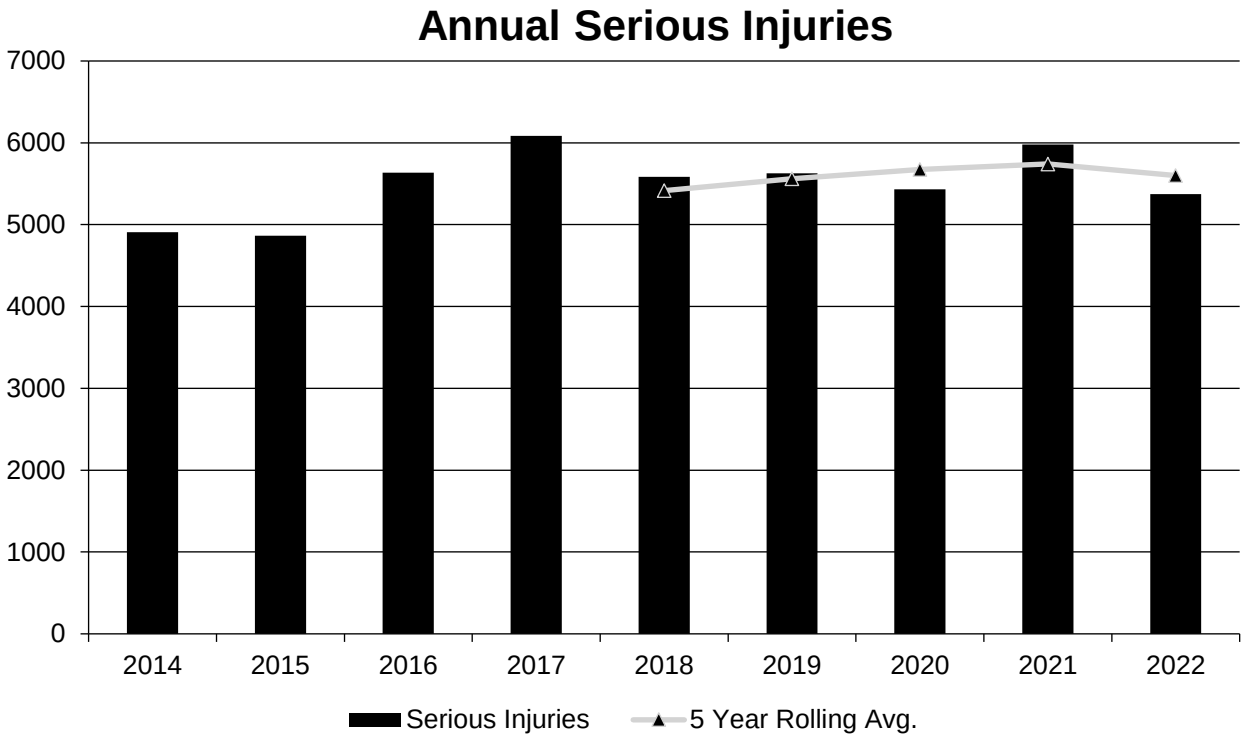
Safety Performance

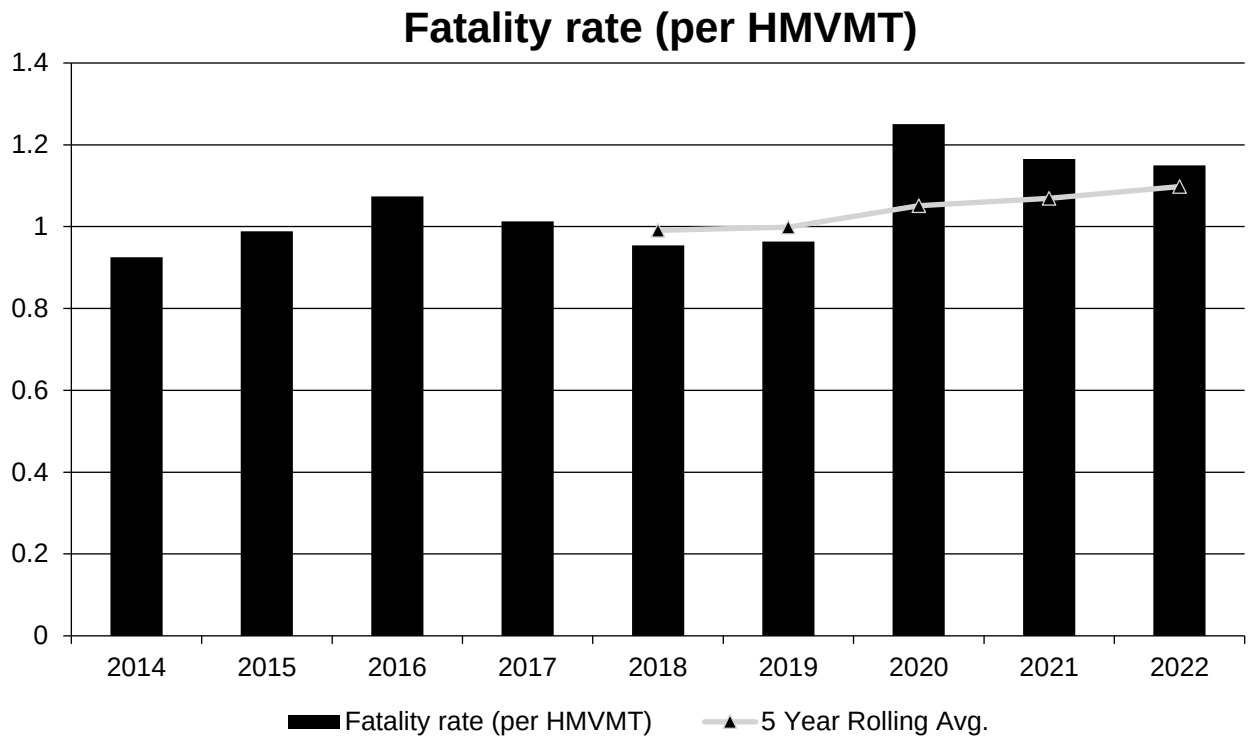
General Highway Safety Trends

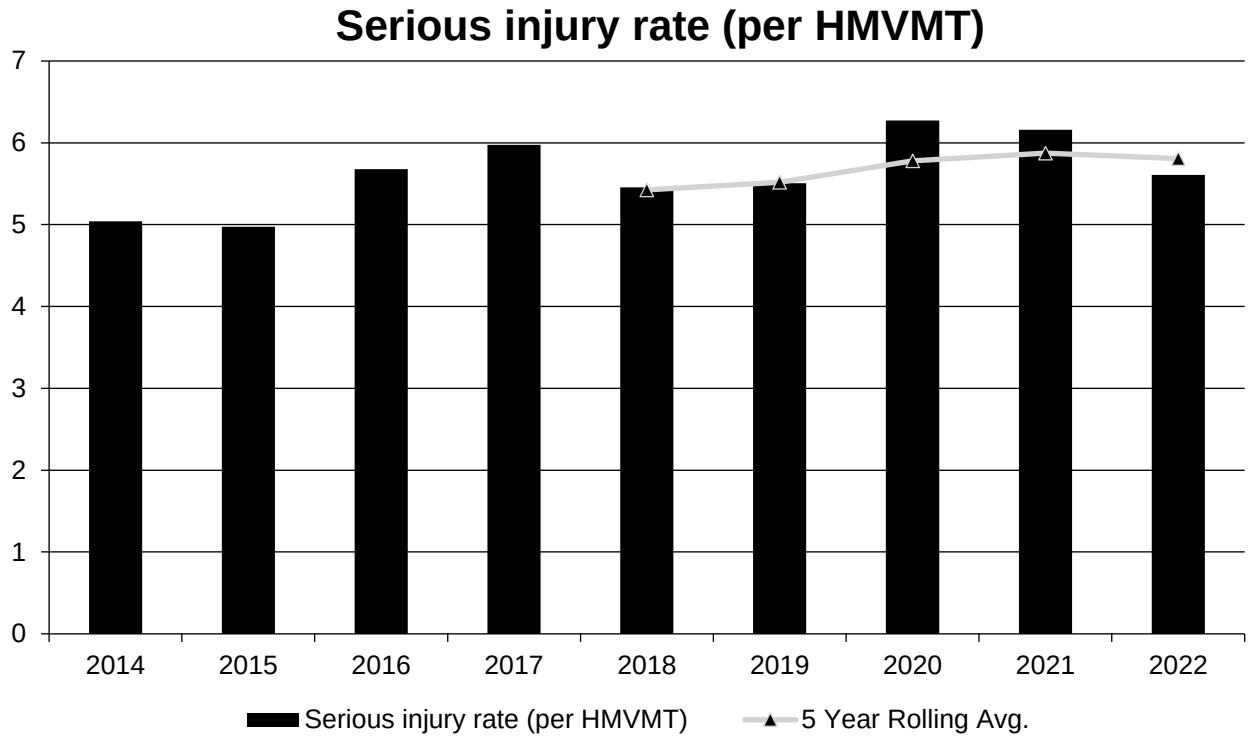
Present data showing the general highway safety trends in the State for the past five years.

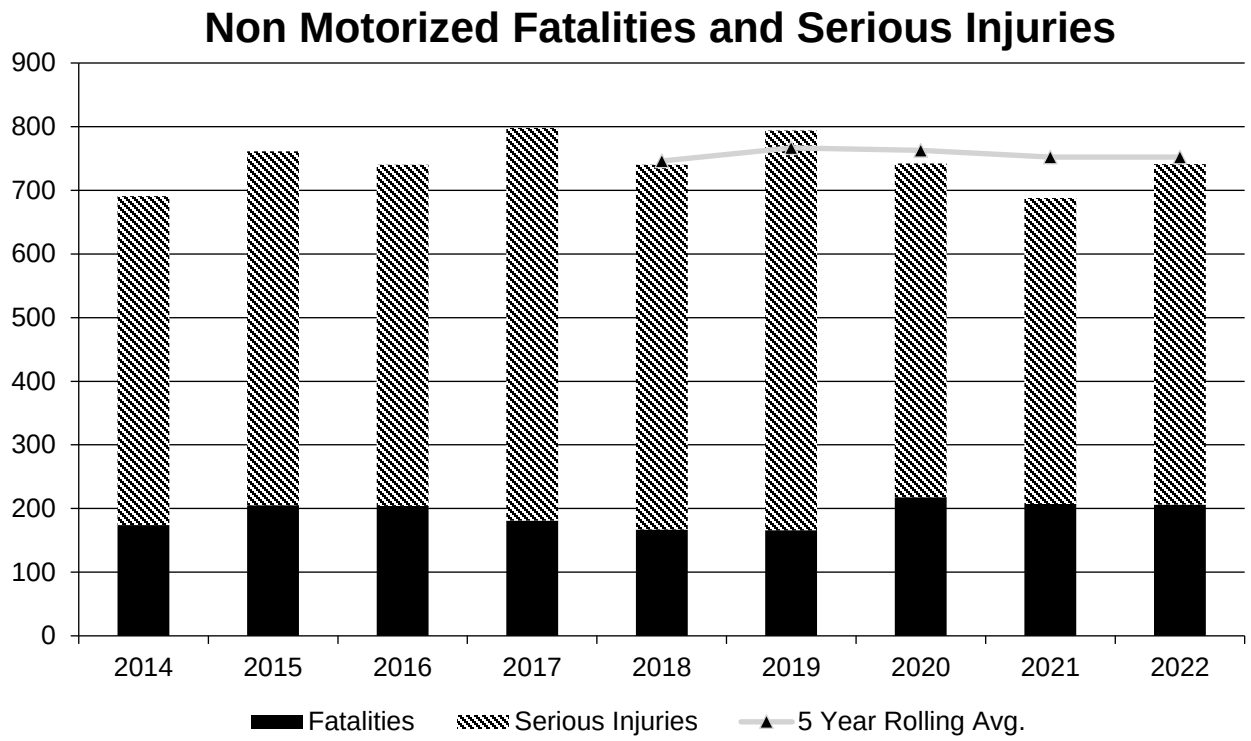
PERFORMANCE MEASURES	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fatalities	901	967	1,065	1,031	977	985	1,083	1,131	1,104
Serious Injuries	4,909	4,865	5,634	6,084	5,586	5,629	5,433	5,979	5,375
Fatality rate (per HMVMT)	0.925	0.989	1.074	1.013	0.954	0.964	1.251	1.165	1.150
Serious injury rate (per HMVMT)	5.040	4.974	5.679	5.976	5.455	5.508	6.274	6.158	5.606
Number non-motorized fatalities	174	205	204	181	167	166	218	207	206
Number of non-motorized serious injuries	517	556	536	617	573	628	524	481	535


Annual Fatalities
1200
1000
800
600
400
200
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
7000
6000
5000
4000
3000
2000
1000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
7
6
5
4
3
2
1
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



Describe fatality data source.

State Motor Vehicle Crash Database

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

Year 2022

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	22.2	88	0.41	1.6
Rural Principal Arterial (RPA) - Other Freeways and Expressways	12	54.8	0.45	2.03
Rural Principal Arterial (RPA) - Other	49.8	221.8	1.18	5.23
Rural Minor Arterial	101.2	423.8	1.5	6.28
Rural Minor Collector	15.2	73.4	1.78	8.57
Rural Major Collector	133.2	614.6	1.65	7.6

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 Local Road or Street	77.6	419.2	3.59	19.26
Urban Principal Arterial (UPA) - Interstate	76.6	374	0.48	2.3
Urban Principal Arterial (UPA) - Other Freeways and Expressways	33.2	155	0.56	2.58
Urban Principal Arterial (UPA) - Other	237.4	1,263.2	1.44	7.65
Urban Minor Arterial	167	1,036	1.1	6.81
Urban Minor Collector	1.4	6.6	1.46	6.86
Urban Major Collector	56.4	317	1.15	6.48
Urban Local Road or Street	60	432.4	0.84	5.95

Year 2019

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				
Non-Trunkline (County, City, Local Owned Roadways)	576.6	3,196.6	1.22	6.76
Trunkline (State Owned Roadways)	426.2	2,348.4	0.8	4.39
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)				
Indian Tribe Nation				
Trunkline (State Owned Roadways)				
Non-Trunkline (County, City, Local Owned Roadways)				

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 7.6 percent over the 5-year span. State trunkline fatalities had an overall increase of 8.1 percent while local roadway fatalities had an overall increase of 7.2 percent.

Serious injuries statewide have seen an increase of 3.4 percent over the 5-year rolling average. State trunkline serious injuries had an overall increase of 2.4 percent while local roadway serious injuries had an overall increase of 4.7 percent.

Regarding rates, the fatality and serious injury rates are lower on state trunkline than on local roadways. Overall, the fatality rate increased 7.6 percent while the serious injury rate increased 3.4 percent. The state trunkline saw an 8.1 percent increase in the fatality rate and a 2.4 percent serious injury rate increase. The local roadways saw a 7.2 percent fatality rate increase and a 4.7 percent serious injury rate increase.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2024 Targets *

Number of Fatalities:1109.2

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, the decision was made to use the change model created by UMTRI used for establishing previous targets. UMTRI predicts 1,109 fatalities in CY 2023, and 1,092 in 2024. The values determined take into account the anticipated impact of the new Hands Free law that went into effect June 30, 2023. The change model predicts change in fatalities from the previous year based on several predictors. This log-change regression model is tied closely to whatever happened recently, so it cannot diverge very far from the current time unless we predict many years out into the future. In the future, the change model predicts a steady (slow) decrease in fatalities. The dataset is a set of differences from one year to the next within the state, expressed as a percentage of the previous year. Thus, the predictors can influence exposure and/or risk. The count model, however, directly predicts counts so it could diverge from observed by a lot if the patterns change in the real world. Based on known factors the count model shows a steady increase in fatalities through 2025. As this is not what is expected the change model was selected in developing the targets. 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:5785.0

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

The model predicts 5,882 serious injuries in CY 2023, and 5,849 in 2024. The values take into account the anticipated impact of the new Hands Free law that went into effect June 30, 2023. While serious injuries have fluctuated over the past several years, the linear relationship of the ratio of serious injuries and fatalities (A/K) going back to 2003 is still evident. However, this trend suggests a greater reduction in serious injuries than being observed. Therefore, a linear model using the last eight year of data was used which projects a flattening pattern. 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:1.152

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

VMT values have been predicted for CYs 2020, 2021 and 2022. VMT estimates for CY 2020 are reduced due to COVID-19. Using the fatal injury values, along with the respective predicted VMT, the forecasted fatality rates are 1.107 for CY 2023, and 1.077 for CY 2024.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:5.999

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

VMT values have been predicted for CYs 2020, 2021 and 2022. VMT estimates for CY 2020 are reduced due to COVID-19. Using the fatal injury values, along with the respective predicted VMT, the forecasted serious injury rates are 5.870 for CY 2023, and 5.768 for CY 2024.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:710.8

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

Results from the UMTRI model as described (the fatality and serious injury relationship) were also used to generate non-motorized forecasted annual values of 722 for CY 2023, and 696 for CY 2024.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.

The annual forecasted values for CY 2023 and CY 2024 along with the actual values from CY 2019 to 2021 to determine the 2024 Targets (five-year rolling average) are shown in the table. In addition, actual values dating back to CY 2012 are included as part of the determination of the 2020 baseline condition.

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

The 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 2022 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.

PERFORMANCE MEASURES	TARGETS	ACTUALS
Number of Fatalities	1065.2	1056.0
Number of Serious Injuries	5733.2	5600.4
Fatality Rate	1.098	1.098
Serious Injury Rate	5.892	5.809
Non-Motorized Fatalities and Serious Injuries	791.6	752.0

Based on Targets vs Actual, Michigan will preliminarily meet the majority of the performance targets for FY 2022.

Applicability of Special Rules

Does the VRU Safety Special Rule apply to the State for this reporting period?

No

Does the HRRR special rule apply to the State for this reporting period?

No

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	2016	2017	2018	2019	2020	2021	2022
Number of Older Driver and Pedestrian Fatalities	172	155	159	159	181	206	195
Number of Older Driver and Pedestrian Serious Injuries	506	558	509	574	464	515	598

Data has been updated with 2022 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:
• Non-infrastructure – training and workforce development, traffic studies, data analysis
• Advance technology and ITS – Wrong-way driving detection, dynamic message signs, etc.
• Alignment – horizontal and vertical alignment, superelevation
• Interchange design – interchange improvements
• Intersection geometry – auxiliary lanes, geometry improvements
• Intersection traffic control – flasher install, conversion to roundabout, signal modernization, intersection upgrades
• Pedestrian and bicyclist – median and refuge areas, sidewalks, crosswalks, pedestrian signal improvements
• Roadside – barrier install (cable, concrete, metal), drainage and grading improvements, roadside object removal
• Roadway – access management, high friction pavement surface, roadway narrowing/widening, rumble/mumble strips
• Roadway delineation – delineators, pavement markings, retroreflectivity improvements
• Roadway signs and traffic control – curve warning signs, signing upgrades and/or replacement
• Shoulder treatments – shoulder paving, shoulder widening
• Speed management – radar speed signs
• Lighting – Intersections, pedestrian crossings, lighting improvements

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

MDOT incorporates FHWA's proven safety countermeasures and strategies. Each countermeasure addresses at least one safety focus area (speed management, intersections, roadway departures, or pedestrians/bicyclists) while others are crosscutting strategies that address multiple safety focus areas (such as lighting, LRSP, RSA, and pavement friction management). These safety measures have been proven to effectively reduce roadway fatalities and serious injuries on all types of roadways and support MDOT's mission of applying the SSA to achieve TZD on Michigan roads.

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

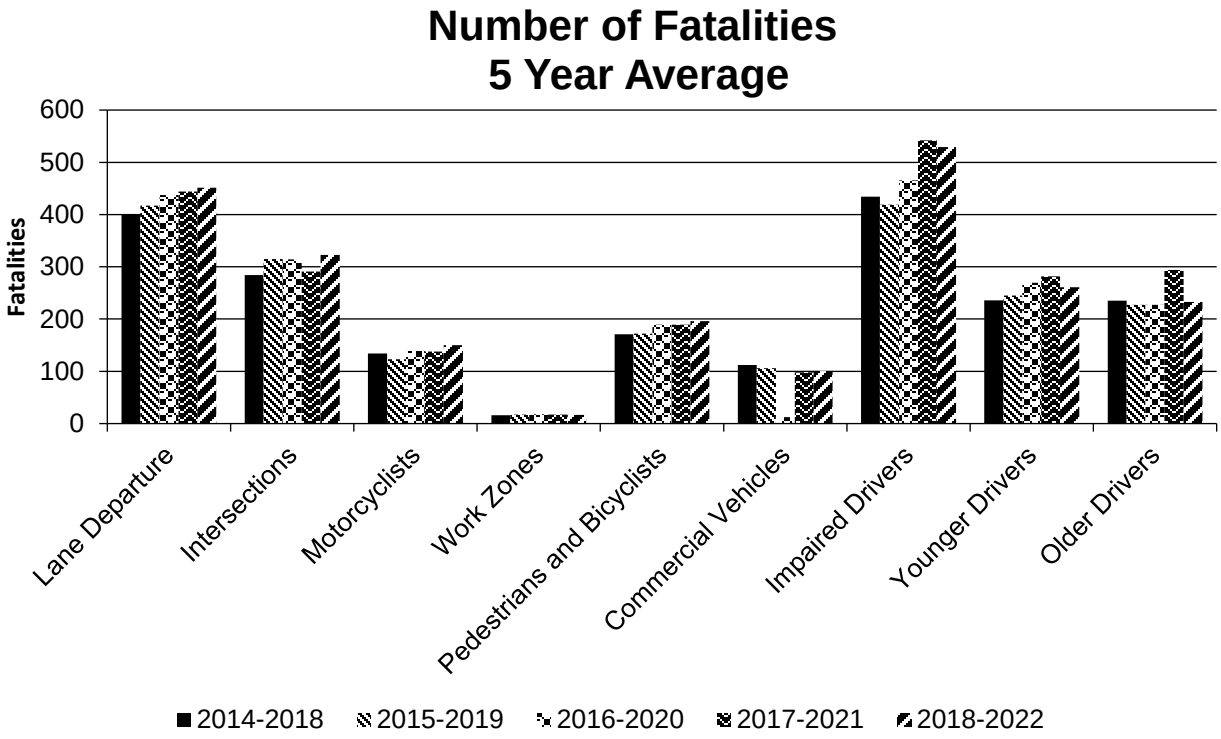
- # RSAs completed
- Increased awareness of safety and data-driven process
- Increased focus on local road safety
- Other-Before and After Studies
- Other-Additional Systemic Treatments based on crash data

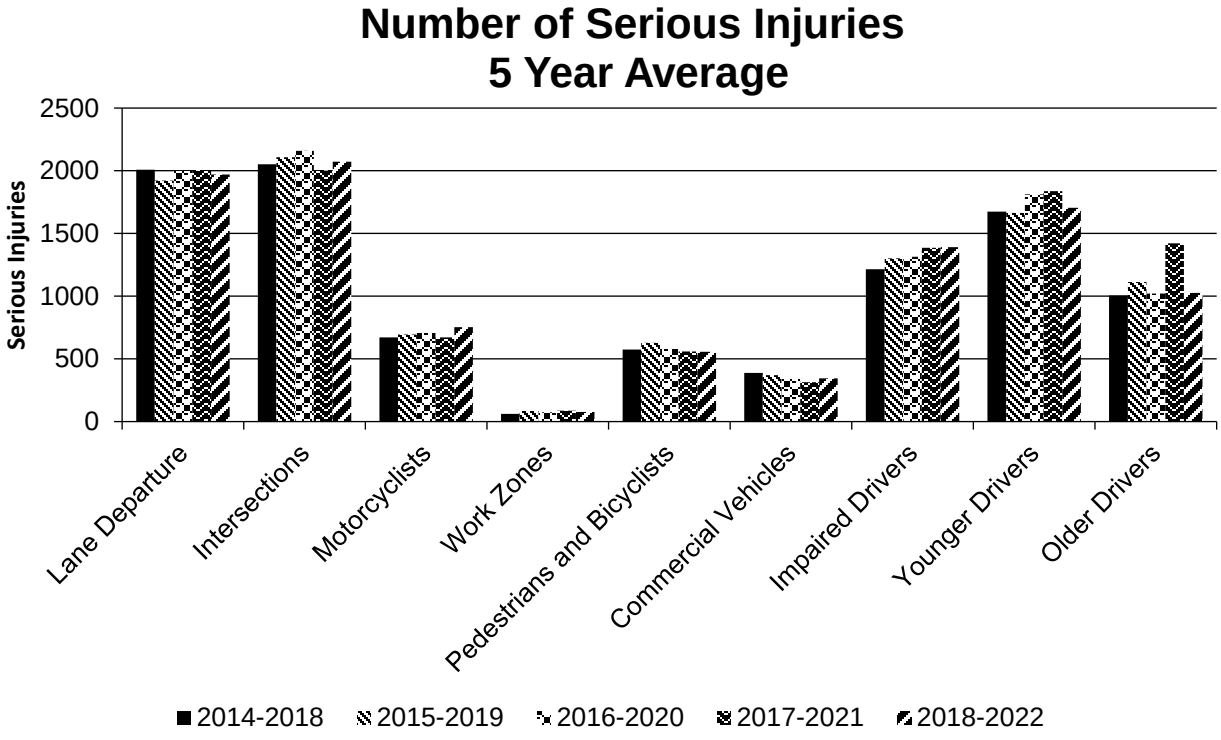
Effectiveness of Groupings or Similar Types of Improvements

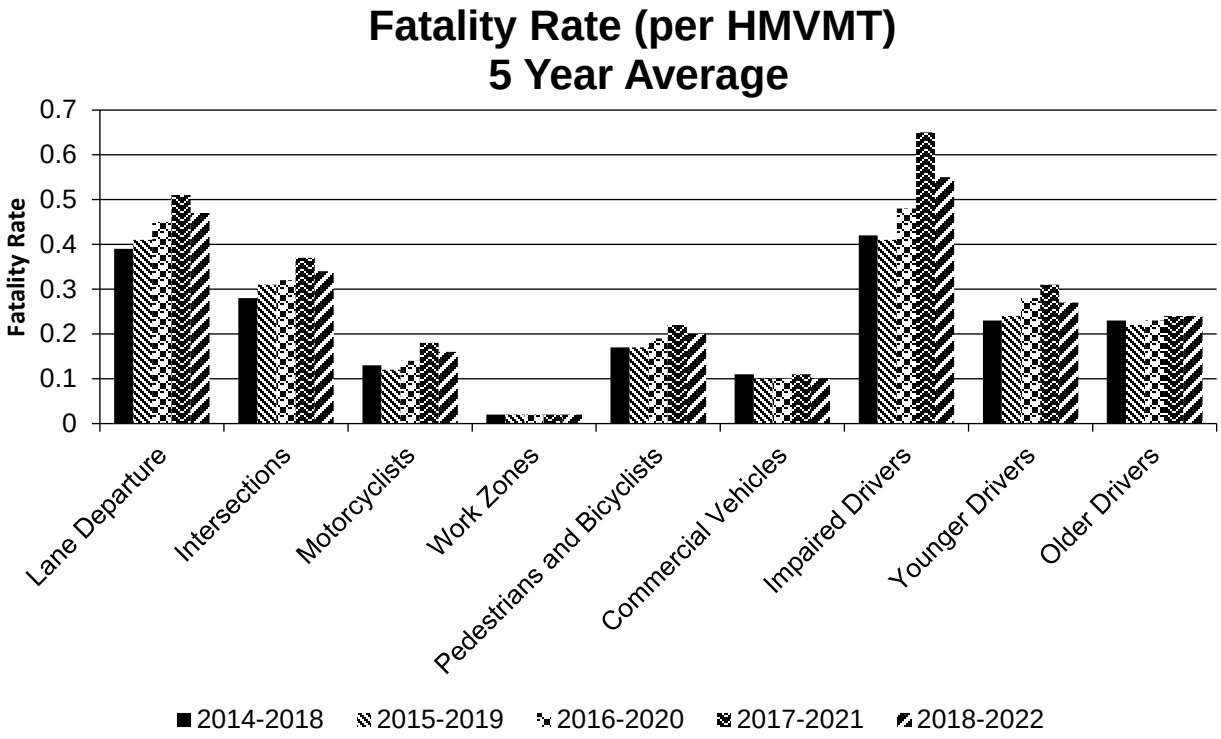
Present and describe trends in SHSP emphasis area performance measures.

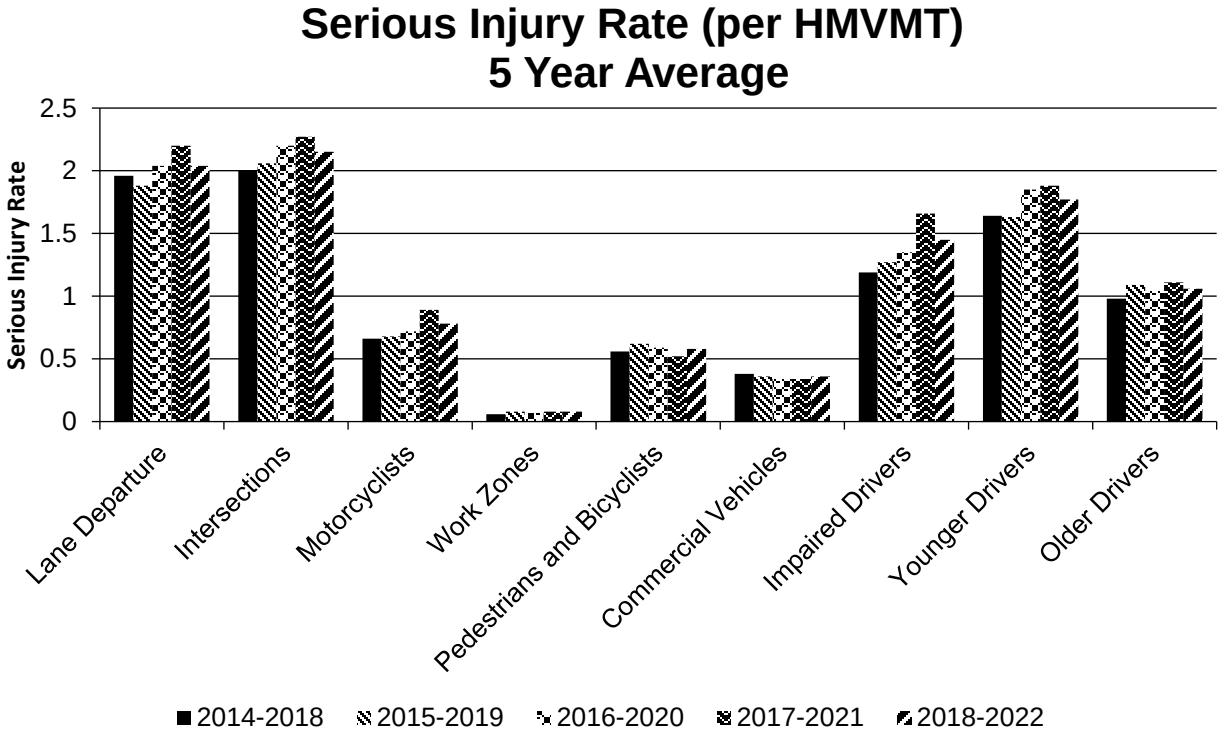
Year 2022

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	Run-off-road	451.6	1,969.4	0.47	2.04
Intersections	Intersections	322.6	2,072	0.34	2.15
Motorcyclists	All	150	752.6	0.16	0.78
Work Zones	All	16.4	77.6	0.02	0.08
Pedestrians and Bicyclists	All	196	556	0.2	0.58
Commercial Vehicles	All	100.4	345.6	0.1	0.36
Impaired Drivers	All	529	1,391.8	0.55	1.45
Younger Drivers	All	261.2	1,703.6	0.27	1.77
Older Drivers	All	232.8	1,026.8	0.24	1.06


Number of Fatalities
5 Year Average
Fatalities
600
500
400
300
200
100
0
Lane Departure
Intersections
Motorcyclists
Work Zones
Pedestrians and Bicyclists
Commercial Vehicles
Impaired Drivers
Younger Drivers
Older Drivers
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022


Number of Serious Injuries
5 Year Average
Serious Injuries
2500
2000
1500
1000
500
0
Lane Departure
Intersections
Motorcyclists
Work Zones
Pedestrians and Bicyclists
Commercial Vehicles
Impaired Drivers
Younger Drivers
Older Drivers
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022





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

No

MDOT did not during the reporting period. Speed feedback signs and safety messages on DMS were evaluated in 2021. Roundabouts and non-motorized crossing enhancements along higher speed corridors are being evaluated in 2023. Research is planned for the evaluation of lighting practices at crosswalks, sinusoidal shoulder trips and the impacts of Covid on traffic crashes and safety targets.

Project Effectiveness

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

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

We have made sinusoidal strips standard for non-freeway shoulders, an option for centerline and edgeline on non-freeways based on certain criteria, and need further investigation and discussion on freeway shoulders.

We rewrote section 6.05.11 of the Road Design Manual if you want to see all the options and criteria we now have for rumble/mumble strips.

MDOT continues to widen lane lanes to 6 inches on state trunkline. We expect to be completed by 2024.

Compliance Assessment

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

03/13/2023

What are the years being covered by the current SHSP?

From: 2023 To: 2026

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

2027

2023_2026_MI_SHSP_v7.pdf (michigan.gov)

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

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

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	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
ROADWAY SEGMENT	Segment Identifier (12) [12]	100	100					100	100	100	100
	Route Number (8) [8]	95									
	Route/Street Name (9) [9]	100	100								
	Federal Aid/Route Type (21) [21]	100	100								
	Rural/Urban Designation (20) [20]	100	100					100	100		
	Surface Type (23) [24]	100	100					100	33		
	Begin Point Segment Descriptor (10) [10]	100	100					100	100	100	100
	End Point Segment Descriptor (11) [11]	100	100					100	100	100	100
	Segment Length (13) [13]	100	100								
	Direction of Inventory (18) [18]										
	Functional Class (19) [19]	100	100					100	100	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	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Median Type (54) [55]	40	9								
	Access Control (22) [23]	100	100								
	One/Two Way Operations (91) [93]	100	100								
	Number of Through Lanes (31) [32]	100	100					100	100		
	Average Annual Daily Traffic (79) [81]	100	100					100	100		
	AADT Year (80) [82]	100	100								
	Type of Governmental Ownership (4) [4]	100	100					100	100	100	100
INTERSECTION	Unique Junction Identifier (120) [110]			100	100						
	Location Identifier for Road 1 Crossing Point (122) [112]			100	100						
	Location Identifier for Road 2 Crossing Point (123) [113]			100	100						
	Intersection/Junction Geometry (126) [116]										
	Intersection/Junction Traffic Control (131) [131]			21	6						
	AADT for Each Intersecting Road (79) [81]			100	100						
	AADT Year (80) [82]										
	Unique Approach Identifier (139) [129]			100	100						
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					100	100				
	Location Identifier for Roadway at					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	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Beginning of Ramp Terminal (197) [187]										
	Location Identifier for Roadway at Ending Ramp Terminal (201) [191]					100	100				
	Ramp Length (187) [177]					100	100				
	Roadway Type at Beginning of Ramp Terminal (195) [185]					85	100				
	Roadway Type at End Ramp Terminal (199) [189]					84	100				
	Interchange Type (182) [172]					100	100				
	Ramp AADT (191) [181]					100	100				
	Year of Ramp AADT (192) [182]					100	100				
	Functional Class (19) [19]					100	100				
	Type of Governmental Ownership (4) [4]					100	100				
Totals (Average Percent Complete):		**90.83**	**83.83**	**65.13**	**63.25**	**97.18**	**100.00**	**100.00**	**92.56**	**100.00**	**100.00**

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

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 is still continuing to collect the MIRE FDE data using the Roadsoft program updated by Michigan Technological University through 2023 and beyond. MDOT currently is on pace to have complete access to the MIRE FDE by September 30, 2026.

Optional Attachments

Program Structure:

2022 CFP Letter - Safety Section.pdf
FY 2022 Safety (HSIP and HRRR) Call Letter.pdf
MDOT Safety Programs Guide 10.22.pdf
Project Implementation:

Safety Performance:

Evaluation:

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.