IOWA

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2023 ANNUAL REPORT

Disclaimer: This report is the property of the State Department of Transportation (State DOT). The State DOT completes the report by entering applicable information into the Federal Highway Administration's (FHWA) Highway Safety Improvement Program (HSIP) online reporting tool. Once the State DOT completes the report pertaining to its State, it coordinates with its respective FHWA Division Office to ensure the report meets all legislative and regulatory requirements. FHWA's Headquarters Office of Safety then downloads the State's finalized report and posts it to the website (https://highways.dot.gov/safety/hsip/reporting) as required by law (23 U.S.C. 148(h)(3)(A)).

Photo source: Federal Highway Administration

Table of Contents

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 Iowa DOT Traffic and Safety Bureau has continued to develop and implement a data-informed safety program. Significant milestones since the last report have included:

-Updates and expansion of the SPF-based Potential for Crash Reduction (PCR) tool for the 2016-2020 period to include secondary segments to add to the existing statewide intersections and segments on the Primary system. Iowa DOT and Iowa State University research partners are working on updates to 2018-2022 segments and intersections, expected Fall 2023. The tool is also seeing across various stakeholders within the DOT and various City, County, MPO/RPA local agencies.

-Completion of HSIP Implementation Plan and identification of High Risk Rural Road (HRRR) Special Rule projects,

-SHSP Advisory Team working on updated Strategic Highway Safety Plan for 2023-2027 to be completed Fall 2023,

-Vulnerable User Assessment underway for 2023 submittal and inclusion in SHSP

-Statewide crash data process now fully updated with daily updates on publicly available web GIS-based Iowa Crash Analysis Tool (ICAT) and growth of unique ICAT users from statewide stakeholders.

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 state's HSIP funds are programmed through three different categories: District Initiatives, Statewide Initiatives, and Interstate High Contrast Pavement Markings (for 5-years FY2022-2027).

District Initiative projects are identified by the six districts, based on their local knowledge or results of a safety study combined with data-driven methods such as their District Road Safety Plan or the SPF-based Potential for Crash Reduction (PCR) tool developed for Primary segments and statewide intersections.**Statewide Initiative** projects are identified by Traffic and Safety Bureau staff based on research/study results, and can involve a mixture of reactive/site-specific and proactive/risk-based/systemic improvements, especially when they can be applied at multiple locations across various districts, or additional District projects. All projects are approved for funding by central office Traffic and Safety Bureau staff. District projects are approved for funding based on whether they were identified by their respective District Road Safety Plan, if a benefit-cost ratio exceeds one, or (most-often) based on the SPF-based Potential for Crash Reduction tool (High or Medium PCR Level). District projects are typically designed in-house, and statewide projects are sometimes designed by DOT or by an outside consultant. The 5-year **Interstate High Contrast Pavement Markings** plan is being developed with Traffic and Safety Bureau and Maintenance Bureau staff, and designed by relevant District staff. All projects are tracked by central office staff, including crashes, costs, and construction dates.

Where is HSIP staff located within the State DOT?

Operations

How are HSIP funds allocated in a State?

- Formula via Districts/Regions

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

Iowa utilizes State funds to address safety on local and tribal roads through the HSIP-Local and TSIP programs.

HSIP-Local (formerly HSIP-Secondary) addresses safety issues on the Secondary (county-owned) roadway system, and is focused on funding projects incorporating systemic, low- to medium-cost safety improvements. Typical countermeasures include rumble strips, grooved-in pavement markings, paved shoulders, improved signage, and guardrail updates. Beginning in FY23, funding for this program increased from $2 million to $5

million per year, and expanded to also include City applications. In addition to City corridors with rural cross sections similar to the prior County projects, additional City applications primarily address roadway reconfiguration (e.g. 4-lane to 3-lane conversions) and pedestrian crossing treatments (e.g. RRFBs and PHBs) - both consistent with the forthcoming Vulnerable Road User Assessment (VRU). The program is also providing local match for County and MPO/RPA SS4A Safety Action Plan development.

Additional safety improvements on other local roads are addressed via the state's Transportation Safety Improvement Program (TSIP). Eligible TSIP applicants include DOT, County, City, Institutional, and Tribal roadways. TSIP is a competitive, application-based program that annually awards approximately $8 million in State funds for safety projects on and off the State system. Funding is provided in three categories: Studies and Outreach ($0.5 million), Traffic Control Devices ($0.5 million), and the construction of larger infrastructure projects ('Site Specific', approx. $7 million).

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

- Districts/Regions
- Maintenance
- Traffic Engineering/Safety

Describe coordination with internal partners.

Most HSIP projects are designed and administered by staff in the six Iowa DOT Districts. Therefore, the Districts are consulted early and often in the HSIP planning process. Districts identify projects based on local knowledge combined with data-driven methods such as recommendations from the risk-factor based District Road Safety Plans and the SPF based Potential for Crash Reduction.

Approximately 80% of the HSIP project funding is designated to these "District Initiatives" (between 12-16% per district) which are submitted as candidates and selected based on funding availability and alignment with SHSP emphasis areas and strategies, most frequently Lane Departures and Intersections. A majority of funding goes toward addressing lane departure crashes through shoulder improvements and associated shoulder and centerline rumble strips. A variety of intersection projects were included this year, including skewed approach realignments, left- and right-turn lanes, median access reductions, roundabouts, and Reduced Conflict Intersection (RCI) improvements.

Interstate High Contrast pavement marking projects are coordinated with the DOT Maintenance Bureau, as are potential rumble strip shoulder and centerline retrofit projects. DOT Program Management Bureau also reviews the HSIP before submittal to FHWA.

Identify which external partners are involved with HSIP planning.

- FHWA

Describe coordination with external partners.

The State Safety Engineer and HSIP manager meet annually with FHWA Iowa Division personnel to review the state's HSIP approval process and update it, if necessary. FHWA Division staff and DOT Traffic and Safety Bureau staff also communicate through emails and phone calls throughout the year, as well as conferences and trainings, and regional multi-agency highway safety groups (called MDSTs), conferences, and in-field visits such as Road Safety Audits requested by various local agencies.

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

In June 2023, the Iowa DOT completed an FHWA HSIP Implementation Plan.

Program Methodology

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

Yes

The State HSIP Manual (2017 for FY 2019) will will receive minor updates in calendar year 2024. These will address the additional tools that have been developed at Iowa DOT such as the Safety Performance Function (SPF) based Potential for Crash Reduction (PCR) tool as it is further integrated into the project development process (discussed in Question 19), as well as the draft Safety Analysis Guide (December 2021), and other updates such as new Access Management Manual (December 2022), the updated SHSP in 2023, updated MUTCD expected 2023/24, and the release of AASHTO HSM 2.

Select the programs that are administered under the HSIP.

- HSIP (no subprograms)

Program: HSIP (no subprograms)

Date of Program Methodology:5/1/2017

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes • Other-with consideration of fatal and serious injury crashes	• Volume	• 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
- Other-Risk Factors
- 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?

- 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

Available funding:2
Cost Effectiveness:1

What percentage of HSIP funds address systemic improvements?

74

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

- High friction surface treatment
- Install/Improve Pavement Marking and/or Delineation
- Pavement/Shoulder Widening
- Rumble Strips
- Safety Edge
- Wrong way driving treatments

The boxes checked represent this year's (FY24) HSIP projects. HSIP funded projects from other years have addressed all of the other boxes at some point.

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
- Stakeholder input

In 2019 Iowa DOT produced a Planning Level Crash Reduction Factor (CRF) List for common improvements to summarize common improvements CRFs based on data from applicable studies on the FHWA CMF

Clearinghouse. This CRF List is used for uniform countermeasure CRF analysis in HSIP applications that are justified by B/C ratio. (As well as the State funded TSIP program described in Question 6).

Does the State HSIP consider connected vehicles and ITS technologies?

No

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.

Iowa is making steady progress for increasing incorporation of the Highway Safety Manual (HSM) in project development and design.

With respect to safety project candidate identification and development, safety performance functions (SPF) have been developed by category (and calibrated) for **Primary road segments** and for **all statewide Intersections** (that have AADT traffic data and at least one paved approach). In Fall 2023, **Secondary road segments** will be added which will assist in evaluation of the State funded local road safety improvements (see HSIP and TSIP discussion in Question 6).

In the PCR tool, these SPF values are compared with 5-year intersection/segment crash data (corrected using empirical bayes methodology) to develop Potential for Safety Improvement, referred to for Iowa DOT as "Potential for Crash Reduction" (PCR). This PCR tool is incorporated into a GIS webpage and has been updated for 2014-2018 and 2016-2020, with 2018-2022 updated currently in progress. This is being used by various DOT bureaus as well as local agencies and project consultants for data driven network screening and safety project prioritization.

Once project candidates are identified, intersection and segment crash distribution dashboards are being generated to compare individual intersection and segment crash distributions to similar locations within the same category, identify crash types that are over-represented, and thus identify potential countermeasures.

Although the state has been using crash modification factors (CMFs) for years, the number of CMFs available on the CMF clearinghouse has grown exponentially, and there remain many countermeasures for which a good CMF does not exist, or the most appropriate is difficult to select. Therefore, the need for state-specific CMFs was identified, and a list of approximately 70 commonly used CMFs was published in August 2019. This list will be updated as needed with refined values or new countermeasures, likely on a 2-4 year basis.

Finally, a consultant has developed a state-specific framework for conducting safety evaluations consistent with HSM Part C methods, via a spreadsheet tool. The rural two-lane, rural multilane, and urban/suburban arterial versions of the tool have been delivered to the state. These will not be used on every project but project candidates are being evaluated, such as alternatives analysis on Super-2 corridors and alternative intersection improvement projects (e.g. signals, roundabout, or RCI comparisons along with FHWA CAP-X and SPICE tools).

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$30,715,000	$32,337,081	105.28%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
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	$0	$0	0%
Totals	$30,715,000	$32,337,081	105.28%

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

0%

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

0%

State funds are used for local projects. (See Question 6 regarding $5 million HSIP-Local systemic program and $8 million TSIP program.)

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

0%

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

0%

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?

$17,892,874

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

There is an adequate supply of HSIP project candidates identified by the Districts and the Traffic and Safety Bureau. However, impediments to fully obligating programmed HSIP funds include cost estimates and development timelines between initial HSIP project identification and ultimate project design and bidding.Initial cost estimates tend to be high in order to account for project uncertainties and to avoid having to ask for more money at a later time.

Rapid changes in material availability have affected estimates differently depending on when in the year the project was bid. For example, ongoing shortage of steel cable have delayed high-tension cable guardrail (HTCG) median barrier projects in FY2022 and FY2023, so the FY2024 HSIP will be focusing more on other systemic treatments like friction, wrong-way driving, etc until those timelines return to normal.

Another impediment is uncertainty regarding internal design resources for more complicated intersection HSIP projects vs more 'standard' roadway departure HSIP projects, which can result in a need for Outside Services.

Project development timelines can be affected by multiple external forces including coordination, ROW, NEPA clearances, and unforeseen circumstances. These happen infrequently as we continue to work with project sponsors and project managers to improve the accuracy of cost estimates and to minimize time delays in order to obligate HSIP funds to the fullest extent.

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
HSIPX-000-T(228)--3L-00	Roadway	Rumble strips – center	57	Miles	$119912	$133236	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	2,000	55	State Highway Agency	Systemic	Lane Departure	Place centerline and/or shoulder rumble strips
HSIPX-001-6(43)--3L-57	Intersection geometry	Intersection geometry - other	1	Intersections	$197955	$219950	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	8,000	35	State Highway Agency	Systemic	Intersections	Signing and geometric design strategies
HSIPX-003-1(108)--3L-75	Shoulder treatments	Pave existing shoulders	4	Miles	$1647410	$1830455	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	3,410	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-010-1(87)--3L-84	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$2621654	$3577823	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	8,600	35	State Highway Agency	Systemic	Intersections	Implement alternative intersection designs
HSIPX-010-1(89)--3L-84	Intersection traffic control	Intersection signing –other	1	Intersections	$89155	$100636	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	8,600	35	State Highway Agency	Systemic	Intersections	Signing and geometric design strategies
HSIPX-010-1(90)--3L-84	Lighting	Intersection lighting	1	Intersections	$101304	$112560	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	8,600	35	State Highway Agency	Systemic	Intersections	Use systemic approaches to improve visibility and awareness of intersections
HSIPX-020-9(272)--3L-31	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$355548	$395053	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	18,600	65	State Highway Agency	Systemic	Intersections	Signing and geometric design strategies
HSIPX-030-3(47)--3L-37	Shoulder treatments	Pave existing shoulders	9	Miles	$1659809	$1844232	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	3,870	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-030-5(298)--3L-64	Shoulder treatments	Pave existing shoulders	7	Miles	$3131825	$3479806	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	10,800	65	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-058-1(101)--3L-07	Shoulder treatments	Pave existing shoulders	5	Miles	$1196863	$1329848	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	5,200	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders

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
HSIPX-059-5(64)--3L-24	Shoulder treatments	Pave existing shoulders	5	Miles	$1127942	$1253269	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	3,170	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-062-1(29)--3L-49	Shoulder treatments	Pave existing shoulders	7.5	Miles	$995972	$1106636	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	2,020	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-064-1(30)--3L-53	Shoulder treatments	Pave existing shoulders	9.9	Miles	$1139702	$1266335	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	2,760	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-069-1(61)--3L-27	Shoulder treatments	Pave existing shoulders	19.3	Miles	$4404557	$4893952	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,460	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-076-2(66)--3L-03	Shoulder treatments	Pave existing shoulders	11.8	Miles	$2476918	$2752131	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	3,670	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-136-1(109)--3L-23	Shoulder treatments	Pave existing shoulders	8.8	Miles	$1122957	$1247730	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,230	55	State Highway Agency	Systemic	Lane Departure	Install or widen paved shoulders
HSIPX-148-1(39)--3L-87	Roadway	Roadway narrowing (road diet, roadway reconfiguration)	1	Miles	$696679	$774088	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	2,710	35	State Highway Agency	Systemic	Intersections	Signing and geometric design strategies
HSIPX-151-4(133)--3L-53	Intersection geometry	Intersection realignment	1	Intersections	$1850063	$2055626	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	12,800	65	State Highway Agency	Systemic	Intersections	Reduce conflict points, geometric design strategies
HSIPX-191-1(29)--3L-78	Shoulder treatments	Pave existing shoulders	8	Miles	$1200388	$1333765	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,650	55	State Highway Agency	Systemic	Lane Departure	Change Intersection Geometry
IHSIPX-035-2(488)56--08-91	Roadway delineation	Improve retroreflectivity	16	Miles	$536488	$596098	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	28,800	70	State Highway Agency	Systemic	Lane Departure	Systemic approaches to improve visibility
IHSIPX-080-1(544)50--08-15	Roadway delineation	Improve retroreflectivity	23	Miles	$452934	$503260	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	23,100	70	State Highway Agency	Systemic	Lane Departure	Systemic approaches to improve visibility
IHSIPX-080-2(265)86--08-01	Roadway delineation	Improve retroreflectivity	11.2	Miles	$264602	$294002	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	25,800	70	State Highway Agency	Systemic	Lane Departure	Systemic approaches to improve visibility

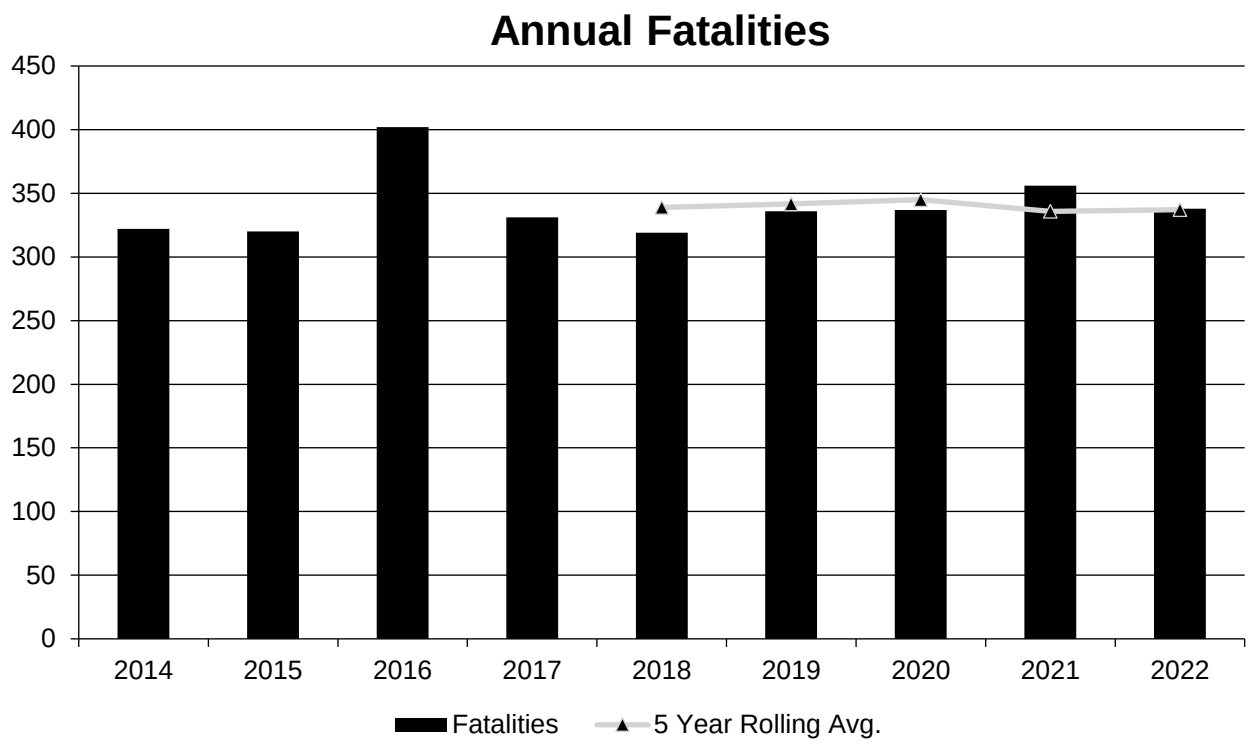
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
IHSIPX-080-2(266)97--08-61	Roadway delineation	Improve retroreflectivity	21.8	Miles	$630871	$700968	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	40,600	70	State Highway Agency	Systemic	Lane Departure	Systemic approaches to improve visibility
IHSIPX-080-3(321)130--08-77	Roadway delineation	Improve retroreflectivity	7.4	Miles	$352014	$391127	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	96,000	65	State Highway Agency	Systemic	Lane Departure	Systemic approaches to improve visibility
IHSIPX-235-2(683)0--08-77	Roadway delineation	Improve retroreflectivity	10.6	Miles	$449110	$404199	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	100,900	60	State Highway Agency	Systemic	Lane Departure	Systemic approaches to improve visibility
IHSIPX-074-1(293)0--08-82	Roadside	Barrier – cable	4	Miles	$920063	$1022292	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	22,900	65	State Highway Agency	Systemic	Roadway Departure	Continue median cable barrier installations
IHSIPX-029-5(265)89--08-43	Roadside	Barrier – cable	6.1	Miles	$732838	$814265	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	14,600	70	State Highway Agency	Systemic	Roadway Departure	Continue median cable barrier installations
IHSIPX-029-6(310)128--08-97	Roadside	Barrier – cable	14.5	Miles	$1861546	$2068385	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	17,900	70	State Highway Agency	Systemic	Roadway Departure	Continue median cable barrier installations

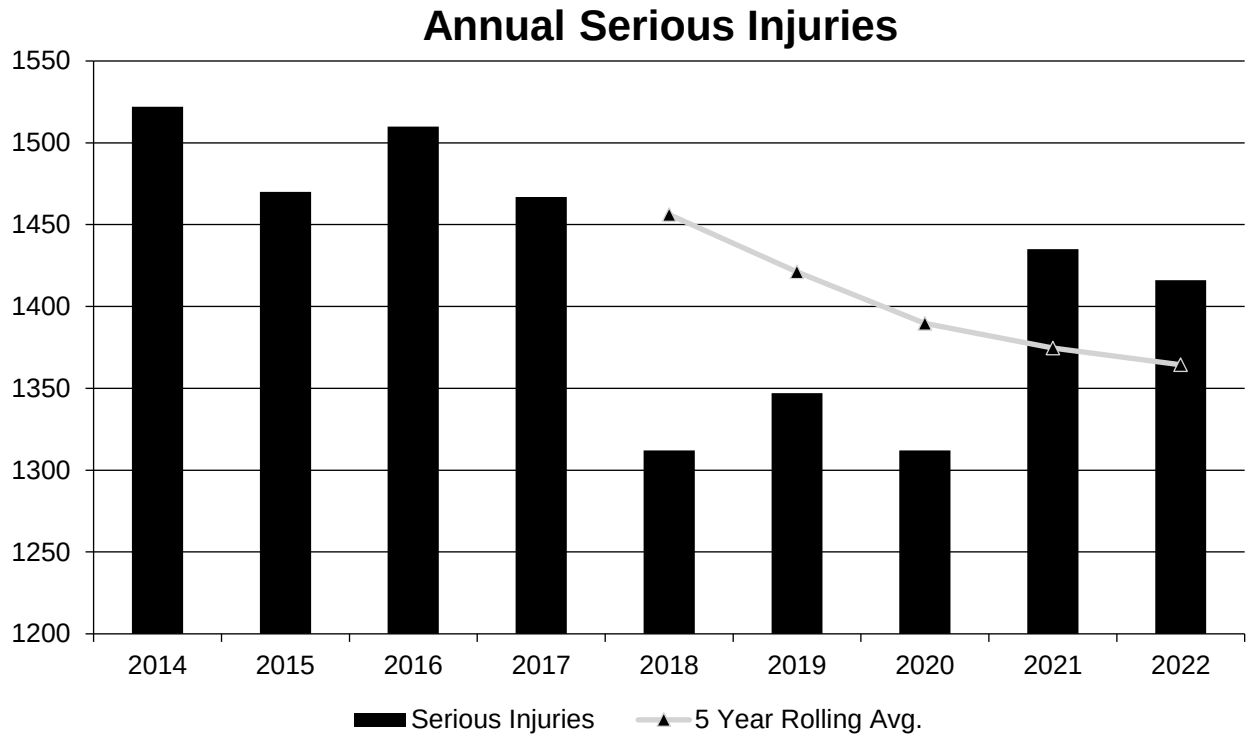
Safety Performance

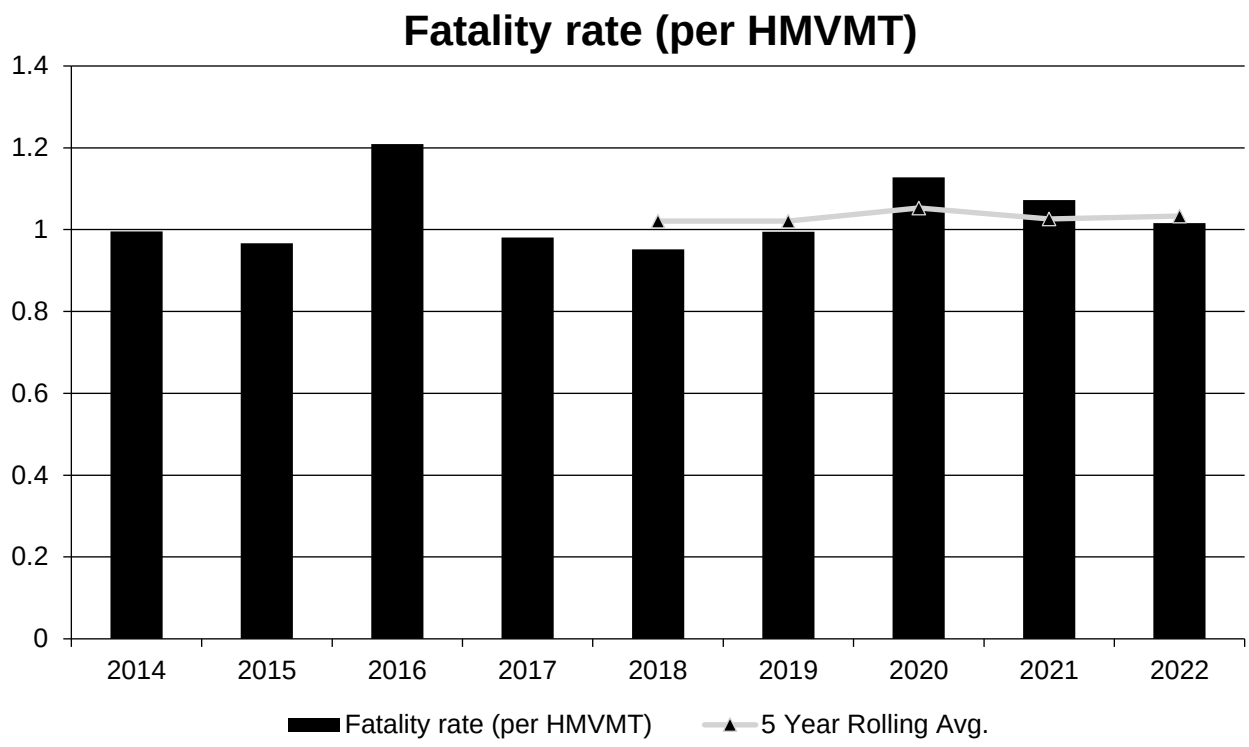
General Highway Safety Trends

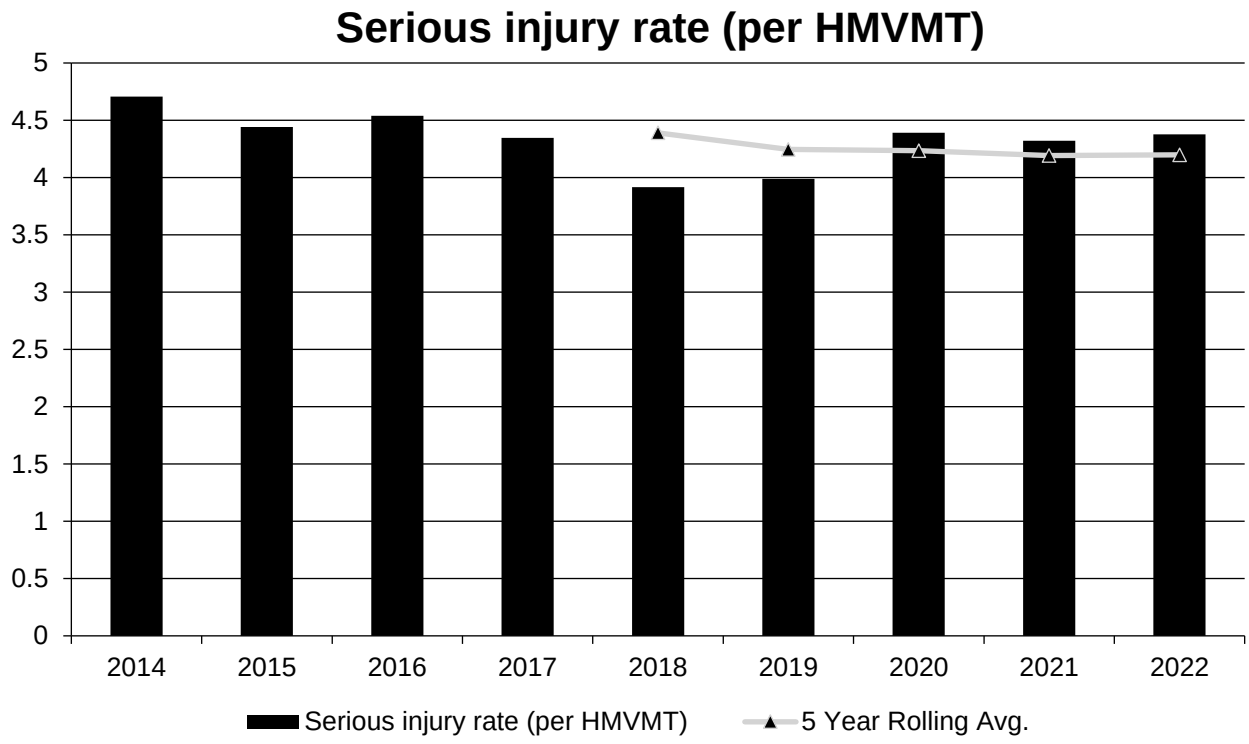
Present data showing the general highway safety trends in the State for the past five years.

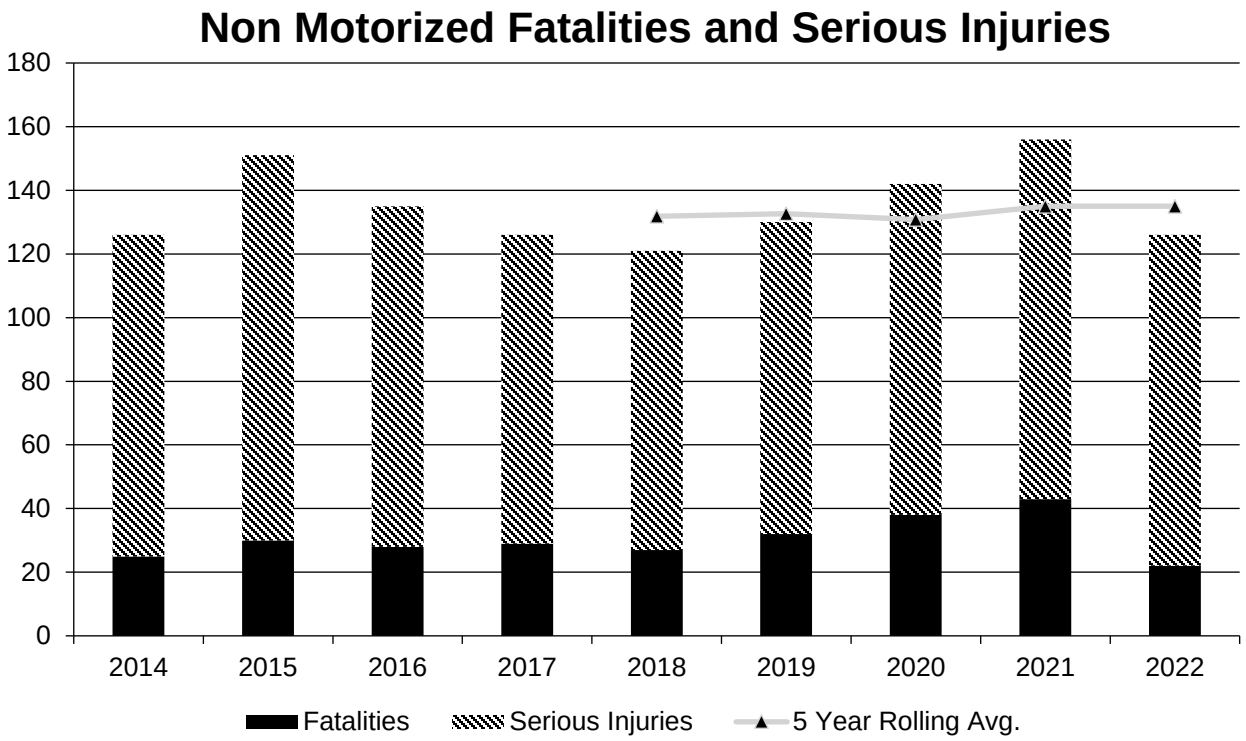
PERFORMANCE MEASURES	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fatalities	322	320	402	331	319	336	337	356	338
Serious Injuries	1,522	1,470	1,510	1,467	1,312	1,347	1,312	1,435	1,416
Fatality rate (per HMVMT)	0.996	0.967	1.209	0.981	0.952	0.995	1.128	1.072	1.016
Serious injury rate (per HMVMT)	4.707	4.440	4.540	4.347	3.916	3.988	4.391	4.320	4.376
Number non-motorized fatalities	25	30	28	29	27	32	38	43	22
Number of non-motorized serious injuries	101	121	107	97	94	98	104	113	104


Annual Fatalities
450
400
350
300
250
200
150
100
50
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
1550
1500
1450
1400
1350
1300
1250
1200
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)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
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	20.6	67		
Rural Principal Arterial (RPA) - Other Freeways and Expressways				
Rural Principal Arterial (RPA) - Other	48.6	143		
Rural Minor Arterial	29.8	99.4		
Rural Minor Collector	23.6	76.4		
Rural Major Collector	65.8	239.6		

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	39.8	169.6		
Urban Principal Arterial (UPA) - Interstate	13	52.4		
Urban Principal Arterial (UPA) - Other Freeways and Expressways				
Urban Principal Arterial (UPA) - Other	31.2	127.8		
Urban Minor Arterial	26.6	165.8		
Urban Minor Collector				
Urban Major Collector	12.2	71		
Urban Local Road or Street	21.4	138		
State Highway Agency				
County Highway Agency				
City or Municipal Highway Agency				

Year 2022

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	153.2	523.6	0.75	2.57
County Highway Agency	110.4	416.4	2.03	7.68
Town or Township Highway Agency				
City or Municipal Highway Agency	54.2	330	0.8	4.87
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				

Safety Performance Targets

Safety Performance Targets

Calendar Year 2024 Targets *

Number of Fatalities:352.6

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

A trendline analysis was performed with fatal crash data from 2001-2022, and an integrated moving average model was developed with 70-97.5% prediction intervals/confidence levels to estimate how much risk would be associated with each set of predictions. This is consistent with procedures since 2017. For the forecast values in 2024, our working group selected an 85% confidence level. The 5-year rolling average target for 2020-2024 is based on crash history from 2020-2022, the forecast value for 2023, and the upper 85% prediction interval/confidence level value for 2024.

Number of Serious Injuries:1419.8

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

A trendline analysis was performed with fatal crash data from 2001-2022, and an integrated moving average model was developed with 70-97.5% prediction intervals/confidence levels to estimate how much risk would be associated with each set of predictions. This is consistent with procedures since 2017. For the forecast values in 2024, our working group selected an 85% confidence level. The 5-year rolling average target for 2020-2024 is based on crash history from 2020-2022, the forecast value for 2023, and the upper 85% prediction interval/confidence level value for 2024.

Fatality Rate:1.080

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

A trendline analysis was performed with fatal crash data from 2001-2022, and an integrated moving average model was developed with 70-97.5% prediction intervals/confidence levels to estimate how much risk would be associated with each set of predictions. This is consistent with procedures since 2017. For the forecast values in 2024, our working group selected an 85% confidence level. The 5-year rolling average target for 2020-2024 is based on crash history from 2020-2022, the forecast value for 2023, and the upper 85% prediction interval/confidence level value for 2024.

Serious Injury Rate:4.344

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

A trendline analysis was performed with fatal crash data from 2001-2022, and an integrated moving average model was developed with 70-97.5% prediction intervals/confidence levels to estimate how much risk would be associated with each set of predictions. This is consistent with procedures since 2017. For the forecast values in 2024, our working group selected an 85% confidence level. The 5-year rolling average target for 2020-2024 is based on crash history from 2020-2022, the forecast value for 2023, and the upper 85% prediction interval/confidence level value for 2024.

Total Number of Non-Motorized Fatalities and Serious Injuries:138.2

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

A trendline analysis was performed with fatal crash data from 2001-2022, and an integrated moving average model was developed with 70-97.5% prediction intervals/confidence levels to estimate how much risk would be associated with each set of predictions. This is consistent with procedures since 2017. For the forecast values in 2024, our working group selected an 85% confidence level. The 5-year rolling average target for 2020-2024 is based on crash history from 2020-2022, the forecast value for 2023, and the upper 85% prediction interval/confidence level value for 2024.

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

Each May, Iowa DOT's Safety Target working group reviews the safety performance target methodology and new data, and begins the target setting process and stakeholder coordination. This group includes members from various Iowa DOT Bureaus - Traffic and Safety, Systems Planning, and Organizational Improvement. The group also coordinates with the Governor's Traffic Safety Bureau (GTSB) in the Iowa Department of Public Safety. In the past the DOT and GTSB targets were identical. Due to legislative changes a joint Final Rule was published by FHWA and NHTSA in June that FY24 safety targets would differ for FHWA and NHTSA reporting agencies such as the Iowa DOT and Iowa GTSB.

In June a Draft memo summarizing the targets and methodology was provided for review and comment and provided the targets to the the state MPOs and RPAs. Their limited comments were supportive and encouraged continued coordination, especially with upcoming SS4A plans. Their comments were incorporated into the Final 2020-2024 safety performance targets.

Does the State want to report additional optional targets?

No

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	337.8	337.2
Number of Serious Injuries	1327.2	1364.4
Fatality Rate	1.037	1.033
Serious Injury Rate	4.073	4.198
Non-Motorized Fatalities and Serious Injuries	129.8	135.0

Two of the 5-year targets in this table were met for Fatality and Fatality Rate, and three of the targets were not met by modest amounts from +2 to +4% for Serious Injuries, Serious Injury Rate, and Non-Motorized Fatalities and Serious Injuries.

While calendar year 2022 showed improvement over 2021 with values more comparable to the steady or declining values from 2013-2020, calendar year 2023 is on track to be a higher year for fatal and serious injury crashes. Like many of our peer states, Iowa is experiencing an increase in speed-related, multi-vehicle, and unprotected (seat belts or helmets) crashes. While pedestrian/bicycle crashes are expected to decline again for the 2nd year in row, this is being offset by a rise in UTV/ATV fatalities.

A common factor in these concerning increases is a regression in safe driver behavior. The Iowa DOT public awareness campaign 'What Drives You' will be included in the FY2024 HSIP program, and multiple multi-year low-cost systemic 'statewide' projects are planned for FY 2024-2027 including:
-a series of centerline rumble strip projects to finish the statewide 2-lane primary network
-multi-year two-lane corridor 6-inch wide pavement marking projects, likely over 2-3 program years
-Phase II of wrong-way driving signing and marking at interchanges and intersections (FY 2024).

An increasing number of roundabout and RCI/RCUT improvements are in development for FY2024-FY27 HSIP program development with more acceptance and interest being shown by Districts and local communities, and a pilot safety corridor program focused on signs, markings, and increased enforcement is in development (not HSIP) beginning Fall 2023.

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	56	51	51	50	51	66	61
Number of Older Driver and Pedestrian Serious Injuries	127	156	127	142	119	150	139

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Benefit/Cost Ratio

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

As a summary since fiscal year 2001, the state's HSIP expenditures have resulted in a benefit-cost ratio of approximately 6 to 1. Some of the highest B-C ratios resulted from extremely low-cost improvements such as supplemental roadway signs, lighting, or roadside clearing. An updated HSIP effectiveness project has been ongoing over the past couple years with office intern support to compute HSIP project and program B/C information over the past 10 years. This effort is systematically inventorying historic HSIP project cost, milepost limits, and construction periods to build a database for project limits and before/after analysis periods. Iowa Crash Analysis Tool (ICAT) GIS crash frequency/severity data and updated societal crash costs will then be used for the updated B/C analysis. The project database will include HSIP project Improvement Category, Subcategory, and Functional Classification information for further review.

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

- HSIP Obligations
- Increased awareness of safety and data-driven process
- Increased focus on local road safety
- More systemic programs
- Organizational change
- Policy change

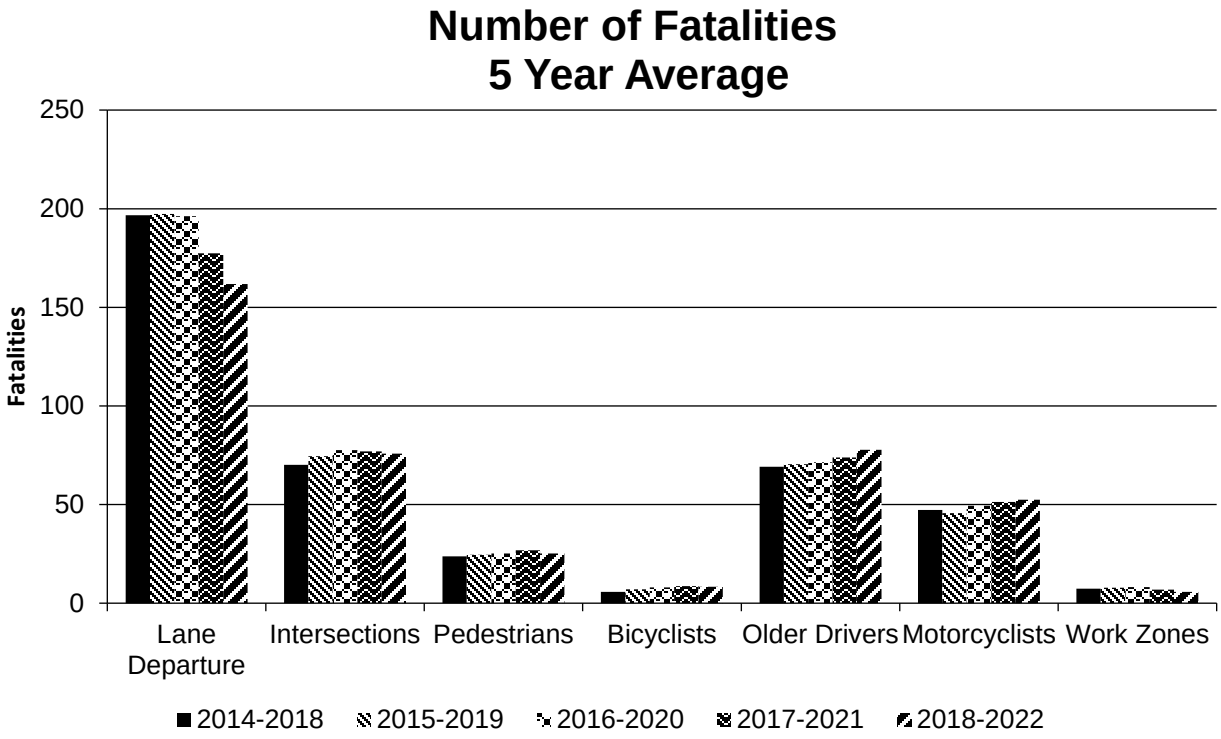
Effectiveness of Groupings or Similar Types of Improvements

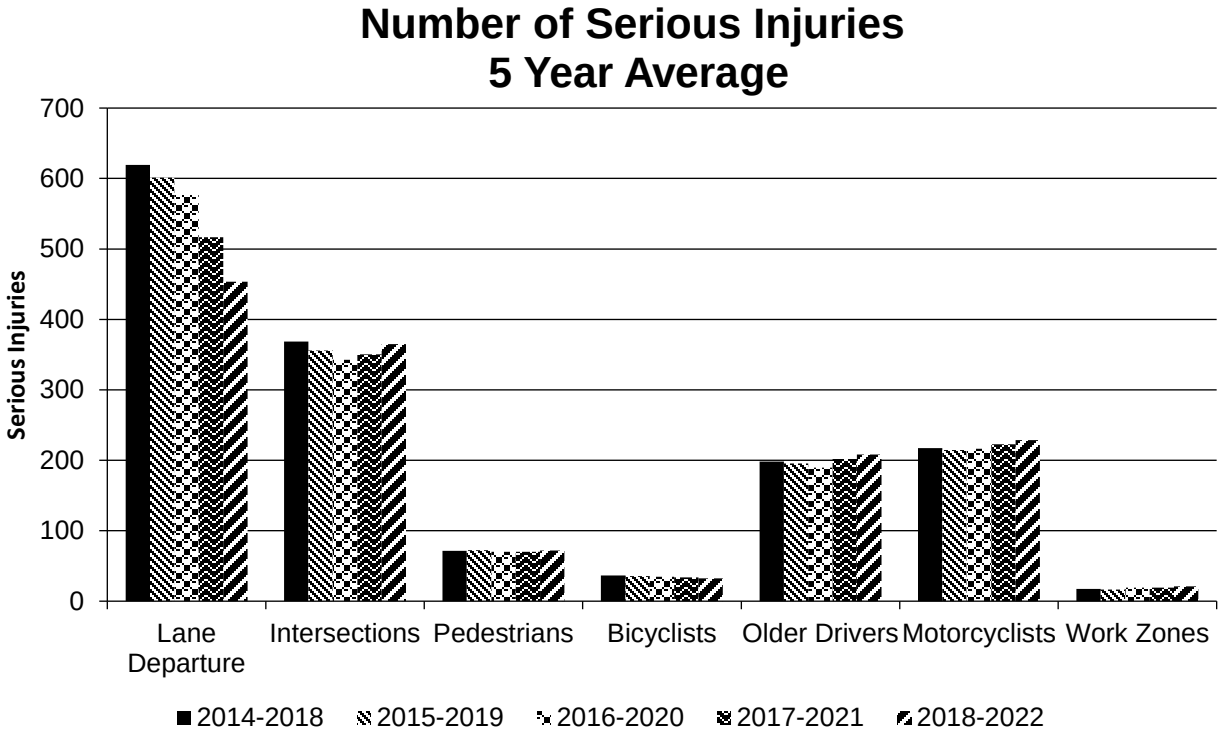
Present and describe trends in SHSP emphasis area performance measures.

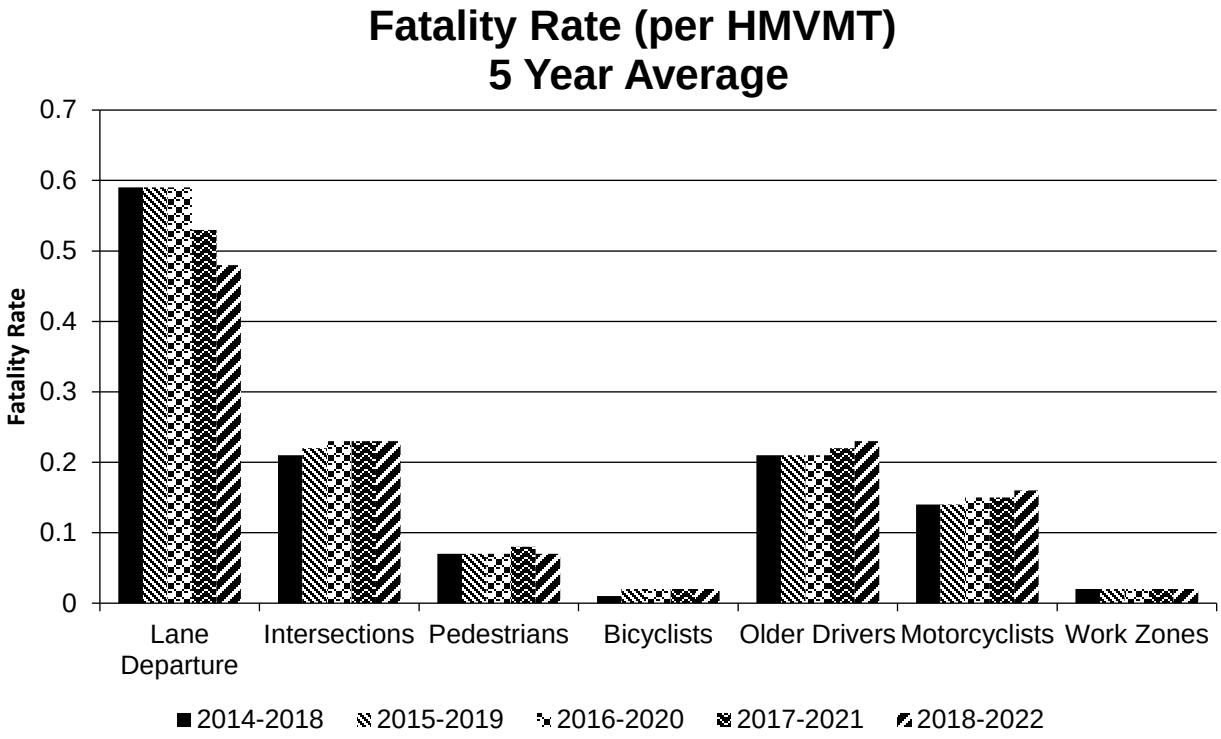
Year 2022

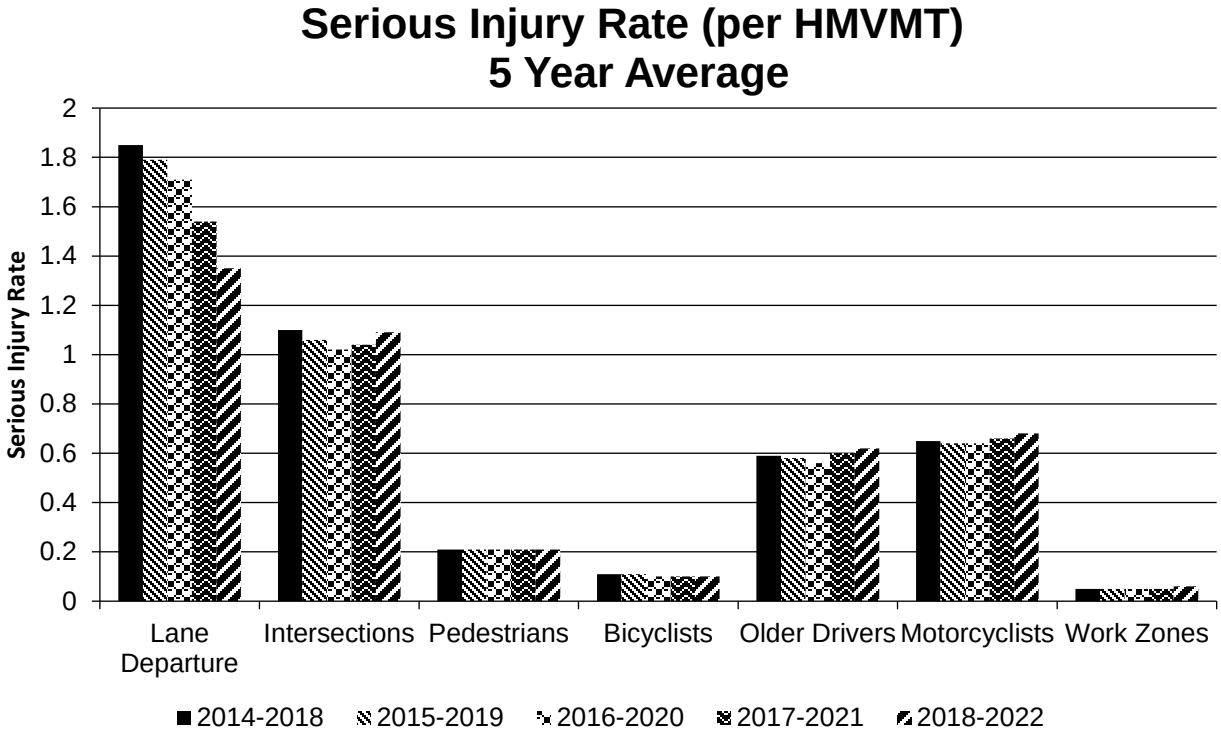
SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Lane Departure		161.8	453.4	0.48	1.35
Intersections		75.8	365	0.23	1.09
Pedestrians		25.2	72	0.07	0.21
Bicyclists		8.4	32.4	0.02	0.1
Older Drivers		77.8	208	0.23	0.62

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)
Motorcyclists		52.4	228.6	0.16	0.68
Work Zones		5.8	21	0.02	0.06


Number of Fatalities
5 Year Average
Fatalities
250
200
150
100
50
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022


Number of Serious Injuries
5 Year Average
Serious Injuries
700
600
500
400
300
200
100
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022


Fatality Rate (per HMVMT)
5 Year Average
Fatality Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022


Serious Injury Rate (per HMVMT)
5 Year Average
Serious Injury Rate
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022

Project Effectiveness

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

Compliance Assessment

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

12/20/2018

What are the years being covered by the current SHSP?

From: 2019 To: 2023

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

2023

The updated 2023-2027 Strategic Highway Safety Program (SHSP) is nearing completion.

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]	100	100								
	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	100		
	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]	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
	Functional Class (19) [19]	100	100					100	100	100	100
	Median Type (54) [55]	100	100								
	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]			100	100						
	Intersection/Junction Traffic Control (131) [131]			100	100						
	AADT for Each Intersecting Road (79) [81]			100	100						
	AADT Year (80) [82]			100	100						
	Unique Approach Identifier (139) [129]			100	100						
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					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
	Location Identifier for Roadway at Beginning of Ramp Terminal (197) [187]					100	100				
	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]					100	100				
	Roadway Type at End Ramp Terminal (199) [189]					100	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):		**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**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.

No actions are required at this time. The State of Iowa is already compliant.

Optional Attachments

Program Structure:

HSIP Manual FINAL FY 19.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.