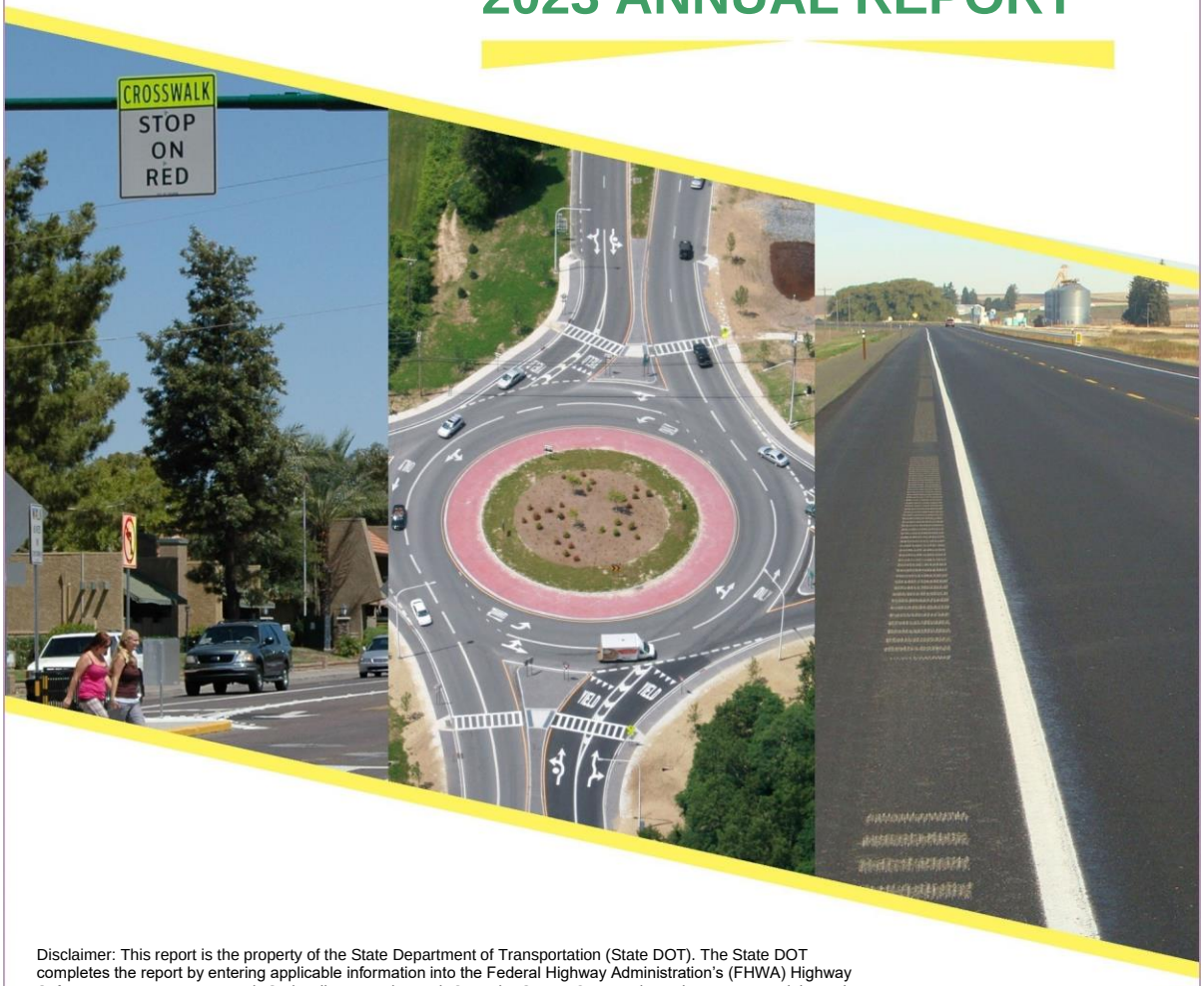
UTAH

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

From 2014-2016, the State of Utah experienced an increase in traffic fatalities each year. The 2017-2019 period marked a return to our past long-term downward trends in fatalities. Suspected serious injury crashes peaked in 2015 and then trended downward through 2019. However, 2020 and 2021 experienced significantly higher numbers of fatal and suspected serious injury crashes than in previous years, resulting in higher totals for both metrics than at any other time in the last decade. These increases mirror trends seen in other states during the COVID-19 pandemic and in the year that followed. Both fatal and suspected serious injury crashes decreased substantially in 2022, but the numbers of both metrics remained substantially higher than any other year in the last decade prior to 2020. We are hopeful that our efforts to prioritize safety projects with the greatest potential to reduce fatalities and suspected serious injuries will lead to a resumption of downward trends in those crash types in future years.

We continue to use both crash analysis and systemic modeling to identify the projects most likely to reduce fatalities and suspected serious injuries. We modified our project selection process in 2019 to fund the projects with the highest benefit-cost (B/C) ratios even if doing so results in HSIP funding not being allocated to each region of the state evenly. The first three years of this change have proven to be successful on the basis of projects with higher estimated B/C ratios being selected. We expect that continuing along this path will lead to the best projects being funded each year. The first batch of projects identified through this modified selection methodology were advertised in FY23 and will be constructed over the course of the next year.

During FY23, UDOT also created a calibrated predictive model of all State-managed roadways. The calibration is based on safety performance functions from the Highway Safety Manual. This model will allow UDOT to quantify the safety benefits of systemic countermeasures for selection by region offices if the countermeasure fits within the regions' future plans. It is anticipated that this model will be available for project selection purposes in FY24. The first round of systemic countermeasures focus on addressing roadway departure type crashes, including project types such as rumble strips, median barrier, raised median, horizontal curve treatments, and enhanced pavement friction treatments. A new round of systemic treatments is also being developed for intersections.

Also in FY23, UDOT made an important commitment to Vulnerable Road Users (VRU) by deciding to allocate a minimum of 15% of the total annual HSIP budget each year to projects that address VRU crashes. This commitment applies for the foreseeable future regardless of whether or not Utah's crash data triggers the federal VRU penalty requirement for any given year. UDOT is also working to complete the federally-required VRU safety assessment and will have that submitted prior to the November 15, 2023 deadline.

The FAST Act approved by Congress six years ago removed our ability to fund education and enforcement efforts with HSIP funds. We used State funds to continue these programs while the FAST Act was in effect. The Bipartisan Infrastructure Law restored our ability to use HSIP funds for education and enforcement purposes, so in FY23 UDOT resumed using federal funds for efforts such as the Zero Fatalities campaign.

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.

UDOT's Safety Programs Engineer (located within the Traffic & Safety Division) oversees HSIP activities within Utah. This person is responsible for setting the policies and procedures required to fulfill federal HSIP mandates. The UDOT region offices also play a major role in the development and implementation of HSIP projects. They work in concert with the UDOT Traffic & Safety Division to identify potential project locations, submit HSIP funding applications, and participate in the screening and prioritization process. Once projects are selected and funded in each region, the region offices take ownership of project delivery, assigning project managers, and proceeding according to standard federal environmental, design, and construction processes.

HSIP funds can be used for infrastructure improvements on any publicly owned roadway. Any local agency may apply for HSIP funding as long as it controls the right-of-way for the location in question. However, the Traffic & Safety Division researches the crash history at these locations just as they do with projects developed internally. In order for HSIP funds to be used, all locations must show either a proven crash history or have characteristics that conform to systemic situations that UDOT has identified as a funding priority. UDOT also works with Metropolitan Planning Organizations to help them integrate safety into their long-range planning efforts.

The project process includes the following steps:

- Crash data evaluation and coordination with region offices to identify candidate projects.
- Analysis of candidate projects to determine anticipated benefit/cost ratios.
- Joint prioritization and selection of projects between the Central Traffic & Safety office and the region offices.
- Programming of projects into discrete funding years.
- Assignment of project managers and beginning of design process.
- Advertisement and construction.
- Evaluation based on three years of crash data before and after construction.
- Reporting in the annual HSIP report.

Additionally, UDOT began during FY20 to implement a new procedure that took effect beginning in FY23. UDOT's four region offices historically were prorated a percentage of Utah's HSIP funds based on the relative numbers of severe crashes that occur within each region. The region offices were given discretion to prioritize their funding allocation to projects of their choosing as long as those projects had an estimated benefit-cost ratio greater than 1.0. This historic funding allocation model continued through FY22. Beginning in FY23, however, regions are not given a set funding allocation. Instead, funding is prioritized based on projects' benefit-cost ratio. This means that the projects most likely to reduce severe crashes will be funded regardless

of location. The Traffic and Safety Division believes that this new process will lead to fewer severe crashes and help Utah best meet the Zero Fatalities goal.

Where is HSIP staff located within the State DOT?

Operations

How are HSIP funds allocated in a State?

- Central Office via Statewide Competitive Application Process

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

Local roads are eligible for HSIP funds if projects meet program requirements. UDOT currently lacks comprehensive roadway data for local roads (non-State and non-Federal Aid) that would make it easier to compare relative safety needs on State roads and local roads, especially for systemic treatments. However, efforts are underway to work with other State agencies, local governments, and emergency dispatch centers to develop more complete roadway inventory data on local roads. In the meantime we will continue to perform hot-spot analysis on all public roads, including local roads. Once we identify a hotspot location and potential countermeasures, we approach the local government to assess their willingness to proceed with an HSIP-funded safety project.

UDOT performs crash analysis on non-State Federal Aid routes and accepts applications from local agencies for HSIP funding consideration on all public roads. We also apply the usRAP safety protocol to select non-State Federal Aid and local routes. UDOT completed coding for all Federal-aid routes in all counties of the state during the FY21 period.

Additionally, near the end of FY22, UDOT senior leadership made a commitment to collaborating more closely with local municipalities towards the shared goal of improving roadway safety. Going forward, UDOT will be working closely with local governments to provide better insights from crash data and other traffic safety support. Some of this collaboration has been happening already. Local agencies are encouraged to work with their respective UDOT Region Traffic & Safety staff members to review safety concerns and prepare applications for HSIP funding when warranted. HSIP applications submitted for local road projects are ultimately evaluated against all other HSIP applications based on estimated benefit-cost ratio.

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

Describe coordination with internal partners.

Planning

UDOT uses three methods to plan HSIP projects. For the first method, the Traffic & Safety Division works throughout the year with each region to determine their priority projects for HSIP funding consideration. The

Traffic & Safety Division then screens the crash data, traffic data, and input from the region offices to determine whether each project meets HSIP eligibility criteria.

For the second method, the Traffic & Safety Division employs a network-wide approach to identify projects. This is done by looking at crash and roadway attribute data from a statewide perspective. UDOT has several efforts underway to identify projects systemically and through network screening tools, including the usRAP model and BYU crash prediction model. During FY23, UDOT also created a calibrated predictive model of all State-managed roadways. The calibration is based on SPFs from the HSM. This will allow UDOT to quantify the safety benefits of systemic countermeasures for selection by region offices if the countermeasure fits within their future plans. It is anticipated that this model will be available for implementation in FY24. The first round of systemic countermeasures focused on roadway departure type crashes including rumble strips, median barrier, raised median, horizontal curve treatments, and enhanced pavement friction treatments. Currently a new round of systemic treatments is being developed for intersections. These efforts should be ready for use in FY24.

Finally the Traffic & Safety Division continues to incorporate its Intersection Control Evaluations (ICE) efforts for intersections requested for study by the region offices. This evaluation effort may lead to recommended changes that qualify for HSIP funding and helps to provide a broader approach to intersection safety than methods used in the past.

Design

After projects are programmed, project managers from the applicable UDOT region offices are assigned to each project. These project managers then shepherd the projects through UDOT's standard federal environmental, design, and construction processes. Project managers generally invite Traffic & Safety staff to attend scoping and design review meetings to make sure that the safety elements are properly incorporated into the project.

Maintenance & Operations

Each region office works with their maintenance and operations staff to give them an opportunity to suggest safety projects based on their experience maintaining the state roadway network every day. Periodic meetings are held between region traffic and safety engineers and maintenance crews. Their round of meetings in the fall is where engineers specifically solicit safety project ideas from maintenance staff. Following these meetings, region traffic and safety engineers submit safety project applications for projects they believe merit funding. These applications are then reviewed by Central Traffic & Safety as described above.

Access to Data

In order to assist each of our partners in this process, we have developed an online crash visualization and analysis tool so everyone has equal access to safety data. Partners include cities and MPO personnel.

Identify which external partners are involved with HSIP planning.

- Academia/University
- FHWA
- Governors Highway Safety Office
- Local Government Agency
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)
- Other-SHSP Partners

Describe coordination with external partners.

Academia

UDOT has active and ongoing partnerships with Brigham Young University (BYU), the University of Utah (UofU), and Utah State University (USU) to further safety work in Utah. BYU has worked with UDOT over the past several years to develop and continually refine Bayesian crash predictive models that show where crashes are over-represented. Each year BYU provides model output reports to the region offices. The reports show potential safety project locations and countermeasures for their consideration.

In FY23 UDOT and BYU partnered to develop network level SPFs for use in their online visualization and analysis software. These SPFs will be used as part of the network analysis tools for state routes comparing the predicted crashes with the observed crashes for prioritization. This research also included the statistical analysis of severity distributions by roadway type for use with the predicted crashes.

The UofU has been working with UDOT the last few years to improve the statewide crash database, including the addition of redacted crash narratives and crash diagrams to the accessible crash data. Efforts have focused on recent years and severity of crashes. Over time the goal is to have this data available for all crashes submitted to the State. The UofU also continues to expand the usRAP model on both state and non-State roads. They completed coding of all federal-aid routes in all counties of the state in the FY21 period. In FY23 and into FY24 they are updating and calibrating the usRAP data based on the MPO boundaries to better assist with their Safe Streets for All (SS4A) efforts.

UDOT has used USU to conduct research into materials that could be used to educate first responders about the limitations of automated driving systems. UDOT began another partnership with Utah State in FY23 to analyze skid data for potential safety applications.

FHWA

We work closely with the Safety Operations Engineer in the local FHWA office to ensure that we are complying with appropriate guidelines in our implementation of the HSIP. We routinely involve him in coordination meetings with the region offices so that he stays informed about the projects we are selecting and implementing with our HSIP funds.

Governor's Office of Highway Safety

The Utah Highway Safety Office (HSO) is housed within the Department of Public Safety. We hold regular meetings involving the HSO to ensure coordination of data, funding, and strategies for our respective programs.

MPOs

The MPOs in Utah have been very motivated to integrate safety into their planning process. UDOT has tried to use several different tools to accomplish this goal, with mixed results. During the past couple of years we have made significant headway by introducing our MPO partners to the usRAP safety model and showing how it can be used as a regional safety planning tool. Specific conversations were held with Cache MPO in 2017 and Mountainland Association of Governments (MAG) in 2018. During the FY21 period, coding of all necessary usRAP roadway attributes was completed for all federal aid routes in all counties across the state. This effort was refreshed in FY23 by coding and calibrating the data to MPO boundaries in order to help with the SS4A programs.

SHSP Partners

SHSP Partners are actively involved in working groups for each of our SHSP emphasis areas.

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

In FY23 the Traffic & Safety Division rolled out a systemic countermeasures effort with a series of “story maps”. These maps show various proven safety countermeasures for roadway departure crashes and the estimated benefits based on a calibrated predicted crash model. It is anticipated that this information will be used by UDOT region offices to select systemic project sites in the FY24 HSIP project application cycle.

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

UDOT focuses its infrastructure improvements primarily on the Roadway Departure Crashes and Intersection Safety emphasis areas. Most of the other emphasis areas (Public Outreach and Education, Use of Safety Restraints, Impaired Driving, Drowsy Driving, Distracted Driving, Aggressive Driving, Teen Driving Safety, Motorcycle Safety, and Speed Management) are addressed primarily through non-infrastructure efforts such as education, media, and enforcement campaigns. The other emphasis area, Pedestrian Safety, gets addressed with a combination of infrastructure improvements and non-infrastructure efforts. UDOT partners with other state, local, and federal agencies to implement the non-infrastructure components of the SHSP. UDOT funded its education and enforcement efforts with state funds during the period in which the FAST Act was in effect, but it is now funding the majority of those efforts with HSIP now that federal eligibility for these activities has been restored.

A "Zero Fatalities" goal (ut.zerofatalities.com) is also part of the SHSP. UDOT began displaying weekly safety messages on variable message signs during the summer of 2015 to encourage safe driving behaviors such as seat belt use. Those safety messages continue to be posted today.

In FY23 the Traffic & Safety Division created an informational website focused on designers and planners to help them better understand, interpret, and analyze Utah’s crash data. This website includes numerous articles containing general discussions about topics such as why “crashes” are not “accidents” and procedural outlines of how historical and predictive models should be approached. These articles help to document our current methods and explain complex topics.

Program Methodology

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

Yes

Select the programs that are administered under the HSIP.

- HRRR
- HSIP (no subprograms)
- Vulnerable Road Users
- Other-Zero Fatalities Safety Campaign

Program: HRRR

Date of Program Methodology:10/1/2016

What is the justification for this program?

- Other-Crash data trigger from FHWA

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		• Functional classification

What project identification methodology was used for this program?

- Crash frequency

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?

- Other-Coordination with region offices

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).

Relative Weight in Scoring

Available funding:50
Other-Ability of region to identify eligible project:50
Total Relative Weight:100

Program: HSIP (no subprograms)

Date of Program Methodology:10/1/2019

What is the justification for this program?

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

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes	• Traffic • Volume • Lane miles	• Median width • Horizontal curvature • Functional classification • Roadside features

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- Critical rate
- Excess proportions of specific crash types
- Other-Hierarchical Bayesian
- Other-usRAP model
- 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

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).

Relative Weight in Scoring

Ranking based on B/C:100
Total Relative Weight:100

Program: Vulnerable Road Users

Date of Program Methodology:10/1/2022

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?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• Other-Non-motorized crashes	• Traffic • Volume • Lane miles	• Other-Lighting quality • Other-Presence of sidewalks and shoulders • Other-Road crossing frequency and quality

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- Critical rate
- Excess proportions of specific crash types
- Other-Hierarchical Bayesian
- Other-usRAP model
- 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

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).

Relative Weight in Scoring

Ranking based on B/C:100
Total Relative Weight:100

Program: Other-Zero Fatalities Safety Campaign

Date of Program Methodology:

What is the justification for this program?

What is the funding approach for this program?

What data types were used in the program methodology?

Crashes **Exposure** **Roadway**

What project identification methodology was used for this program?

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

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

How are projects under this program advanced for implementation?

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).

What percentage of HSIP funds address systemic improvements?

43

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

- Cable Median Barriers
- Install/Improve Lighting
- Other-Raised medians
- Rumble Strips

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
- Stakeholder input

Does the State HSIP consider connected vehicles and ITS technologies?

Yes

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

Connected and autonomous vehicles are identified as a Special Safety Area in our SHSP. We do not have a committed program of HSIP funds being used for V2X technologies. However, we do consider project applications submitted by our region offices. If an application for V2X or other ITS-related technologies is submitted and is worthy of funding, we are able to program the project. We have funded (or are currently funding) ITS technologies such as variable speed limit signing and wrong-way driving sign arrays. We also funded a project in FY18 to use DSRC technology in snow plows in order to allow them to coordinate their movements with signalized intersections, thereby facilitating much faster snow clearance on a key arterial street.

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.

All construction projects that are funded with HSIP funds are assessed using the following procedures from the HSM:

1. Preliminary analysis is done with crash history and CMFs following procedures of Part D from the HSM.
2. If a more technical analysis is warranted, the predictive method of Part C is used by utilizing the spreadsheet tools developed and published in the CMF Clearinghouse.
3. Where applicable, potential infrastructure projects are also compared to the usRAP results, which represent a risk-based approach based on roadway characteristics.
4. Methods in Chapter 4 in conjunction with the SPFs of Part C are used to prioritize potential locations of systemic treatments such as rumble strips, median barrier, and raised medians.
5. Utah maintains a list of approved mitigation measures from Part D and the CMF Clearinghouse.
6. Systemic projects are developed on the basis of roadway characteristics by using a sensitivity analysis involving the SPFs and CMFs found in the HSM.
7. Benefit-cost ratios are calculated based on guidance from Chapter 7. No HSIP funds are applied to projects that have a benefit cost ratio less than 1 unless the project can be justified systemically.
8. All projects are prioritized based on benefit-cost ratio.
9. The CAP-X and SPICE worksheets provided at the CMF clearinghouse are used to help decide on installation options of various intersections. Intersections that warrant further study use IHSDM and capacity projection models to determine the best alternatives.
10. Where applicable, design deviations use the predictive methods of Part C to evaluate the safety impact of proposed deviations.

The Bayesian statistical methods outlined in the HSM are also used extensively in a modeling partnership with Brigham Young University in order to identify hot spot crash locations for consideration of HSIP funding.

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

In FY23, UDOT was subject for the first time to the new Vulnerable Road Users (VRU) Special Rule. This rule requires UDOT to obligate a minimum of 15% of it's HSIP funding to projects that address vulnerable road user crashes in years when the rule is triggered. UDOT met this requirement by working with region offices to identify projects that address VRU crashes. It is noteworthy also that UDOT plans for the foreseeable future to

obligate a minimum of 15% of its annual HSIP allocation to VRU projects regardless of whether or not the VRU Special Rule is triggered.

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

UDOT uses some of its HSIP funding for eligible non-infrastructure projects that aid roadway safety efforts. Such projects include:

Integrating Safety Into Planning

UDOT Traffic & Safety Division personnel work internally with other UDOT divisions to integrate safety planning into their core processes. UDOT also works with MPOs and other safety partners across the state to supply them with needed data and tools so they can better integrate safety into their internal planning processes. Integrating safety into UDOT and MPO planning processes helps all agencies proactively address safety.

Improving Crash Data Analysis

HSIP funding is also used to improve UDOT's crash database. The ability to accurately locate crashes and understand crash characteristics is vital to programming HSIP funds.

University & Consultant Support

The Traffic & Safety Division uses HSIP funding to contract with universities and consultants who assist with various HSIP functions. The functions include items such as program management, project management, crash data mapping, statistical analysis, safety modeling, report preparation, SPF/CMF development, training, safety-related research, and HSM analysis.

Zero Fatalities Safety Campaign

UDOT resumed using HSIP funds for Zero Fatalities educational and awareness programs in FY23 after federal eligibility for them was restored in the new federal transportation bill passed in FY22.

High Risk Rural Road Special Rule

UDOT was not subject to the HRRR Special Rule during FY23, but anticipates being subject to it again in FY24. To identify HRRR-eligible projects, we first look at the roads that qualify for application of the funding. Then, we look for systemic improvements such as warning signs, shoulder treatments, barrier/guardrail, and rumble strips that could be applied to make the roads safer. It is generally difficult to find crash hot spots on these roads due to the lower volumes and crash concentrations so we rely heavily on systemic approaches to finding locations where the money can be wisely spent. We are also occasionally able to use projects that are already planned for HSIP funding when those projects have been selected through other means and are located on a route that qualifies for HRRR funds.

Vulnerable Road User Special Rule

In FY23, UDOT was subject for the first time to the new Vulnerable Road Users (VRU) Special Rule. This rule requires UDOT to obligate a minimum of 15% of it's HSIP funding to projects that address vulnerable road user crashes in years when the rule is triggered. UDOT met this requirement by working with region offices to identify projects that address VRU crashes. UDOT plans for the foreseeable future to obligate a minimum of

15% of its annual HSIP allocation to VRU projects regardless of whether or not the VRU Special Rule is triggered.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

Federal 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)	$29,226,024	$22,694,336	77.65%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
VRU Safety Special Rule (23 U.S.C. 148(g)(3))	$4,613,021	$4,106,266	89.01%
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	$6,657,260	$6,146,155	92.32%
Totals	$40,496,305	$32,946,757	81.36%

UDOT overprograms HSIP funds each year (i.e. programs more than is available to obligate) in order to ensure obligation of all available HSIP funds. As a result, the "% Obligated/Programmed" statistic is always less than 100% even though we are typically always able to obligate the entire annual HSIP allocation.

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%

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

30%

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

37%

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.

Over the past few years we have made great strides toward getting our HSIP funds obligated by the fiscal year end. From FY19 to FY23 we were able to effectively obligate all of our HSIP funds. The main reason we were able to reach our goal of full obligation was that we consistently encouraged the four region offices to over-program, and they delivered enough of the projects to obligate all available funding.

The principal ongoing challenges we face when trying to achieve full obligation are:

- Reprogramming funds that return from closed projects (or from projects where scope changes reduce the budget) to other projects where they can be spent.
- Delays in project delivery timelines that prevent projects from advertising in the fiscal year originally intended. This became a significant challenge during the last half of FY21 when several projects delayed advertisement to FY22 in order to get better bid prices. This was primarily due to a market where construction costs skyrocketed and bids came in significantly higher than already-inflated engineers estimates. This cost escalation environment improved somewhat in FY23 but remained a notable challenge despite that marginal improvement.
- Projects that are canceled for political, practical, or economic reasons.
- The addition of the VRU Special Rule funds to the funding mix in FY23. Managing the HSIP program obligation flow becomes more complex with each additional fund type that we need to manage. The VRU funds are particularly challenging because they comprise 15% of the overall budget and often must be bundled with regular HSIP funds in the same projects. This bundling proved challenging in FY23 because we couldn't isolate the effects of cancelled projects and/or changing advertisement timelines into only one funding type. Any changes to projected obligations on projects with both VRU and regular HSIP funds affected obligations for both fund types. Despite these challenges, we were able to obligate all of our FY23 allocations for both regular HSIP and VRU.

Over-programming is our primary mitigation tool, which means planning more projects than we have budget for. Experience has taught us that there will always be some projects that ultimately get canceled and others that return part of their budget, so the only way to have all of our funds obligated at the end of the year is to plan for these occurrences. In the event that we run out of HSIP funds to obligate, we have the option to delay advertisement to the following fiscal year or use some state funds as a temporary bridge across the fiscal year boundary. These measures were necessary from FY19 to FY23 because we were very aggressive with over-programming.

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

Project delivery is administered through the UDOT region offices. We work closely with our region counterparts to make sure safety projects are addressed in a timely manner. After projects are programmed, project managers from the applicable UDOT region offices are assigned to each project. These project managers then shepherd the projects through UDOT's standard federal environmental, design, and construction processes.

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
US-89; MP 345.05-347.35, Various Sfty Improvements (PIN 9994)	Intersection traffic control	Modify traffic signal timing – left-turn phasing	1	Intersections	$1000000	$1000000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	25,000	35	State Highway Agency	Spot	Intersections	Intersection Improvements
SR-67; 500 S. to I-15 (17429)	Roadway	Rumble strips – edge or shoulder	13.7	Miles	$1223000	$1223000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	22,000	65	State Highway Agency	Systemic	Roadway Departure	Rumble Strips
SR-67; MP 0-11.5, Median & Shoulder Barrier (18293)	Roadside	Barrier – cable	11.5	Miles	$3532000	$3532000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	22,000	65	State Highway Agency	Systemic	Roadway Departure	Barrier
US-91; MP 19.2-23.7, Sinusoidal CL Rumble Strips (18294)	Roadway	Rumble strips – center	4.5	Miles	$585000	$585000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	20,500	60	State Highway Agency	Systemic	Roadway Departure	Rumble Strips
US-89; MP 467.8-478.5, Shoulder Barrier (18295)	Roadside	Barrier- metal	10.6	Miles	$1350000	$1385000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	6,600	45	State Highway Agency	Systemic	Roadway Departure	Barrier
3500 South (SR-171) Sidewalk Improvements (18833)	Pedestrians and bicyclists	Install sidewalk	5.8	Miles	$755000	$2297000	VRU Safety Special Rule (23 U.S.C. 148(g)(3))	Urban	Principal Arterial-Other	22,000	45	State Highway Agency	Systemic	Pedestrians	Sidewalk
SR-126; MP 1.24-3.67, Install HAWK Signs (19210)	Pedestrians and bicyclists	Pedestrian hybrid beacon	3	Locations	$799000	$799000	VRU Safety Special Rule (23 U.S.C. 148(g)(3))	Urban	Principal Arterial-Other	21,000	40	State Highway Agency	Spot	Pedestrians	Pedestrian Crossings
Various Locations; Enhance Ped Xings & Sidewalk (19273)	Pedestrians and bicyclists	Pedestrian hybrid beacon	3	Locations	$468000	$468000	VRU Safety Special Rule (23 U.S.C. 148(g)(3))	Urban	Multiple/Varies	25,000	45	State Highway Agency	Spot	Pedestrians	Pedestrian Crossings
US-91; MP 32.43-32.73, Signal &	Access management	Raised island - install new	0.25	Miles	$936000	$936000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	33,000	45	State Highway Agency	Spot	Intersections	Access Control

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
Access Control (19277)															
SR-68; MP 36.10-63.00, Signal & Lighting Upgrades (19281)	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	27.3	Miles	$3488001	$3488001	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	30,000	45	State Highway Agency	Systemic	Intersections	Flashing Yellow Arrow
Various Locations; Signal & Lighting Improvements (19284)	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	26.6	Miles	$3667000	$4058000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	30,000	40	State Highway Agency	Systemic	Intersections	Flashing Yellow Arrow
I-15; MP 18-22, Wildife Fencing (19295)	Roadside	Fencing	4	Miles	$1200000	$1200000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	27,000	80	State Highway Agency	Spot	Roadway Departure	Animal Crashes
Traffic & Safety Program Management Support FY24 (19320)	Miscellaneous	Miscellaneous - other	1	Numbers	$2100000	$2100000	HSIP (23 U.S.C. 148)	N/A	N/A	0	0	Non-infrastructure	Non-infrastructure	Program Management Support	All
Statewide Roadway Data Inventory FY24 (19322)	Miscellaneous	Data collection	1	Numbers	$500000	$500000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Non-infrastructure	Data	Data
I-15; MP 31.8-37.4, Guardrail & Cable Barrier (19336)	Roadside	Barrier- metal	3.1	Miles	$1100000	$1100000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	28,000	80	State Highway Agency	Systemic	Roadway Departure	Barrier
SR-204; MP 1.23-1.95, Corridor Lighting (19988)	Pedestrians and bicyclists	Pedestrians and bicyclists – other	0.7	Miles	$946000	$957922	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	22,000	40	State Highway Agency	Spot	Pedestrians	Lighting
SR-39; MP 8.8-44.5, Sinusoidal Rumble Strips (19990)	Roadway	Rumble strips – center	16.8	Miles	$1125000	$1125000	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Multiple/Varies	5,000	50	State Highway Agency	Systemic	Roadway Departure	Rumble Strips

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 Locations; Lighting Improvements (19995)	Pedestrians and bicyclists	Pedestrians and bicyclists – other	4.3	Miles	$2896000	$2896000	VRU Safety Special Rule (23 U.S.C. 148(g)(3))	Urban	Principal Arterial-Other	35,000	45	State Highway Agency	Spot	Pedestrians	Lighting
I-80 & I-84; Wildlife Fencing near Echo Jct (19998)	Roadside	Fencing	9.1	Miles	$1689000	$2889000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	14,000	70	State Highway Agency	Spot	Roadway Departure	Animal Crashes
US-40; MP 40.39, RICWS Installation (20065)	Intersection geometry	Intersection realignment	1	Intersections	$1274000	$1294000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	6,700	65	State Highway Agency	Spot	Intersections	Intersection Improvements
SR-73/SR-145/SR-85; Intersection Improvements (20067)	Intersection geometry	Intersection realignment	1	Intersections	$1800000	$1800000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	25,000	50	State Highway Agency	Spot	Intersections	Intersection Improvements
SR-31; MP 5.65-5.96, Install Guardrail (20069)	Roadside	Barrier- metal	6	Miles	$500000	$500000	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Major Collector	2,300	40	State Highway Agency	Spot	Roadway Departure	Barrier
Zero Fatalities FY23 (20072)	Miscellaneous	Miscellaneous - other	1	Numbers	$2500000	$2500000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	Non-infrastructure	Non-infrastructure	Education and Enforcement	Safety Campaign
SPF Development & Research (20668)	Miscellaneous	Data analysis	1	Numbers	$27000	$27000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	Non-infrastructure	Non-infrastructure	Data	Data
US-6; Soldier Summit Median Barrier (20805)	Roadside	Barrier – concrete	0.3	Miles	$900000	$900000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	9,300	65	State Highway Agency	Spot	Roadway Departure	Barrier
Salt Lake County Safety Projects (20921)	Miscellaneous	Miscellaneous - other	1	Numbers	$500000	$500000	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	0	0	Non-infrastructure	Non-infrastructure	Intersections	Intersection Improvements
R3 Sight Distance Analysis FY24 (21265)	Miscellaneous	Data analysis	1	Numbers	$200000	$200000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	Non-infrastructure	Non-infrastructure	Data	Data

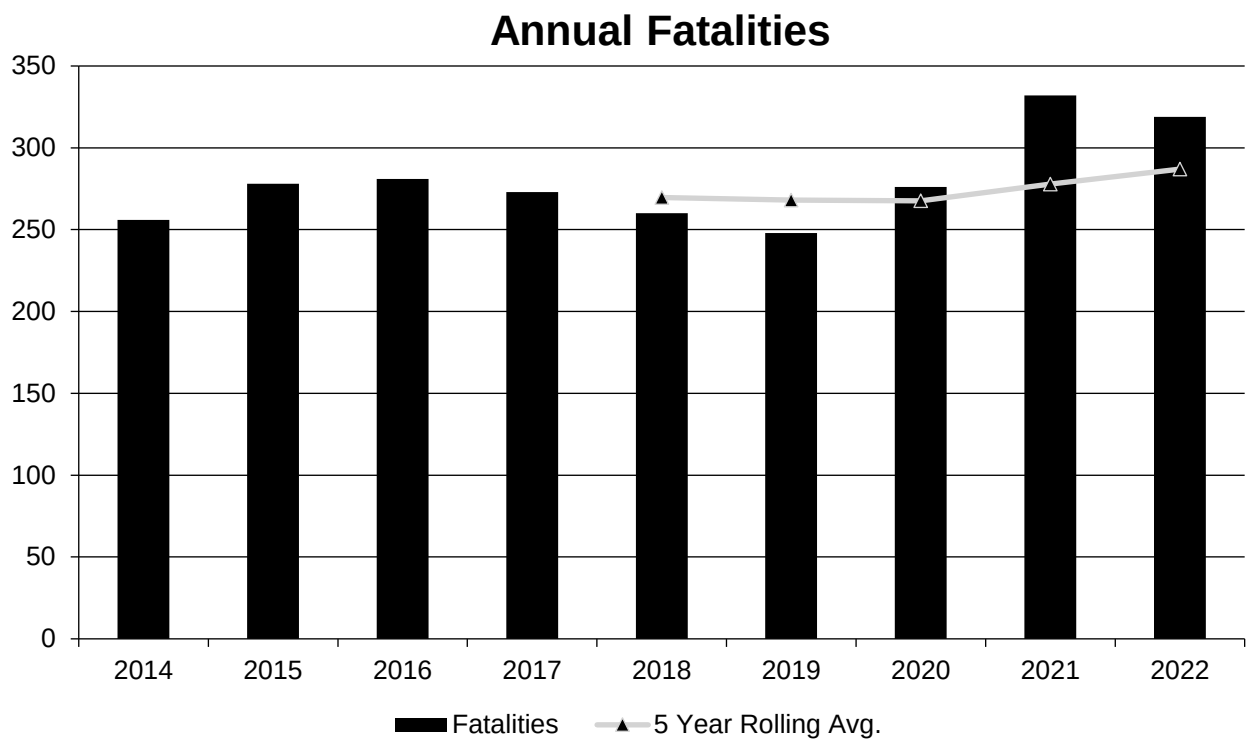
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
R4 Sight Distance Analysis FY24 (21266)	Miscellaneous	Data analysis	1	Numbers	$200000	$200000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	Non-infrastructure	Non-infrastructure	Data	Data

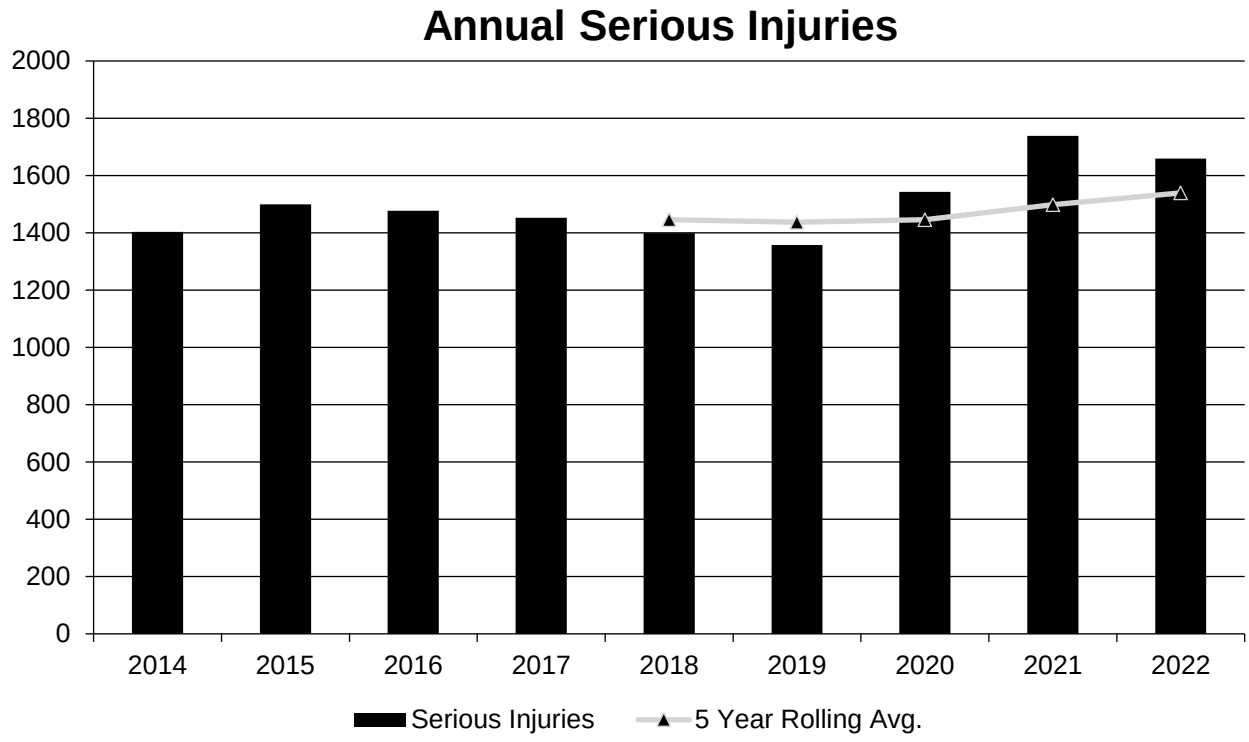
Safety Performance

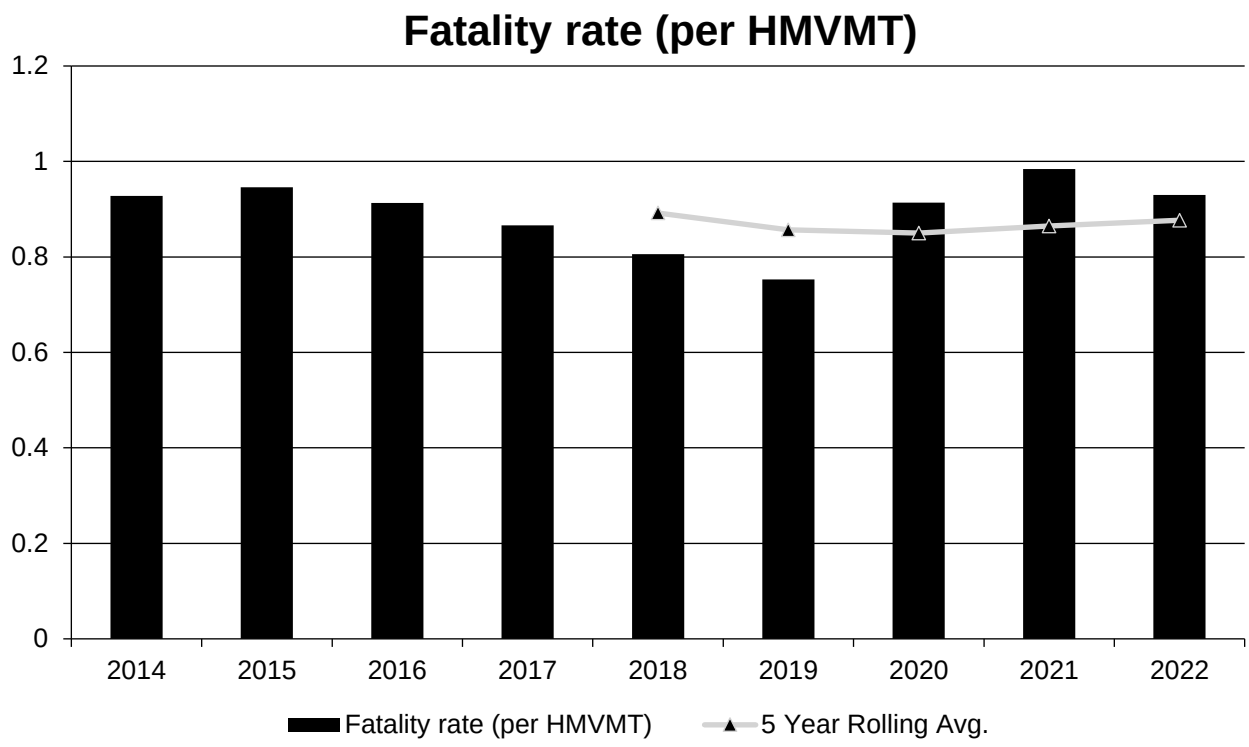
General Highway Safety Trends

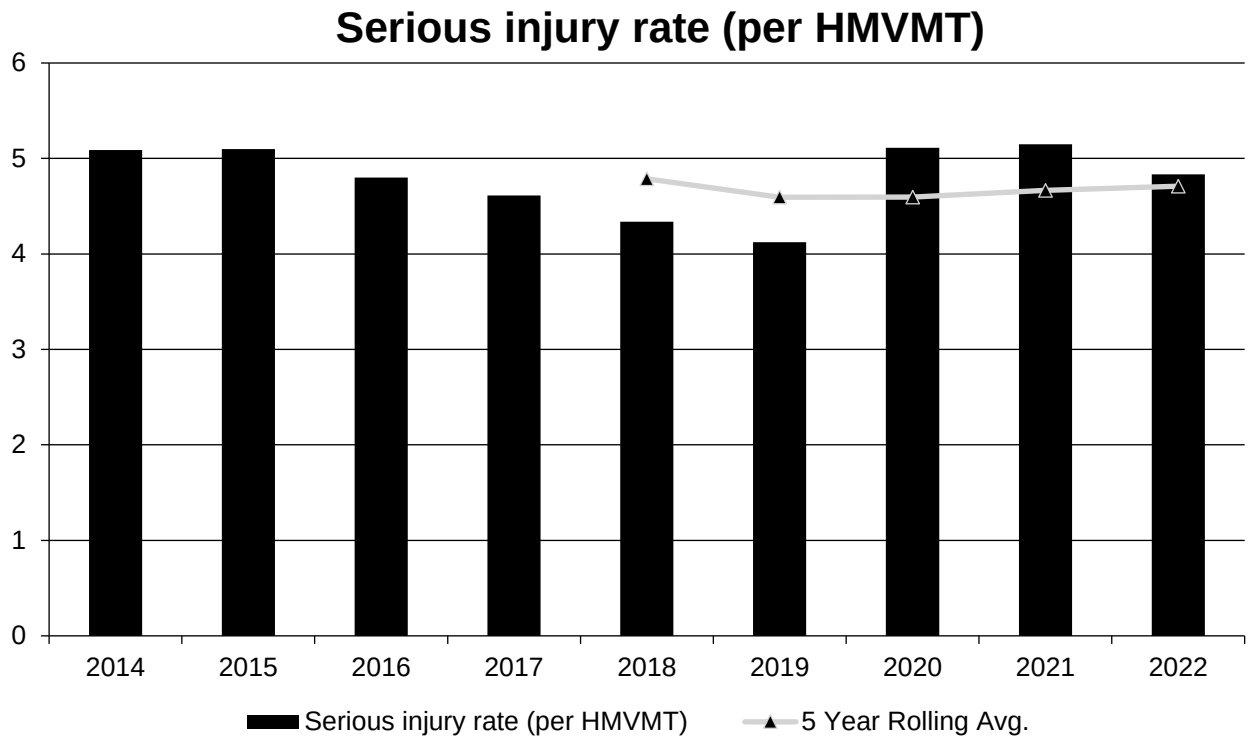
Present data showing the general highway safety trends in the State for the past five years.

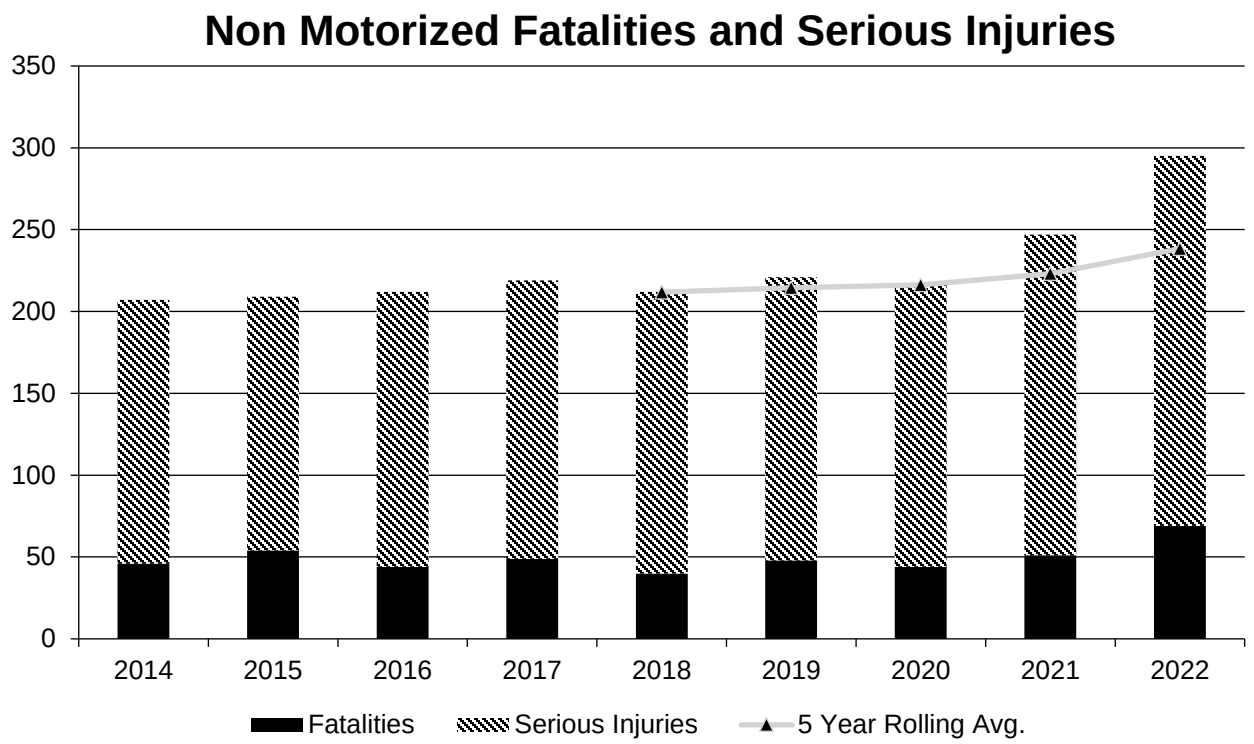
PERFORMANCE MEASURES	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fatalities	256	278	281	273	260	248	276	332	319
Serious Injuries	1,403	1,499	1,477	1,453	1,399	1,358	1,543	1,738	1,659
Fatality rate (per HMVMT)	0.928	0.946	0.913	0.866	0.806	0.753	0.914	0.984	0.930
Serious injury rate (per HMVMT)	5.088	5.099	4.799	4.611	4.337	4.124	5.111	5.149	4.835
Number non-motorized fatalities	46	54	44	49	40	48	44	51	69
Number of non-motorized serious injuries	161	155	168	170	172	173	173	196	226


Annual Fatalities
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
2000
1800
1600
1400
1200
1000
800
600
400
200
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
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)
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	30.6	94.8	0.83	2.59
Rural Principal Arterial (RPA) - Other Freeways and Expressways	1.4	2.6	1.56	2.89
Rural Principal Arterial (RPA) - Other	33.4	103.8	1.64	5.08
Rural Minor Arterial	16	64.6	1.79	7.24
Rural Minor Collector	7.2	23.8	2.5	8.25
Rural Major Collector	17.8	68.8	1.68	6.48

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	11	78.4	0.89	6.37
Urban Principal Arterial (UPA) - Interstate	26.2	133.4	0.32	1.62
Urban Principal Arterial (UPA) - Other Freeways and Expressways	4.4	12.2	0.88	2.44
Urban Principal Arterial (UPA) - Other	73.6	456.6	1.29	8.01
Urban Minor Arterial	30.2	200.4	1.12	7.4
Urban Minor Collector	3.8	27.6	1.13	8.21
Urban Major Collector	18.2	142	0.94	7.37
Urban Local Road or Street	13.2	130.4	0.33	3.25
All Other				

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	206.6	958.6	0.93	4.33
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				
All Other	80.4	580.4	0.76	5.51

Provide additional discussion related to general highway safety trends.

The 5-year rolling average for total fatalities decreased slightly from 2018-2020, and then increased sharply from 2020-2022. The 5-year rolling average for fatality rate also decreased from 2018-2020 and increased from 2020-2022, but the magnitude of the decrease was greater than the magnitude of the increase, such that the fatality rate rolling average for 2022 was less than that same metric in 2018. The actual number of annual fatalities went down from 2018 to 2019 but saw significant upticks in 2020 and 2021. Fatalities were lower in 2022 than 2021, but still remained far higher than any year in the past decade prior to 2021. The annual fatality rate decreased from 2018-2019 but then increased even more sharply from 2019-2021, resulting in the 2021

figure being higher than the previous high of the last decade that occurred in 2015. The fatality rate decreased somewhat in 2022 but was still higher than any other years of the past decade other than 2015 and 2021.

Trends for suspected serious injuries have been similar. The 5-year rolling average for suspected serious injuries decreased slightly from 2018-2019 and then increased sharply from 2019-2022. The changes in the 5-year rolling average for suspected serious injury rate, however, exhibited much less variation from 2018-2022. This rolling average decreased slightly from 2018-2019, stayed the same in 2020, and then increased slightly from 2020-2022 such that the 2022 rate was slightly lower than the 2018 rate. Actual numbers of serious injuries and the suspected serious injury rate decreased slightly from 2018 to 2019, but both metrics rose sharply in 2020 and 2021 to levels higher than any other year in the past decade. Values for these two metrics decreased substantially from 2021-2022 but remained higher than most other years in the past decade.

The rise in crashes and crash rates in 2020 was associated with a spike in crashes coupled with significantly reduced traffic volumes, both of which are likely attributable to the COVID-19 pandemic. Traffic volumes rebounded in 2021, but fatal and suspected serious injury crashes increased from 2020-2021 by an even larger margin, which resulted in the fatal and suspected serious injury rates being higher than at any point in the last decade. Fatal crashes, suspected serious injury crashes, fatal crash rates, and suspected serious injury crash rates all decreased substantially from 2021-2022, which is cause for optimism. However, these numbers and rates are still very high compared to historic figures from the last decade and UDOT is working to reduce those values further in coming years.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2024 Targets *

Number of Fatalities:308.8

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

Step 1: The number of fatalities from 2022 were reduced by 2.5% per year for 2023 and 2024 to reflect the goal set in our SHSP. Step 2: The 5-year rolling averages were computed using the values calculated in Step 1. The 2020-2024 value for this performance measure is our 2024 target.

Number of Serious Injuries:1628.4

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

Step 1: The number of suspected serious injuries from 2022 were reduced by 2.5% per year for 2023 and 2024 to reflect the goal set in our SHSP. Step 2: The 5-year rolling averages were computed using the values calculated in Step 1. The 2020-2024 value for this performance measure is our 2024 target.

Fatality Rate:0.930

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

Step 1: The number of fatalities from 2022 were reduced by 2.5% per year for 2023 and 2024 to reflect the goal set in our SHSP. Step 2: The 2022 VMT was held constant for 2023 and 2024 given the highly variable nature of VMT from year-to-year. Step 3: Rates were estimated using the values calculated in Step 1 and Step 2 and also reflect a 2.5% reduction per year. Step 4: The 5-year rolling averages were computed using the

values calculated in Step 1 through Step 3. The 2020-2024 value for this performance measure is our 2024 target.

Serious Injury Rate:4.885

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

Step 1: The number of suspected serious injuries from 2022 were reduced by 2.5% per year for 2023 and 2024 to reflect the goal set in our SHSP. Step 2: The 2022 VMT was held constant for 2023 and 2024 given the highly variable nature of VMT from year-to-year. Step 3: Rates were estimated using the values calculated in Step 1 and Step 2 and also reflect a 2.5% reduction per year. Step 4: The 5-year rolling averages were computed using the values calculated in Step 1 through Step 3. The 2020-2024 value for each performance measure is our 2024 target.

Total Number of Non-Motorized Fatalities and Serious Injuries:266.2

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

Step 1: The number of fatalities and suspected serious injuries from 2022 were reduced by 2.5% per year for 2023 and 2024 to reflect the goal set in our SHSP. Step 2: The 5-year rolling averages were computed using the values calculated in Step 1. The 2020-2024 value for each performance measure is our 2024 target.

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

We held a series of meetings with our MPO and SHSP partners to coordinate and gain consensus on our 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	263.6	287.0
Number of Serious Injuries	1455.2	1539.4
Fatality Rate	0.823	0.877
Serious Injury Rate	4.547	4.711
Non-Motorized Fatalities and Serious Injuries	213.8	238.4

We remain committed to our goal of Zero Fatalities. Implementing measures to improve safety through the HSIP is bringing UDOT closer to that goal. Our fatality rate is down 44% from 2000. Despite being the country's fastest-growing state between 2010 and 2022, and the 3rd fastest growing state from 2020 to 2022,

Utah's fatality rate for 2022 of 0.93 is 31% lower than the estimated national average of 1.35 fatalities per 100 million vehicle miles traveled*.

We continue to focus on opportunities to reduce fatalities and suspected serious injuries across all performance measures. The increases we have experienced represent unacceptable trends. We continue to monitor each performance measure closely, seeking to identify and implement projects that will improve safety and significantly reduce the number of fatalities and suspected serious injuries on Utah's roads.

* Source: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813428

Applicability of Special Rules

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

Yes

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	50	58	42	51	62	68	51
Number of Older Driver and Pedestrian Serious Injuries	147	138	140	166	144	178	170

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Benefit/Cost Ratio
- Other-Reduction of severe crashes

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

The two measures of effectiveness chosen by UDOT are B/C ratio and reduction of severe crashes. Results presented in this report show that UDOT is continuing to show a strong overall B/C ratio for the infrastructure projects it is selecting. The overall weighted B/C of the 3-year before/after project results reported this year is 2.6. Fatal and suspected serious injury crashes decreased significantly from 2021 to 2022, but they nevertheless remain very high relative to pre-2020 levels. These trends mirror nationwide observations.

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

- HSIP Obligations

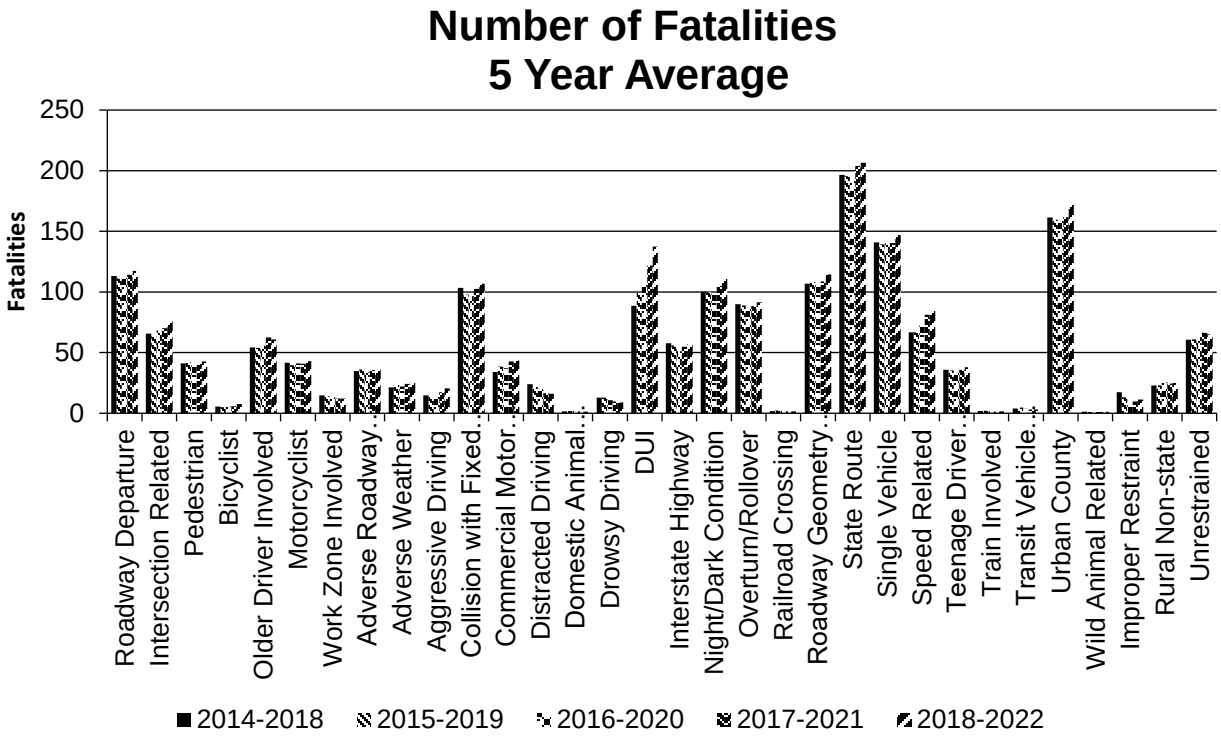
Effectiveness of Groupings or Similar Types of Improvements

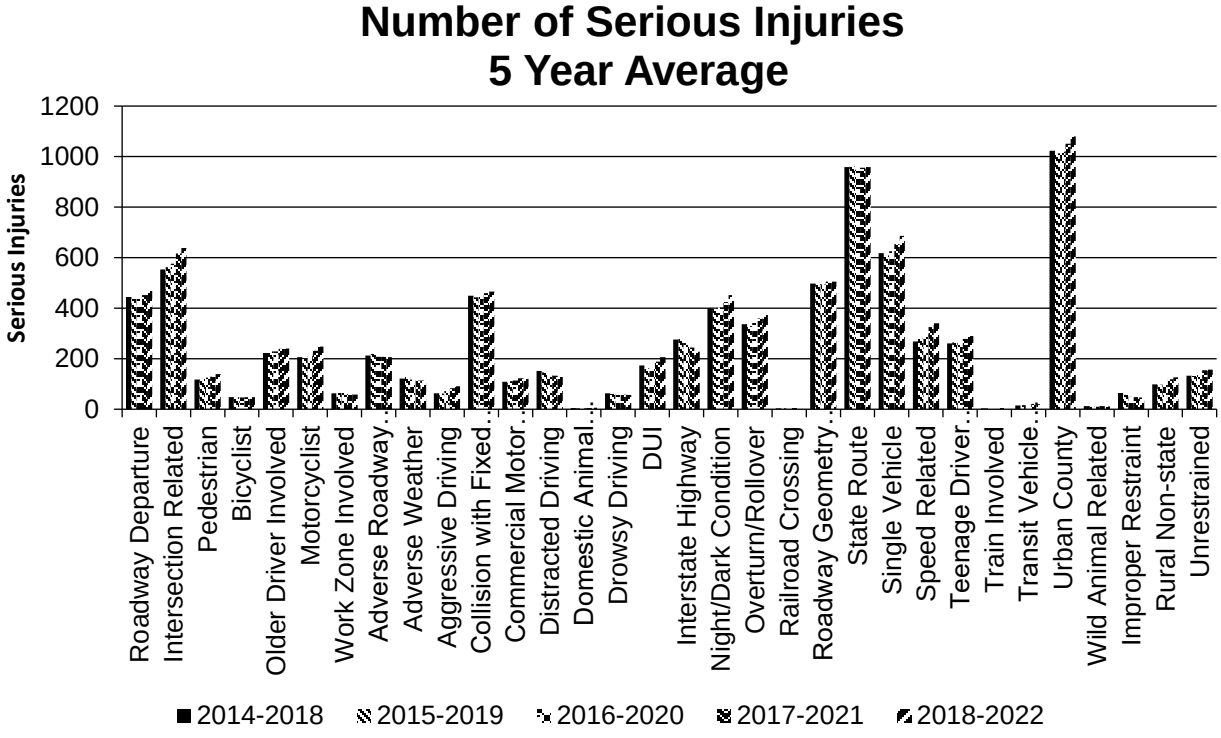
Present and describe trends in SHSP emphasis area performance measures.

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)
Roadway Departure		117.4	468.4	0.36	1.43
Intersection Related		75.8	637.8	0.23	1.95
Pedestrian		42.8	139.6	0.13	0.43
Bicyclist		7.6	48.4	0.02	0.15
Older Driver Involved		60.8	240.8	0.19	0.74
Motorcyclist		43	248.4	0.13	0.76
Work Zone Involved		12	57.6	0.04	0.18
Adverse Roadway Surface Condition		36	206.6	0.11	0.63
Adverse Weather		25.4	113.6	0.08	0.35

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)
Aggressive Driving		20.6	90.4	0.06	0.28
Collision with Fixed Object		106.8	465.6	0.33	1.42
Commercial Motor Vehicle Involved		43.4	119.8	0.13	0.37
Distracted Driving		16	127.6	0.05	0.39
Domestic Animal Related		1.2	6.2	0	0.02
Drowsy Driving		9	56.6	0.03	0.17
DUI		137.4	205.8	0.42	0.63
Interstate Highway		57	228	0.17	0.7
Night/Dark Condition		112.2	452	0.34	1.38
Overturn/Rollover		91.4	379	0.28	1.16
Railroad Crossing		1.6	5	0	0.02
Roadway Geometry Related		114.4	505.2	0.35	1.55
State Route		206.6	958	0.63	2.93
Single Vehicle		147	685.8	0.45	2.1
Speed Related		85.4	340.8	0.26	1.04
Teenage Driver Involved		38	290	0.12	0.89
Train Involved		1.4	4.6	0	0.01
Transit Vehicle Involved		3.2	20.4	0.01	0.06
Urban County		171.8	1,079.6	0.53	3.3
Wild Animal Related		1.2	11.6	0	0.04
Improper Restraint		11.4	46.6	0.03	0.14
Rural Non-state		25	125.8	0.08	0.38
Unrestrained		65	157	0.2	0.48


Number of Fatalities
5 Year Average
Fatalities
250
200
150
100
50
0
Roadway Departure
Intersection Related
Pedestrian
Bicyclist
Older Driver Involved
Motorcyclist
Work Zone Involved
Adverse Roadway...
Adverse Weather
Aggressive Driving
Collision with Fixed...
Commercial Motor...
Distracted Driving
Domestic Animal...
Drowsy Driving
DUI
Interstate Highway
Night/Dark Condition
Overturn/Rollover
Railroad Crossing
Roadway Geometry...
State Route
Single Vehicle
Speed Related
Teenage Driver...
Train Involved
Transit Vehicle...
Urban County
Wild Animal Related
Improper Restraint
Rural Non-state
Unrestrained
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022


Number of Serious Injuries
5 Year Average
Serious Injuries
1200
1000
800
600
400
200
0
Roadway Departure
Intersection Related
Pedestrian
Bicyclist
Older Driver Involved
Motorcyclist
Work Zone Involved
Adverse Roadway...
Adverse Weather
Aggressive Driving
Collision with Fixed...
Commercial Motor...
Distracted Driving
Domestic Animal...
Drowsy Driving
DUI
Interstate Highway
Night/Dark Condition
Overturn/Rollover
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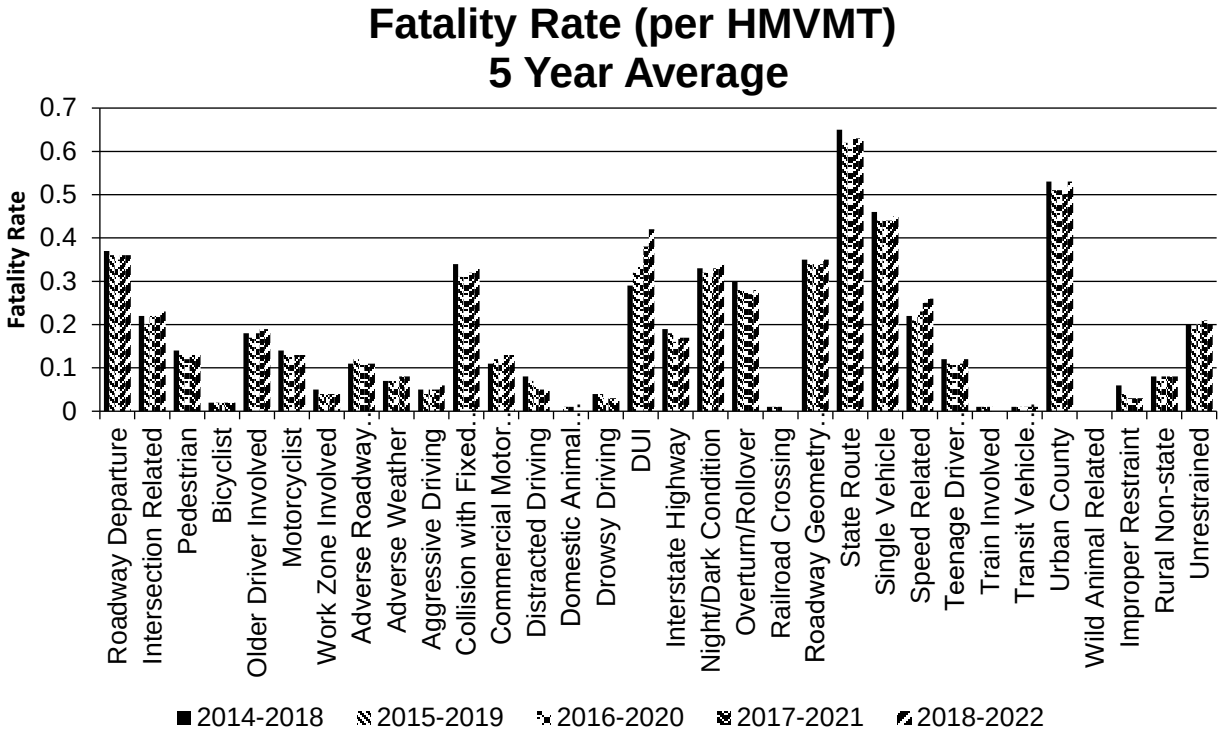
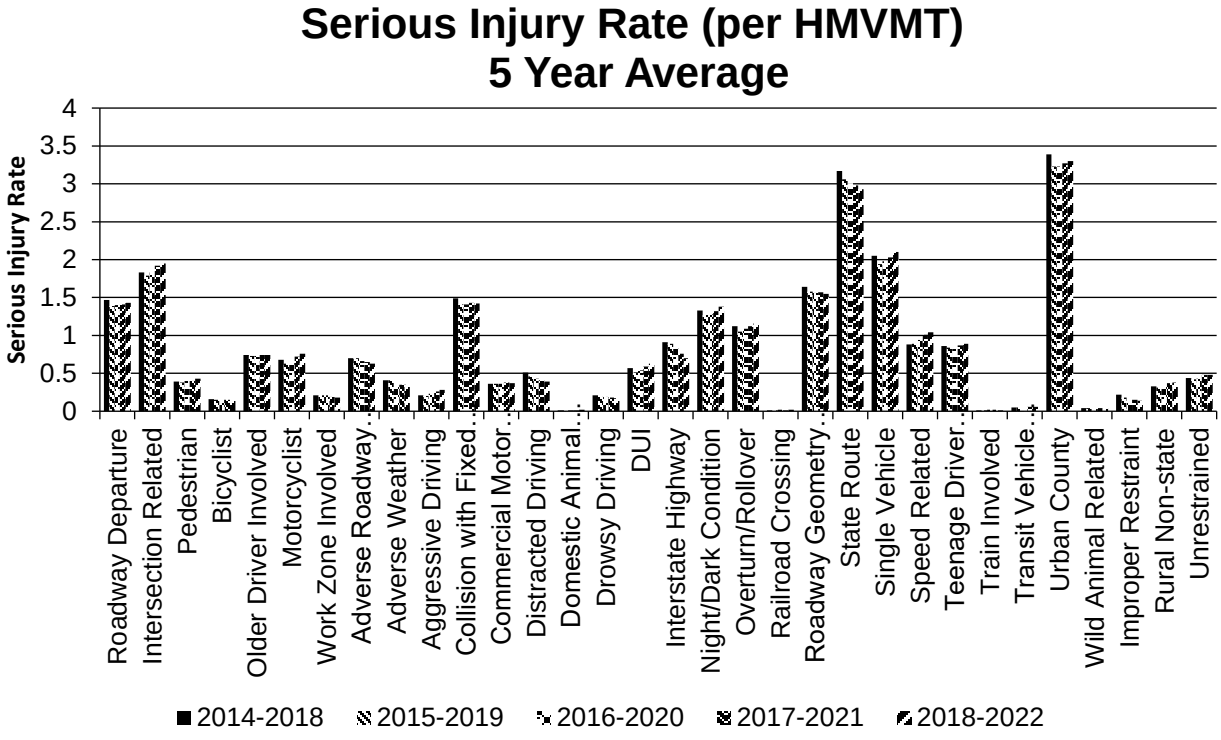
Wild Animal Related
Improper Restraint
Rural Non-state
Unrestrained
2014-2018
2015-2019
2016-2020
2017-2021
2018-2022





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

No

Each year we enter our before/after results for projects that have achieved 3 years of post-construction crash history, so there is information available there for specific types of projects. But we have not completed any grouped studies of the effectiveness of certain types of countermeasures.

Project Effectiveness

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

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
Various Routes; 6" Paint Striping (PIN 16685)	Rural – Multiple	Roadway delineation	Wider Edge Lines (6 inch markings)	3350.00	2799.00	40.00	55.00	141.00	109.00	865.00	970.00	4396.00	3933.00	5.91
Various Routes; High Friction Pavement (PIN 16311)	Rural/Urban – Multiple	Roadway	Pavement surface – high friction surface	119.00	54.00			2.00	2.00	30.00	24.00	151.00	80.00	3.32
Region 1 Texas Turndown & Guardrail Replacement (PIN 15587)	Rural Major Collector	Roadside	Barrier- metal	1.00	2.00						1.00	1.00	3.00	-0.69
SR-56; MP 32.0-58.2, Intersection Improvements (PIN 14427)	Rural Minor Arterial	Intersection geometry	Add/modify auxiliary lanes	11.00	14.00			2.00	2.00	7.00	7.00	20.00	23.00	0.42

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

The overall weighted B/C was 2.6 for the projects we reported 3-year before-after crash analysis for this year. This is not as high of a B/C ratio as in some previous years, but it nevertheless demonstrates that UDOT is funding HSIP projects that are reducing serious and fatal injury crashes. The actual numbers of fatal and serious injury crashes decreased from 2021-2022 but that was following two years of sharp increases. Even with the decreases from 2021-2022, the 2022 fatal and serious injury crash totals were substantially higher than any other years in the last decade except for 2020 and 2021.

Compliance Assessment

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

10/01/2021

What are the years being covered by the current SHSP?

From: 2021 To: 2026

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

2025

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	25		
	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								
	Functional Class (19) [19]	100	100					100	100	100	100
	Median Type (54) [55]	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
	Access Control (22) [23]	100	100								
	One/Two Way Operations (91) [93]	100	100								
	Number of Through Lanes (31) [32]	100	100					100	25		
	Average Annual Daily Traffic (79) [81]	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							
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					100	100				
	Location Identifier for Roadway at Beginning of Ramp Terminal (197) [187]					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 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				
	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**	**87.50**	**90.91**	**100.00**	**100.00**	**72.22**	**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.

UDOT has now collected all required FDE, however we are still working to merge and organize the data so we are not marking them as complete until data is in a usable and accessible format. For state-maintained roads, FDE are collected using our biennial asset inventory and various internally managed business systems. For the non-state Federal-Aid system, data are collected using various internally managed business systems and the usRAP protocol. This data has all been collected and is going through the organization process. Local road FDE data are collected through the ARNOLD system and are completed and available now. For unpaved state roads, data are collected via biennial asset inventory and with internal business systems. For non-state unpaved roads, data are collected with the ARNOLD system. UDOT anticipates having all MIRE FDE available and complete within 1-2 years.

Optional Attachments

Program Structure:

200929_HSIP Manual.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.