VERMONT

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2024 ANNUAL REPORT

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Disclaimer

Protection of Data from Discovery Admission into Evidence

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

23 U.S.C. 407 states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.”

Executive Summary

The financial aspects of this report are based on the federal fiscal year (October 1, 2022 to September 30 2023, FFY23). In the past, VTrans reported on the state fiscal year (July 1 to June 30 of the following year). This change was made to better align with the HSIP implementation plan which is based on the federal fiscal year.

During this period, VTrans worked on the development of seventeen projects and on the construction of eight projects to remediate site specific and corridor locations.

For FFY23, the total amount of funding that was obligated during the reporting period was $24,824,952. Of this amount, $16,499,558 was obligated from HSIP Section 148, $5,085,947 was obligated from Section 164, $900,00 was obligated from HRRR Special Rule (23 U.S.C. 148(g)(1)) and $2,339,447 was obligated from VRU Safety Special Rule (23 U.S.C. 148(g)(3)).

VTrans was required to comply with the provisions set forth in 23 U.S.C. 148(i) and submitted an HSIP Implementation Plan for FFY23 for not meeting or making significant progress toward FHWA Safety Performance Measures for calendar year 2020.

Vermont safety performance for 2020 triggered all three special rules, namely, the HRRR Special Rule (23 U.S.C. 148(g)(1)), the Older Drivers and Pedestrians Special Rule (23 U.S.C. 148(g)(2)), and the VRU Safety Special Rule (23 U.S.C. 148(g)(3)).

Review of safety performance data has shown the five-year averages of the number of fatalities and serious injuries in 2023 to be higher than the current Strategic Highway Safety Plan 2017-2021 baseline period with the five-year average of the number of fatalities going from 64 fatalities to 65.6 and the five-year average of the number of suspected serious injuries going from 258.0 to 273.4 serious injuries.

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 HSIP program structure within VTrans is centralized, and works to identify, design, and construct both site specific and systemic, data-driven projects on the state and local transportation network

For site specific projects, HSIP staff review high crash locations on the federal aid network and identify potential projects. Solutions are proposed to mitigate crash patterns and crash types. Crash modification factors and benefit-to-cost ratios (B/C ratio) are used to determine the best solutions. A project must have a B/C ratio of greater than 1 to be further considered. A group of senior management review the recommendations for further advancement of the projects to scoping or design. Major HSIP projects are designed by consultants or Agency staff following the normal project development process. Small projects such as signage, markings, beacons and brush cutting are implemented via work orders done by the Agency or may be incorporated into existing projects where practical.

Systemic safety countermeasures to address lane departure and intersection safety are being incorporated into existing infrastructure projects. Within this reporting cycle VTrans continued to incorporate centerline rumble stripes and SafetyEdge on all resurfacing contracts, consistent with Agency guidance. VTrans also began review of projects that span high-risk curves with the goal of ensuring that crash reduction measures are incorporated. Types of improvement include superelevation improvements, widened shoulders, and signage improvements. Additionally, during the previous reporting cycle, VTrans created a municipal grant program for safety projects on local roadways for specific low-cost countermeasures. This program is based on locally identified safety needs.

Selected projects are evaluated using simple before and after crash data for a period of three-years before and three years after construction. VTrans worked to draft and adopt a HSIP Manual in November of 2022, that contains expanded procedure for post-construction evaluation. VTrans is transitioning the post-construction evaluation of projects to meet these processes.

Where is HSIP staff located within the State DOT?

Operations

HSIP staff is located within the Operations and Safety Bureau and is part of the Safe Systems Section.

High Crash Locations, which are currently used to assist in the identification of HSIP sites, are generated by staff located within the Data Unit of the Operations and Safety Bureau.

The programming of HSIP projects is performed by staff located within the Asset Management Bureau, design activities and/or oversight are performed by the Project Delivery Bureau, and construction management is performed by the Construction and Materials Bureau.

How are HSIP funds allocated in a State?

- Central Office via Statewide Competitive Application Process
- Formula via Districts/Regions
- Other-Central Office via High Crash Location Reviews

A recent change to past practices in Vermont is the implementation of a grant application process for municipalities to apply for funding for local safety projects. VTrans has also targeted a greater amount of funds to local projects.

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

Vermont does not have any tribal roads. Local roads are addressed in several ways. As noted previously VTrans developed a HSIP grant program, awarding non-competitive funding for low-cost countermeasures. VTrans has also designed and delivered site-specific projects on the local network. VTrans is required by statute to pave and stripe Class I Town Highways (which are under the jurisdiction of municipalities) based on asset management schedule. Projects on the Class I Town Highway network are thus well-suited for state management and VTrans has been reviewing these projects, as they are being planned, for opportunities to incorporate into them proven safety countermeasures and or safety improvements. VTrans continues to be interested in alternative methods for delivery and administration on the local network, that could increase efficiency and bypass administrative challenges.

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

- Design
- Districts/Regions
- Maintenance
- Operations
- Planning
- Traffic Engineering/Safety
- Other-State Highway Safety Office
- Other-Finance and Administration
- Other-Asset Management Bureau

In Vermont, the Governor’s Highway Safety Office is called the State Highway Safety Office (SHSO) and is part of VTrans. The HSIP and the SHSO are both managed under the newly created Safe Systems Section of the Operations and Safety Bureau.

Operations refers to the Operations and Safety Bureau which includes, as HSIP internal partners, Traffic Operations, Traffic Signal and ITS, Data & Analysis and the Safe Systems Section in addition to the SHSO.

Design refers to the Project Delivery Bureau which includes Highway Safety and Design, Structures and Municipal Assistance.

Describe coordination with internal partners.

The HSIP coordinates directly with internal partners on project development, grant administration, crash data products, and project delivery. Examples of this coordination include:

. Coordination with the Project Delivery Bureau on site specific countermeasure selection for HSIP-initiated projects prior to hand-off for delivery

. Coordination with the Asset Management Bureau's short and mid-range work plans, and consideration of incorporating the HSIP-driven elements into larger independent projects

. Shared administration of the Small Scale Local Safety Grant program with the Municipal Assistance Section, including shared roles in grant selection

. Coordination with the Data Management Unit regarding crash data and associated needs

.Coordination with Finance & Administration on obligation status and fund balances

. Coordination with VTrans District staff for localized concerns and needs, and administration of Road Safety Audits

Identify which external partners are involved with HSIP planning.

- FHWA
- Law Enforcement Agency
- Local Government Agency
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)

Describe coordination with external partners.

VTrans works with, and is in continued contact with the Federal Highway Administration to discuss all elements of HSIP, including HSIP Manual compliance, HSIP Implementation Plan development and implementation, HSIP obligation status and planning, project status, and data analysis. VTrans also coordinates with the MPO and RPCs, who assist with the local grant program, promoting it to local governments and offering technical assistance with site selection and the associated applications. Additionally, VTrans works with the MPO to ensure that the TIP is reflective of the HSIP implementation plan and can accommodate all planned obligations. MPO and RPCs, local governments, and law enforcement are all involved in any identified Road Safety Audit process.

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

VTrans produced an HSIP implementation plans as a result of not meeting its safety performance targets in recent years. VTrans found the development of these HSIP implementation plans to be beneficial in administering the HSIP program and plans to produce an HSIP implementation plan each FFY regardless of the analysis of data versus safety targets.

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

VTrans has significantly restructured its HSIP in recent years. Actions taken to improve the HSIP within VTrans started with the reorganization of the Operations and Safety Bureau to better emphasize safety and data driven decisions. VTrans hired a consultant to help develop an HSIP Manual based on best practices nationwide and this was adopted in November of 2022. The manual outlined new project development and delivery practices that are being used to develop data driven safety projects on both local and state roadways. VTrans recently created a Safety Systems Section within the Operations and Safety Bureau to house HSIP, the State Highway Safety Office, and Active Transportation within a common Section and under common management. This change integrates both behavioral and infrastructure safety programs, with an intended outcome of a fully coordinated approach to safety.

Program Methodology

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

Yes

Vermont has a HSIP manual that was finalized in November 2022 and that describes the current HSIP planning, implementation and evaluation processes.

Some of the older documents that were used in the past are attached as projects identified and selected from these processes are still being constructed or mentioned in this HSIP report.

Select the programs that are administered under the HSIP.

- HRRR
- Local Safety
- Roadway Departure
- Sign Replacement And Improvement
- Vulnerable Road Users
- Other-Low-Cost Site Specific Improvements
- Other-Major Project Site Specific Improvements
- Other-Traffic Signal Replacement/Installation

The HRRR program refers to the applicability of the High Risk Rural Roads Special Rule under 23 USC 148(g)(1) and is in effect only if Vermont triggers the Special Rule.

The Local Safety program refers to the newly created Small Scale Local HSIP Grant which offers funding for the construction of low-cost measures on local roadways.

The Roadway Departure program refers to the systemic review of curves and straight segments.

The Sign Replacement and Improvement refers to sign projects.

Vulnerable Road Users refer to pedestrian and bicyclist projects.

Low-Cost Site Specific Improvements and Major Project Site Specific Improvements refer to countermeasures implemented at localized sites.

Program: HRRR

Date of Program Methodology:9/30/2023

What is the justification for this program?

- Other-Bipartisan Infrastructure Law Special HRRR Rule

What is the funding approach for this program?

Other-Funding set-aside only if special rules apply

What data types were used in the program methodology?

Crashes

- Other-Fatal and all injury crashes

Exposure

- Volume

Roadway

- Horizontal curvature
- Functional classification
- Roadside features

What project identification methodology was used for this program?

- Crash frequency
- Other-Systemic Risk-Based Screening

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-statewide project for low cost improvements

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:100
Total Relative Weight:100

In FHWA's definition of HRRR ("any roadway functionally classified as a rural major or minor collector or a rural local road with significant safety risks, as defined by a State in accordance with an updated State strategic highway safety plan"), Vermont defines "significant safety risks" as meeting the high risk standard for any systemic safety screening.

VTrans has recent screening results for roadway departure, intersection, and vulnerable road user crashes. In addition, the 2017 screening of curves for roadway departure also applies to the HRRR program.

Vermont has triggered this rule for FFY 23 and for FFY 24. The HRRR program will remain active. The special rule requires VTrans to obligate $900,000 on projects that address safety on HRRR each FFY.

Program: Local Safety

Date of Program Methodology:11/1/2022

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

- All crashes

Exposure

Roadway

- Horizontal curvature
- Roadside features

What project identification methodology was used for this program?

- Other-Local Identification Hazards

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

Available funding:50
Cost Effectiveness:50

Total Relative Weight:100

The Local Safety program refers to the recently created Small Scale Local HSIP Grant which offers funding for the construction of low-cost measures on local roadways. Grant funding (up to $35,000 per town) is available with no local match requirement to cover construction only (design, permitting and administration are not eligible for reimbursement).

Program: Roadway Departure

Date of Program Methodology:9/30/2023

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• Fatal and serious injury crashes only	• Volume	• Horizontal curvature • Functional classification • Roadside features

What project identification methodology was used for this program?

- Other-Systemic Network Screening

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-Harmonization with other projects

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:25

Other-Feasibility:75

Vermont is currently incorporating systemic improvements in the preparation of New Project Summaries for paving projects.

Program: Sign Replacement And Improvement

Date of Program Methodology:2/9/2015

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
		• Other-Sign replacement needs

What project identification methodology was used for this program?

- Other-Average Sign Age

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

No

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

How are projects under this program advanced for implementation?

- Other-Programed by Asset Management & Performance Bureau

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:100
Total Relative Weight:100

Program: Vulnerable Road Users

Date of Program Methodology:11/15/2023

What is the justification for this program?

- Addresses SHSP priority or emphasis area
- Other-Other-Bipartisan Infrastructure Law Special VRU Rule

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• Fatal and serious injury crashes only	• Other-Social Vulnerability Index	• Other-No Existing Ped/Bike Facility

What project identification methodology was used for this program?

- Probability of specific crash types

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

Yes

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

Yes

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:1

Program: Other-Low-Cost Site Specific Improvements

Date of Program Methodology:11/1/2022

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

- All crashes

Exposure

- Traffic
- Lane miles

Roadway

- Functional classification

What project identification methodology was used for this program?

- Equivalent property damage only (EPDO 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-Harmonization with other projects, or Road Safety Audit Team recommendations

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:100
Total Relative Weight:100

Projects under this program are advanced for implementation through harmonization with other projects, or Road Safety Audit Team recommendations to and consideration for programming by the Operations and Safety Bureau and Asset Management Bureau.

Program: Other-Major Project Site Specific Improvements

Date of Program Methodology:11/1/2022

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes

- All crashes

Exposure

- Traffic
- Lane miles

Roadway

- Functional classification

What project identification methodology was used for this program?

- Crash frequency
- Equivalent property damage only (EPDO Crash frequency)
- 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?

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

Rank of Priority Consideration

Available funding:1
Incremental B/C:2

Program: Other-Traffic Signal Replacement/Installation

Date of Program Methodology:11/1/2022

What is the justification for this program?

- Addresses SHSP priority or emphasis area

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	• Functional classification

What project identification methodology was used for this program?

- Critical rate
- Equivalent property damage only (EPDO Crash frequency)

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

No

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

How are projects under this program advanced for implementation?

- Competitive application process

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

Rank of Priority Consideration

Ranking based on B/C:2
Available funding:1

What percentage of HSIP funds address systemic improvements?

7

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

- Horizontal curve signs
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing

The percentage above represents the percentage of HSIP funds that was obligated during federal fiscal year 2023 (10/1/22 to 9/30/23) that addresses systemic improvements including the design of projects. During the reporting period, HSIP funds were used to construct projects that focused on low-cost treatments.

Other improvements are implemented by policy or systematically. The safety edge and rumble stripes are installed on all paving projects as per policy. Shoulder widening is also considered on paving projects based on physical and cost constraints.

VTrans has sign projects that are constructed yearly on a statewide basis (and not based on the systemic approach).

VTrans has completed the systemic screening of lane departure crashes and of intersection crashes and intend to deploy more systemic projects in order to approach the HSIP funding allocation goals mentioned in its HSIP Manual for systemic initiatives in the order of 38% on state-owned roads and 15% on local roads.

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.

The HSIP considers other ITS technologies. For example, when VTrans constructs a new traffic signal with HSIP funds, the signal is connected to a central management system and VTrans has the ability to monitor the signal performance using ATSPM's (Automated Traffic Signal Performance Measures) and taking corrective actions. ATSPM help with having traffic signals operating correctly and having signal-controlled intersections being safer for all road users.

Regarding Connected Vehicle Technology, VTrans did install 16 intersections with V2I roadside units which broadcast Signal Phasing and Timing, SPaT messages to vehicles capable of receiving them. Ten intersections were completed in 2020 and six in 2021.

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.

VTrans has been using the overall safety management process discussed in Part B of the HSM to conduct the HSIP.

VTrans has been using the critical rate method to screen the roadway network when identifying high crash locations.

VTrans has been using the methodology shown in Appendix 4a to updates its crash cost estimates.

VTrans has been using crash modification factors for estimating the crash reduction benefits when calculating benefits/costs ratios (B/C ratio) for evaluating alternatives.

VTrans occasionally uses the predictive equations presented in Part C of the HSM when conducting site impacts analyses.

A research project to calibrate the predictive equations for two-lane rural roads found in Chapter 10 of the HSM was completed in September 2019 by the UVM Transportation Center. VTrans has been using IHSDM to recalibrate some of the HSM models using more recent crash data.

VTrans has been exploring how to incorporate the Intersection Control Evaluation process within its programs, with the aim of better quantifying safety performance through an increased usage of the HSM predictive methods.

VTrans is working to develop and initiate a safety management system that will include network screening capabilities based on safety performance functions.

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

Actions taken to improve the HSIP within VTrans started with the reorganization of the Operations and Safety Bureau to better emphasize safety and data driven decisions. VTrans hired a consultant to help develop an HSIP Manual based on best practices nationwide and this was adopted in November of 2022. The manual outlined new project development and delivery practices that are being used to develop data driven safety projects on both local and state roadways. VTrans recently created a Safety Systems Section within the Operations and Safety Bureau to house HSIP, the State Highway Safety Office, and Active Transportation within a common Section and under common management. This change integrates both behavioral and infrastructure safety programs, with an intended outcome of a fully coordinated approach to safety.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

Federal Fiscal Year

In the past, VTrans reported on the state fiscal year. To better match with the HSIP implementation plans which are done for the federal fiscal year, VTrans has now decided to report on the federal fiscal year. This report is for FFY23 (October 1, 2022, to September 30, 2023). This current 2024 HSIP report consequently overlaps with the previous 2023 HSIP report.

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$16,499,558	$16,499,558	100%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$900,000	$900,000	100%
VRU Safety Special Rule (23 U.S.C. 148(g)(3))	$2,339,447	$2,339,447	100%
Penalty Funds (23 U.S.C. 154)	$0	$0	0%
Penalty Funds (23 U.S.C. 164)	$5,085,947	$5,085,947	100%
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	$24,824,952	$24,824,952	100%

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

25%

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

25%

The proportion of funds used for local projects was determined as follows.

Local Projects	**HSIP Project Cost($)**
City or Municipal Highway Agency	
BARRE CITY HES 037-1(8) - Construction	764682
BURLINGTON HES 5000(18) - Construction	2194406
Town or Township Highway Agency	
BENNINGTON STP BP15(2) - Development	395947
RUTLAND CITY STP BP14(24) - Development	1128200
STATEWIDE HES HRRR(25) - Development	285359
STATEWIDE HSIP(16) - Development	200000
STATEWIDE HSIP(17) - Planned	550000
STATEWIDE STP HRRR(24) - Development	614641
Grand Total Local Projects	**6133235**
Total Obligated	**24824952**
Percent Non-Infrastructure	25%

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

15%

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

15%

The proportion of funding for non-infrastructure projects was calculated as shown below.

Non-Infrastructure Projects	HSIP Project Cost($)
CRASH PROGRAM HWCR(332) - Planned	540000
STATEWIDE HSIP(13) - Planned	600000
STATEWIDE HSIP(15) - Development	200000
STATEWIDE HSIP(16) - Development	200000
STATEWIDE HSIP(17) - Planned	550000
STATEWIDE HSIP(18) - Development	200000
STATEWIDE HSIP(19) - Planned	750000
STATEWIDE STP HRRR(24) - Development	614641
Grand Total Non-Infrastructure	**3654641**
Total Obligated	**24824952**
Percent Non-Infrastructure	15%

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%

No funds were transferred into or out of the HSIP apportionments.

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

Vermont’s main challenge is timely delivery of HSIP projects. Some projects accumulate project delivery delays at specific project stages, which can prevent VTrans from making obligations on schedule. A VTrans priority is to establish pipelines of projects in all categories to create a balanced program that can be slowed or accelerated as targets and/or funding changes. VTrans is working to complete a major network screening effort, is evaluating the use of probe data for safety planning, and development of new crash dashboards.

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 OR SPEED RANGE	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
BARRE CITY HES 037-1(8) - Construction	Intersection geometry	Add/modify auxiliary lanes	0.229	Miles	$764682	$4135488	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	7,500	25	City or Municipal Highway Agency	Spot	Intersections	Improve Geometry
BENNINGTON STP BP15(2) - Development	Pedestrians and bicyclists	Pedestrians and bicyclists – other	1.29	Miles	$395947	$1497144	VRU Safety Special Rule (23 U.S.C. 148(g)(3))	Urban	Minor Arterial	0	40	Town or Township Highway Agency	Spot	Pedestrians	Bicycle or Pedestrian Improvement
BRATTLEBORO STP 2000(29) - Complete	Pedestrians and bicyclists	Pedestrians and bicyclists – other	1.25	Miles	$93023	$613226	Penalty Funds (23 U.S.C. 164)	Urban	Principal Arterial-Other	0	40	State Highway Agency	Spot	Pedestrians	Bicycle or Pedestrian Improvement
BRATTLEBORO STP 2000(29) - Complete	Pedestrians and bicyclists	Pedestrians and bicyclists – other	1.25	Miles	$0	$613226	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	40	State Highway Agency	Spot	Pedestrians	Bicycle or Pedestrian Improvement
BURLINGTON HES 5000(18) - Construction	Intersection traffic control	Intersection traffic control - other	0.317	Miles	$1228913	$13576522	Penalty Funds (23 U.S.C. 164)	Urban	Principal Arterial-Other	6,300	25	City or Municipal Highway Agency	Spot	Intersections	Improve Operations
BURLINGTON HES 5000(18) - Construction	Intersection traffic control	Intersection traffic control - other	0.317	Miles	$965493	$13576522	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	6,300	25	City or Municipal Highway Agency	Spot	Intersections	Improve Operations
COLCHESTER HES NH 5600(14)C/2 - Development	Interchange design	Interchange design - other	1.053	Miles	$4224223	$37674057	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	23,900	35	State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
COLCHESTER HES NH 5600(14)C/2 - Development	Interchange design	Interchange design - other	1.053	Miles	$1000000	$37674057	Penalty Funds (23 U.S.C. 164)	Urban	Principal Arterial-Other	23,900	35	State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
COLCHESTER HES NH 5600(14)C/2 - Development	Interchange design	Interchange design - other	1.053	Miles	$400000	$37674057	VRU Safety Special Rule (23 U.S.C. 148(g)(3))	Urban	Principal Arterial-Other	23,900	35	State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
CRASH PROGRAM HWCR(332) - Planned	Miscellaneous	Data collection	1	Locations	$540000	$600000	HSIP (23 U.S.C. 148)			0		State Highway Agency	HSIP Program Support	Data	Improve Data Quality

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED OR SPEED RANGE	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
ESSEX JCT. STP 5300(13) - Development	Roadway	Roadway - other	0.3	Miles	$415300	$14950000	VRU Safety Special Rule (23 U.S.C. 148(g)(3))	Urban	Major Collector	0	0		Spot	Intersections	Improve Infrastructues for all Users
ESSEX STP 5400(10) - Development	Intersection traffic control	Modify control – new traffic signal	1	Intersections	$125000	$260000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	45	State Highway Agency	Spot	Intersections	Improve Operations
ESSEX STPG 030-1(22) - Development	Intersection traffic control	Modify control – new traffic signal	1	Intersections	$125000	$475000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	14,100	35	State Highway Agency	Spot	Intersections	Improve Geometry
FAIR HAVEN-RUTLAND TOWN NHG SIGN(70) - Complete	Roadway signs and traffic control	Roadway signs (including post) - new or updated	37.658	Miles	$178113	$2516658	Penalty Funds (23 U.S.C. 164)	Rural	Principal Arterial-Other	0		State Highway Agency	Spot	Roadway Departure	Improve Signs and Markings
FERRISBURGH NH 019-4(32) - Complete	Intersection traffic control	Intersection traffic control - other	0.001	Miles	$87623	$985832	Penalty Funds (23 U.S.C. 164)	Rural	Principal Arterial-Other	0	40	State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
FERRISBURGH NH 019-4(32) - Complete	Intersection traffic control	Intersection traffic control - other	0.001	Miles	$5000	$985832	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	0	40	State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
HARTFORD NHG SGNL(60) - Construction	Intersection traffic control	Modify traffic signal – modernization/replacement	3	Locations	$50000	$1408157	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	0		State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
HINESBURG HES 021-1(19) - Closing	Intersection geometry	Add/modify auxiliary lanes	0.403	Miles	$466951	$5046899	Penalty Funds (23 U.S.C. 164)	Rural	Minor Arterial	8,600	40	State Highway Agency	Spot	Intersections	Improve Geometry
MILTON STP 5800(3) - Development	Intersection geometry	Intersection geometry - other	0.61	Miles	$375000	$1675000	HSIP (23 U.S.C. 148)	Urban	Minor Collector	10,520	35	State Highway Agency	Spot	Intersections	Improve Geometry
NEW HAVEN HES 032-1(8) - Construction	Intersection geometry	Intersection geometry - other	0.3	Miles	$2785046	$3954882	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,000	45	State Highway Agency	Spot	Intersections	Improve Geometry
NEW HAVEN HES 032-1(8) - Construction	Intersection geometry	Intersection geometry - other	0.3	Miles	$10387	$3954882	Penalty Funds (23 U.S.C. 164)	Rural	Minor Arterial	4,000	45	State Highway Agency	Spot	Intersections	Improve Geometry
PLAINFIELD NH 028-3(41) - Development	Intersection traffic control	Intersection traffic control - other	0.11	Miles	$200000	$700000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	0	30	State Highway Agency	Spot	Intersections	Improve Operations
RUTLAND CITY STP BP14(24) - Development	Pedestrians and bicyclists	Pedestrians and bicyclists – other	0.25	Miles	$1128200	$1626250	VRU Safety Special Rule	Rural	Principal Arterial-Other	7,435	40	Town or Township	Spot	Pedestrians	Bicycle or Pedestrian Improvement

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED OR SPEED RANGE	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
							(23 U.S.C. 148(g)(3))					Highway Agency			
RUTLAND TOWN NHG SGNL(59) - Construction	Intersection traffic control	Modify traffic signal – modernization/replacement	1	Locations	$65000	$1117697	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	25,291	40	State Highway Agency	Spot	Intersections	Improve Operations
SHELBURNE-SOUTH BURLINGTON NHG SGNL(51)C/2 - Complete	Intersection traffic control	Modify traffic signal – modernization/replacement	1.212	Miles	$265026	$6089213	Penalty Funds (23 U.S.C. 164)	Urban	Principal Arterial-Other	0		State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
SOUTH HERO STP HES 028-1(22) - Complete	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$58632	$2613172	HSIP (23 U.S.C. 148)	Rural	Major Collector	7,922	35	State Highway Agency	Spot	Intersections	Improve Geometry
ST. ALBANS TOWN STPG SGNL(61) - Development	Intersection traffic control	Modify traffic signal – modernization/replacement	2	Locations	$50000	$75000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	0		State Highway Agency	Spot	Intersections	Improve Infrastructues for all Users
STATEWIDE - NORTHEAST REGION STPG MARK(320) - Closing	Roadway delineation	Longitudinal pavement markings - remarking	1	Locations	$1735000	$2685157	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Roadway Departure	Improve Signs and Markings
STATEWIDE - NORTHWEST REGION STPG MARK(321) - Complete	Roadway delineation	Longitudinal pavement markings - remarking	1	Locations	$1290000	$1832954	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Roadway Departure	Improve Signs and Markings
STATEWIDE - SOUTH REGION STPG MARK(322) - Complete	Roadway delineation	Longitudinal pavement markings - remarking	1	Locations	$1348167	$1775872	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Roadway Departure	Improve Signs and Markings
STATEWIDE HES HRRR(25) - Development	Roadway signs and traffic control	Curve-related warning signs and flashers	95	Miles	$285359	$337859	HRRR Special Rule (23 U.S.C. 148(g)(1))			0	45	Town or Township Highway Agency	Systemic	Roadway Departure	Improve Signs and Markings
STATEWIDE HES HSIP(12) - Planned	Miscellaneous	Data collection	1	Locations	$540000	$2400000	HSIP (23 U.S.C. 148)			0		State Highway Agency	HSIP Program Support	Data	Improve Data Quality
STATEWIDE HES SHSP(19) - Complete	Miscellaneous	Miscellaneous - other	1	Locations	$64910	$170033	Penalty Funds (23 U.S.C. 164)			0		State Highway Agency	HSIP Program Support	Data	Improve Data Quality

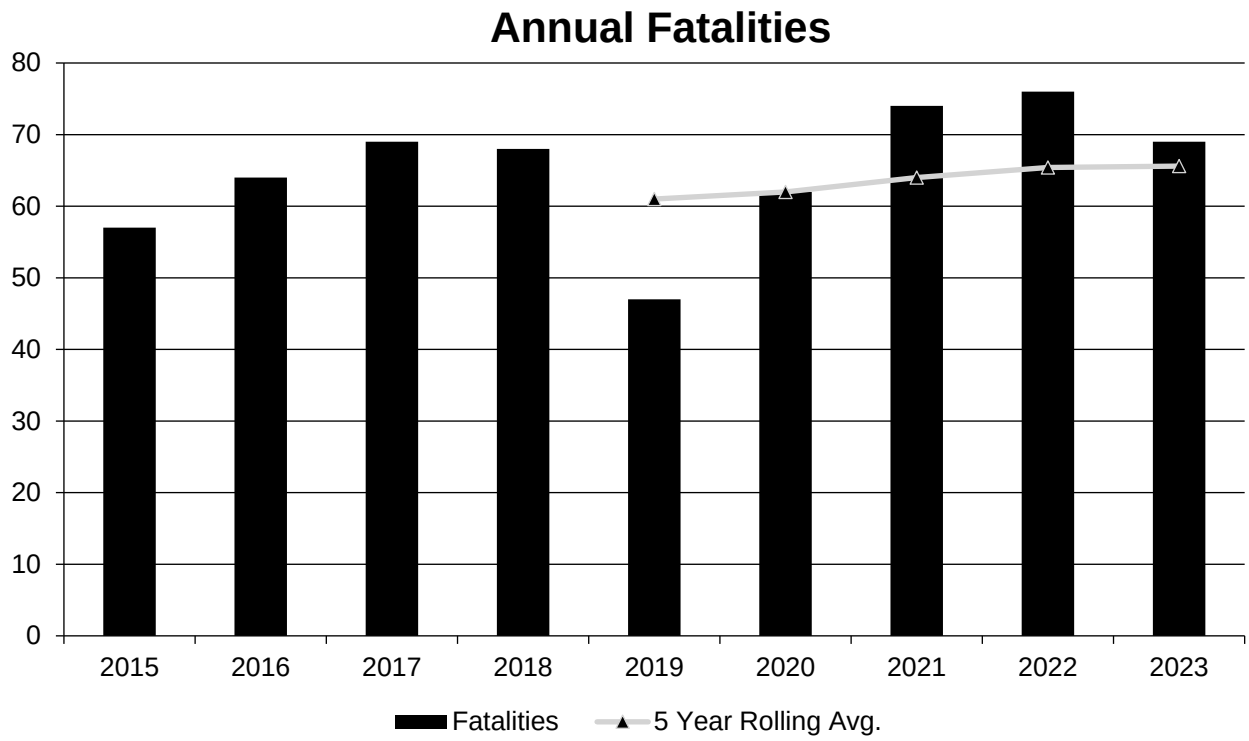
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED OR SPEED RANGE	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
STATEWIDE HES SHSP(19) - Complete	Miscellaneous	Miscellaneous - other	1	Locations	$3316	$170033	HSIP (23 U.S.C. 148)			0		State Highway Agency	HSIP Program Support	Data	Improve Data Quality
STATEWIDE HSIP(13) - Planned	Miscellaneous	Transportation safety planning	1	Locations	$600000	$1100000	Penalty Funds (23 U.S.C. 164)			0		Local and State	HSIP Program Support	All	Improve Infrastructues for all Users
STATEWIDE HSIP(15) - Development	Roadway	Roadway - other	1	Locations	$200000	$200000	Penalty Funds (23 U.S.C. 164)			0		State Highway Agency	Systemic	Roadway Departure & Intersections	Improve Infrastructues for all Users
STATEWIDE HSIP(16) - Development	Roadway	Roadway - other	1	Locations	$200000	$200000	Penalty Funds (23 U.S.C. 164)			0		Town or Township Highway Agency	Systemic	Roadway Departure & Intersections	Low Cost Improvements
STATEWIDE HSIP(17) - Planned	Roadway	Roadway - other	1	Locations	$500000	$1212000	HSIP (23 U.S.C. 148)			0		Town or Township Highway Agency	Systemic	Roadway Departure & Intersections	Low Cost Improvements
STATEWIDE HSIP(17) - Planned	Roadway	Roadway - other	1	Locations	$50000	$1212000	Penalty Funds (23 U.S.C. 164)			0		Town or Township Highway Agency	Systemic	Roadway Departure & Intersections	Low Cost Improvements
STATEWIDE HSIP(18) - Development	Roadway	Roadway - other	1	Locations	$200000	$200000	Penalty Funds (23 U.S.C. 164)			0		State Highway Agency	Spot	Roadway Departure & Intersections	Improve Infrastructues for all Users
STATEWIDE HSIP(19) - Planned	Miscellaneous	Miscellaneous - other	1	Locations	$750000	$1050000	HSIP (23 U.S.C. 148)			0			HSIP Program Support	Data	Improve Data Analysis
STATEWIDE STP HRRR(24) - Development	Roadway signs and traffic control	Roadway signs (including post) - new or updated	1	Locations	$614641	$879641	HRRR Special Rule (23 U.S.C. 148(g)(1))	Rural	Local Road or Street	0		Town or Township Highway Agency	Systemic	Roadway Departure	Improve Signs and Markings
STOWE STPG SGNL(52) - Construction	Intersection geometry	Add/modify auxiliary lanes	0.13	Miles	$6000	$1368279	Penalty Funds (23 U.S.C. 164)	Rural	Minor Arterial	0	30	State Highway Agency	Spot	Intersections	Improve Geometry
WILLISTON STP 5500(17) - Development	Roadway	Roadway widening - add lane(s) along segment	0.676	Miles	$435000	$9858087	Penalty Funds (23 U.S.C. 164)	Urban	Minor Arterial	31,284	40	State Highway Agency	Spot	Lane Departure	Improve Geometry

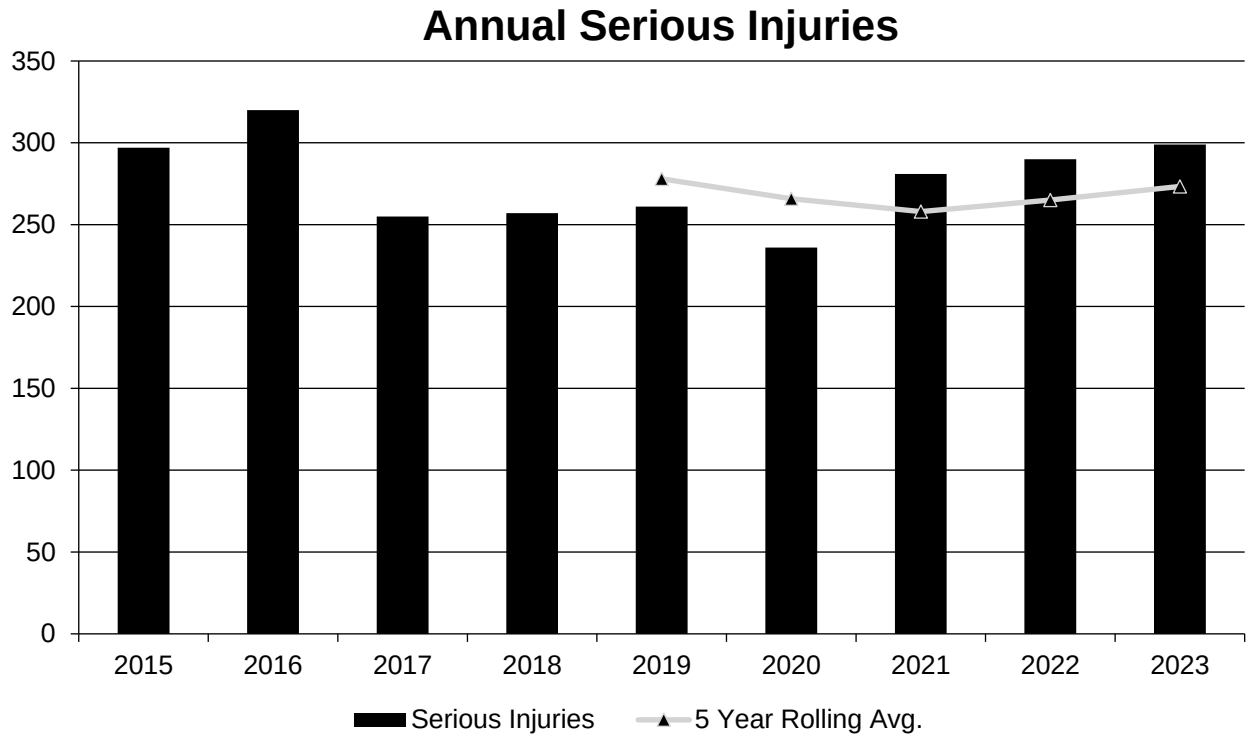
Safety Performance

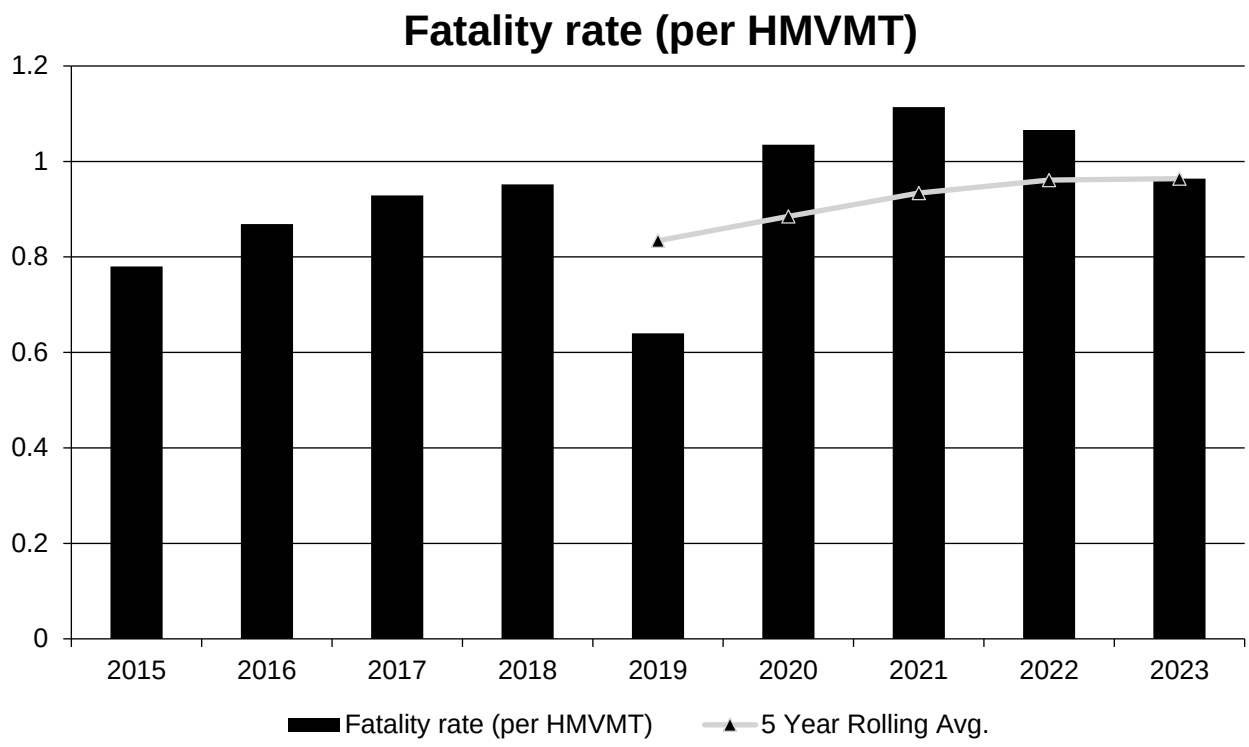
General Highway Safety Trends

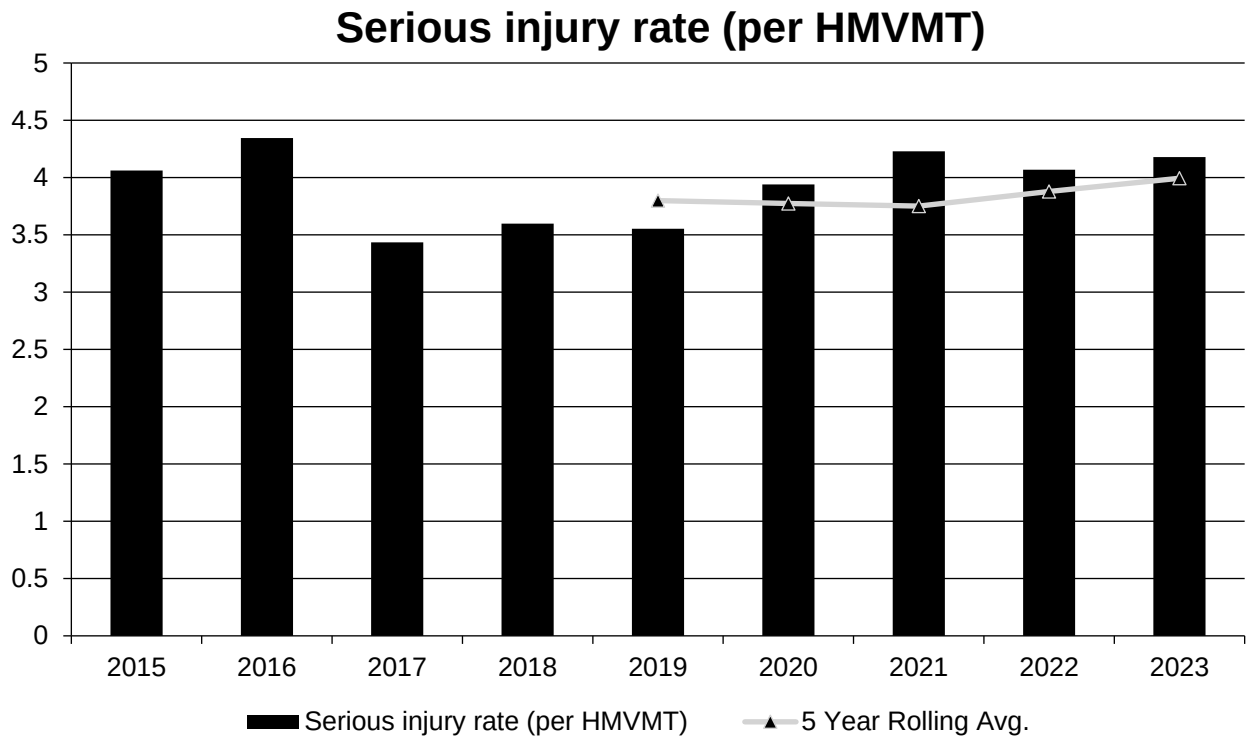
Present data showing the general highway safety trends in the State for the past five years.

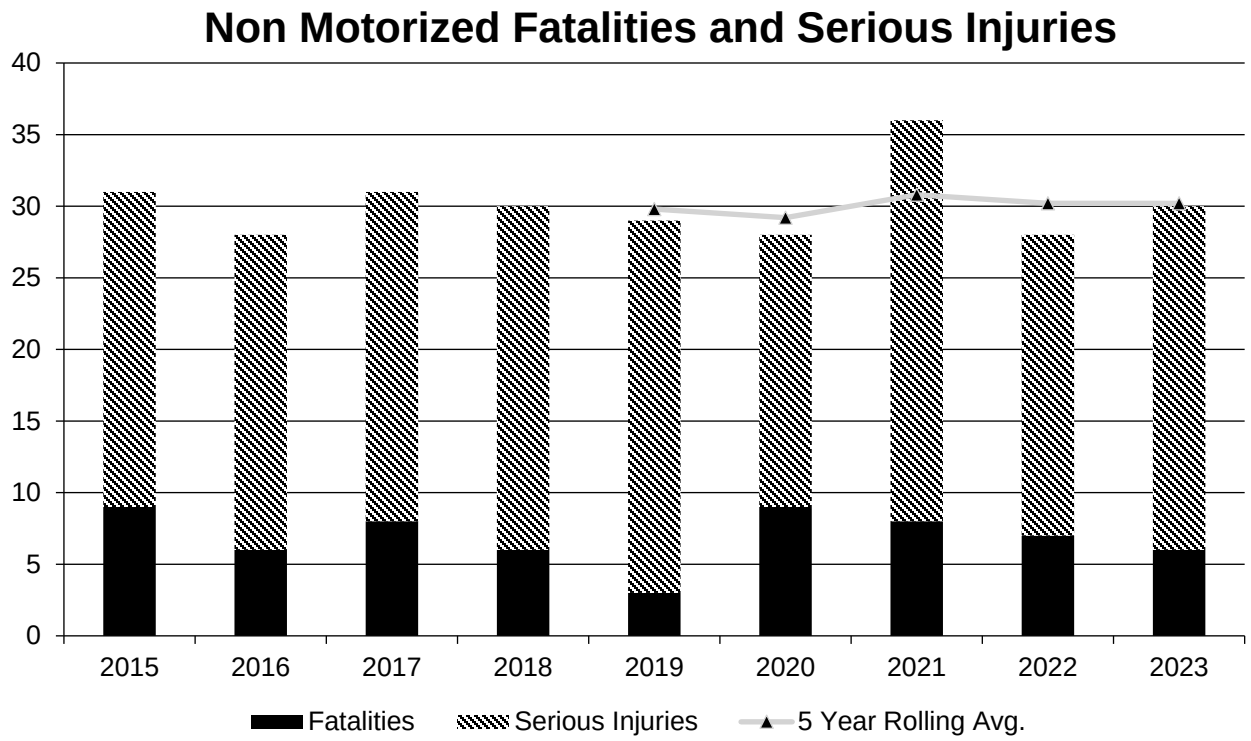
PERFORMANCE MEASURES	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fatalities	57	64	69	68	47	62	74	76	69
Serious Injuries	297	320	255	257	261	236	281	290	299
Fatality rate (per HMVMT)	0.780	0.869	0.929	0.952	0.640	1.035	1.114	1.066	0.964
Serious injury rate (per HMVMT)	4.062	4.345	3.435	3.598	3.553	3.940	4.229	4.069	4.179
Number non-motorized fatalities	9	6	8	6	3	9	8	7	6
Number of non-motorized serious injuries	22	22	23	24	26	19	28	21	24


Annual Fatalities
80
70
60
50
40
30
20
10
0
2015
2016
2017
2018
2019
2020
2021
2022
2023
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
350
300
250
200
150
100
50
0
2015
2016
2017
2018
2019
2020
2021
2022
2023
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.2
1
0.8
0.6
0.4
0.2
0
2015
2016
2017
2018
2019
2020
2021
2022
2023
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
2015
2016
2017
2018
2019
2020
2021
2022
2023
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



Describe fatality data source.

FARS

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

Year 2023

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	6.2	15.2	0.01	0.02
Rural Principal Arterial (RPA) - Other Freeways and Expressways	0	0	0	0
Rural Principal Arterial (RPA) - Other	8.6	24.8	0.01	0.03
Rural Minor Arterial	15.8	44.4	0.02	0.04
Rural Minor Collector	0.8	3.2	0	0
Rural Major Collector	14.2	50.2	0.08	0.28
Rural Local Road or Street	10.8	47.4	0.01	0.06
Urban Principal Arterial (UPA) - Interstate	1.2	6.8	0	0.01
Urban Principal Arterial (UPA) - Other Freeways and Expressways	0.2	1.8	0	0.03
Urban Principal Arterial (UPA) - Other	3.6	33	0.01	0.06
Urban Minor Arterial	1.8	20.6	0	0.06
Urban Minor Collector	0.4	0.6	0	0
Urban Major Collector	1.2	12.4	0.05	0.54
Urban Local Road or Street	0.8	13	0	0.04

Year 2023

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	48	178.2		
County Highway Agency				
Town or Township Highway Agency	14.8	58.2		
City or Municipal Highway Agency	2	27.6		
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency	0.8	7		
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)				
Indian Tribe Nation				

Provide additional discussion related to general highway safety trends.

In Vermont, a group public and private entities under the organization of the Vermont Highway Safety Alliance (VHSA) continues to collaborate towards safety efforts by promoting safety through education.

VTrans also not only manages the Highway Safety Improvement Program but it also operates the State Highway Safety Office. This has facilitated the coordination and implementation of behavioral countermeasures targeted at the Critical Emphasis Areas listed in the SHSP.

Over the years, roadway departure has been the principal crash type that has accounted for a large proportion of major crashes (fatal plus serious injury crashes). The 2022-2026 SHSP reports this percentage to be over

70%. Roadway departure crashes and crashes taking place at intersections are the crash types that are more readily addressed by the HSIP or other systematic efforts.

For several years, VTrans has been implementing statewide policies related to the inclusion of centerline rumble stripes and the SafetyEdge on all paving projects. VTrans has recently completed risk-based assessments of lane departure and intersection crashes, and has been putting more emphasis on harmonization with planned projects.

Despite these efforts, like in many parts of the country, fatalities have been occurring at a higher rate than projected over the last few years in Vermont. Speeding and aggressive driving, distracted driving, lack of seat belt use and impairment by alcohol or other drugs continue to be the principal factors.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2025 Targets *

Number of Fatalities:65.0

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

The Excel regression trend line value for 2025 is estimated at 69. The point forecast for 2025, as determined by the ARIMA forecasting method, is 65.6 with a 95% confidence interval of between 62.7 and 68.5. The current baseline for 2025 is 65.6.

As of July 1, 2024, the number of fatal crashes and the number of fatalities in Vermont are lower than in 2022 and very similar to the same time of year in 2021 which had 28 fatalities and 25 fatal crashes. In 2021, the total number of fatalities was 74 and crept up to 76 in 2022 but fell to 69 in 2023. If the second half of 2024 progresses similarly to the first, 2024 could end up with the lowest 5-year average since the first year of the COVID-19 pandemic and the lowest since 2015. In order to equal the 2025 baseline of 65.6, the total number of fatalities would need to equal 47 in 2024.

The 2022-2026 SHSP calls for a 10% reduction in the 5-year average of the number of fatalities. Assuming a constant linear reduction, this represents a 2% reduction per year from 2022 numbers. To support the SHSP goal, this means that the 2025 target should be 61.5.

Based on the information and trends described above, VTrans intends to keep the 2025 target value consistent with the 2024 target value. The 2025 target was set at 65.

Number of Serious Injuries:258.0

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

The 2022-2026 SHSP calls for a 10% reduction in the 5-year average of the number of suspected serious injuries, a 2% reduction per year. To support the SHSP goal, this means that the 2025 target should be 248.2.

The number of suspected serious injuries has been trending up over the last five years, with an increase from 286 to 302 injuries in the most recent two years (2022 and 2023), but the number of suspected serious injuries so far for the 1st half of 2024 is lower than that of 2023 at the same time of year.

A sensitivity analysis indicates that two high years in 2024 and 2025 (e.g., 280 each year) would bring the 2025 5-yr average to 285.6 and that on the other hand, with two years resembling numbers prior to 2020 (e.g., 260), the 2025 5-yr average would be 277.6.

The Excel regression trend line value for 2025 is estimated at 263. The point forecast for 2025, as determined by the ARIMA forecasting method, is 267.7 with a 95% confidence interval of between 252.2 and 283.2.

Based on the information above, VTrans intends to keep the 2025 target value consistent with the 2024 target value. The 2025 target was set at 258.

Fatality Rate:0.965

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

The new approach established in 2022 for Vermont to reallocate its HSIP funds in greater proportions towards rural roads and systemic projects will not have an effect in the short term in reducing fatalities.

The Excel regression trend line value for 2025 is estimated at 1.052. The point forecast for 2025, as determined by the ARIMA forecasting method, is 0.963 with a 95% confidence interval of between 0.854 and 1.072.

VTrans intends to keep the 2025 target value consistent with the 2024 target value. The 2025 target was set at 0.965.

Serious Injury Rate:3.746

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

The Excel regression trend line value for 2025 is estimated at 4.0144. The point forecast for 2025, as determined by the ARIMA forecasting method, is 3.832 with a 95% confidence interval of between 3.647 and 4.018.

A value of 3.6 would be the target needed to support the straight application of the of 10% per year SHSP reduction goal. However, injury crashes have been increasing. Calculating the 2025 5-yr average rate using estimated injury values to support the SHSP goal (280 suspected serious injuries in 2024 followed by an unrealistic 217 in 2025), results in a 5-yr average rate 3.855.

Based on the information above, VTrans intends to keep the 2025 target value consistent with the 2024 target value. The 2025 target was set at 3.746.

This target is above what would support the SHSP goal in terms of rate. Short and mid-term HSIP investments might achieve greater reductions in the number of serious injuries in the later year of the SHSP.

Total Number of Non-Motorized Fatalities and Serious Injuries:34.0

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

The 2022-2026 SHSP calls for a 10% reduction in the 5-year average of the number of fatalities and in the number of suspected serious injuries. To support the 10% SHSP goal reduction, or the equivalent reduction of 2% per year, the 2025 target should be 34.2.

The Excel regression trend line value for 2025 is estimated at 34.6. The point forecast for 2025, as determined by the ARIMA forecasting method, is 37 with a 95% confidence interval of between 34.4 and 39.6.

Based on this information, the target has been set at 34 and supports the SHSP goal. The target is the same as it was for 2024.

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

Draft safety targets were developed by the Data & Analysis Section of the Operations & Safety Bureau using trend lines and ARIMA forecasting.

In spring 2024, FHWA and NHTSA waived, for federal fiscal year 2025, the requirement that performance targets submitted for common performance measures be identical in the HSIP reporting and the HSP. Regardless, VTrans decided to continue coordinating the development of the safety performance targets that are reported in the HSIP report with stakeholders.

A coordination meeting was held among stakeholders to discuss the safety targets. These stakeholders included: The Chittenden County MPO, VTrans' Operations and Safety Bureau (HSIP Staff, Data Staff, SHSO Staff), VTrans' HSIP/HSP consultant, and VTrans' Planning and Policy Bureau.

Does the State want to report additional optional targets?

No

Vermont does not wish to establish separate targets for the urbanized areas.

Describe progress toward meeting the State's 2023 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	65.0	65.6
Number of Serious Injuries	258.0	273.4
Fatality Rate	0.965	0.964
Serious Injury Rate	3.746	3.994
Non-Motorized Fatalities and Serious Injuries	34.0	30.2

Vermont did not meet the 2023 target for the number of fatalities. The actual 5-year average performance for 2019-2023 (65.4) was higher than the established target for 2023 (65.0) and it was also not better than the 2017-2021 baseline (64.0).

The number of fatalities in 2016 was 47. Prior to the pandemic, fatalities in Vermont had been typically in the 60s. The number of fatalities in 2016 was much lower than usual. In addition, fatalities in Vermont in 2021 and 2022 increased into the 70s, above what Vermont had experienced in the recent past. The 2021 and 2022 increases in fatalities followed the national trend that happened post-covid lockdowns. Speeding and more reckless driving were suspected to have contributed to the increase in fatalities during that time.

Fatalities in Vermont were lower in 2023 as they were nationally as per NHSTA estimates. A contributing factor to crashes in 2023 is drugs and alcohol with 65% of fatal crashes being associated with alcohol and/or drug use, compared with 61% in 2022.

· Vermont did meet the 2023 fatality rate target. The actual performance for 2019-2023 (0.964) was lower than the established target for 2023 (0.965). However, it was not better than the 2017-2021 baseline (0.934).

The number of vehicle miles traveled during 2020 was approximately 18% lower due to the pandemic. Vehicle miles traveled in 2021 were 9% lower than the level of the pre-pandemic and in 2022 and 2023, vehicle miles traveled were about 3% lower. In addition, the number of fatalities has been increasing in recent years.

· Vermont did not meet the number of suspected serious injuries target. The actual performance for 2019-2023 (273.2) was higher than the established target for 2023 (258). Similarly, it was also not better than the 2017-2021 baseline (257.8).

The serious injury 5-year average was strongly affected by the unusually low Covid-year number in 2020 of 236 and the unusually high number in 2023 of 302, the highest number since 2016.

· Vermont did not meet the 2023 suspected serious injury rate target. The actual performance for 2019-2023 (4.000) was higher than the established target for 2023 (3.700). Similarly, it was also not better than the 2017-2021 baseline (3.746).

The number of vehicle miles traveled during 2020 was approximately 18% lower due to the pandemic. Vehicle miles traveled in 2021 were 9% lower than the level of the pre-pandemic and in 2022 and 2023, vehicle miles traveled were about 3% lower. In addition, the number of suspected serious injuries has increased since the pandemic.

· Vermont did not meet the number of non-motorized fatalities and non-motorized serious injuries target. The actual performance for 2019-2023 (34.4) was higher than the established target for 2023 (34.0). However, the actual performance (34.0) was better than the 2017-2021 baseline (36.00) and Vermont thus made significant progress.

Nationally, pedestrian fatalities have increased 5 to 10%, while they have declined in Vermont.

Applicability of Special Rules

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

Yes

The High Risk Rural Roads Special Rule applied for FFY23. Vermont's 5-year average fatality rates based on 100 MVMT on the three functional classifications of rural roads for the periods ending 2018 and 2020 increased from 1.077 to 1.133.

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

Yes

The Vulnerable Road Users Special Rule applied for FFY23. In 2020, the number of non-motorized fatalities was 9, the total number of fatalities was 62, and the percentage of VRU fatalities per total fatalities was 15%.

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	2017	2018	2019	2020	2021		
Number of Older Driver and Pedestrian Fatalities	13	12	11	11	10	19	17
Number of Older Driver and Pedestrian Serious Injuries	31	26	30	25	52	40	34

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Change in fatalities and serious injuries
- Other-Change in fatal and serious injury crashes

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

The overall effectiveness of the HSIP is measured by changes in the number of fatalities and suspected serious injuries as well as by changes in the number of fatal and suspected serious injury crashes (referred to as major crashes).

Fatal and Injury Crashes (Major Crashes):

Both trends in the five-year average of the number of fatal crashes and in the five-year average of the number of suspected serious injury crashes have been going up. The trend in the five-year average of the number of fatal crashes has increased from the 2015-2019 period to the 2019-2023 period, from 55.2 fatal crashes to 61.4, while the five-year average of the number of suspected serious injury crashes has also increased, passing from 228.4 serious injury crashes to 230.0.

Overall, the trend in the five-year average of the number of major crashes has been upward from 283.3.8 major crashes to 291.4 major crashes.

Fatalities and Serious Injuries:

The five-year average of the number of fatalities went up when comparing the same two periods, passing from 61.0 to 65.6 fatalities. On the other hand, comparing the same two periods shows that the five-year average of the number of serious injuries went down from 278.0 to 283.4 serious injuries.

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

A continued increased awareness of data-driven processes indicates success as there has been an increasing desire in Vermont to use data-driven processes to identify projects and to allocate funding.

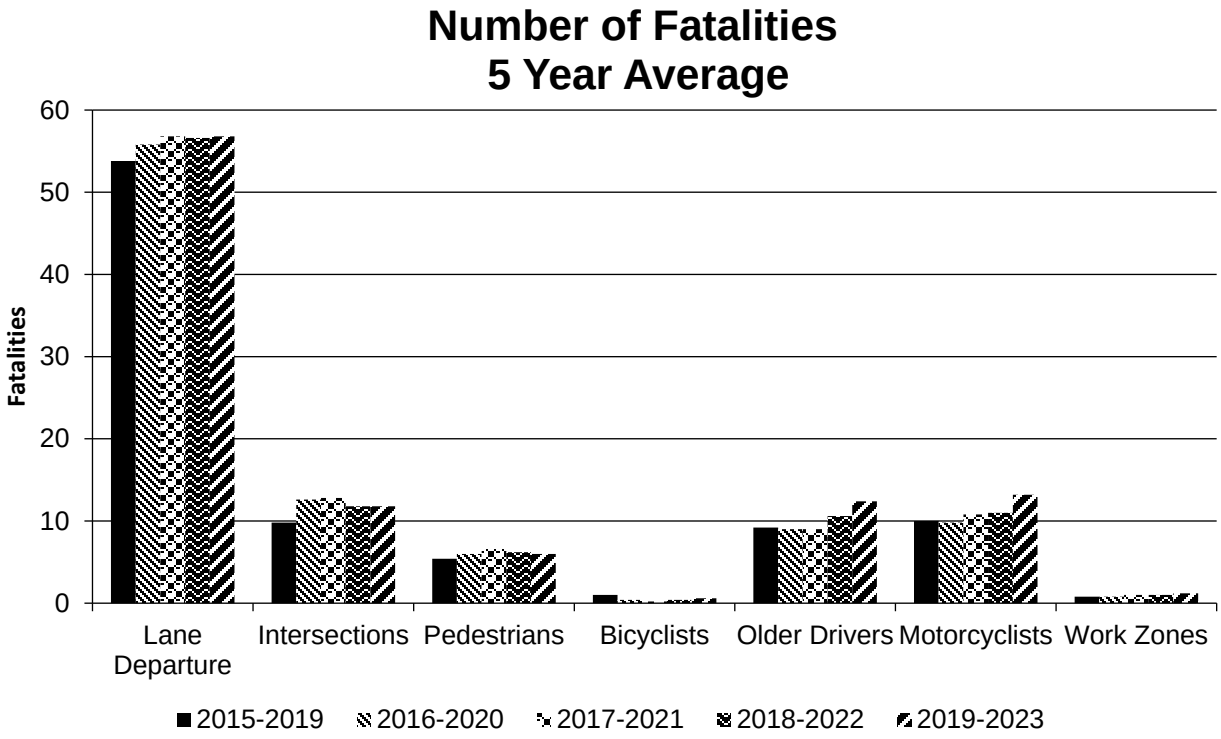
During the reporting period, VTrans worked on developing visualization tools to provide easier access to the systemic risk-based assessment of lane departure and intersection crashes to help designers include targeted safety measures in their projects. VTrans continued to develop an intersection control evaluation (ICE) process with the intent of including predictive safety analysis in the scoping of non-safety projects.

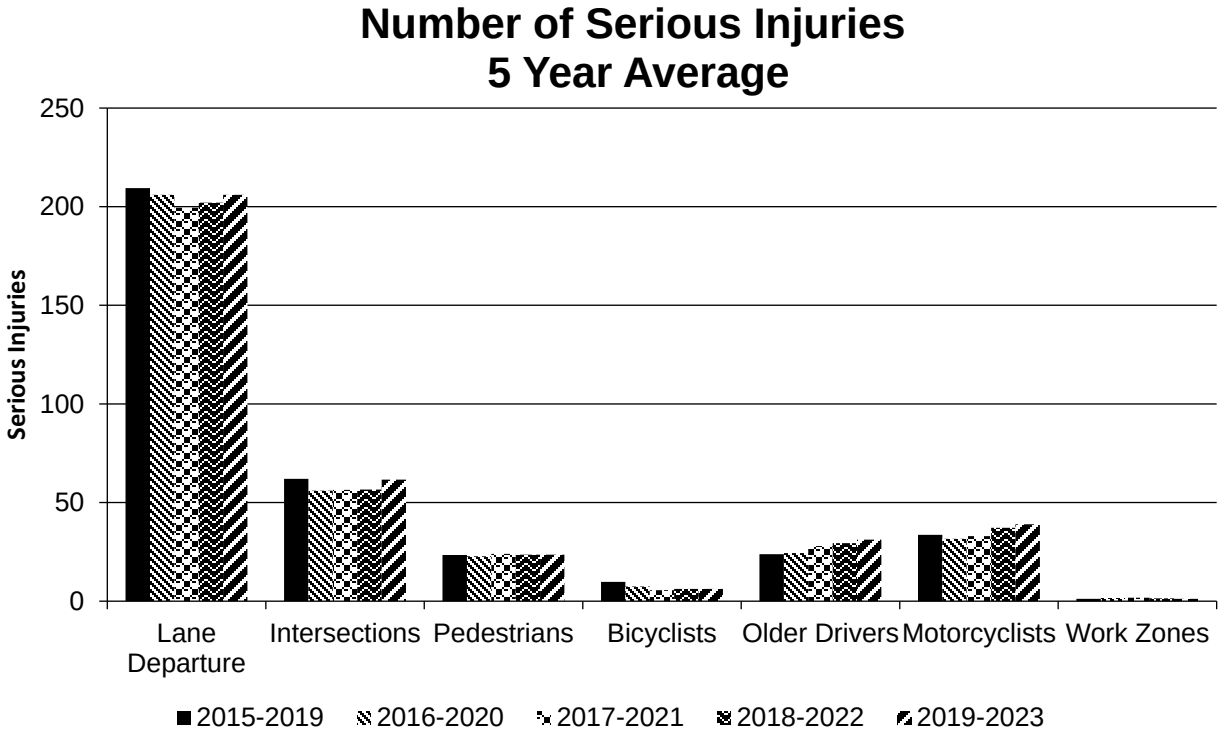
Effectiveness of Groupings or Similar Types of Improvements

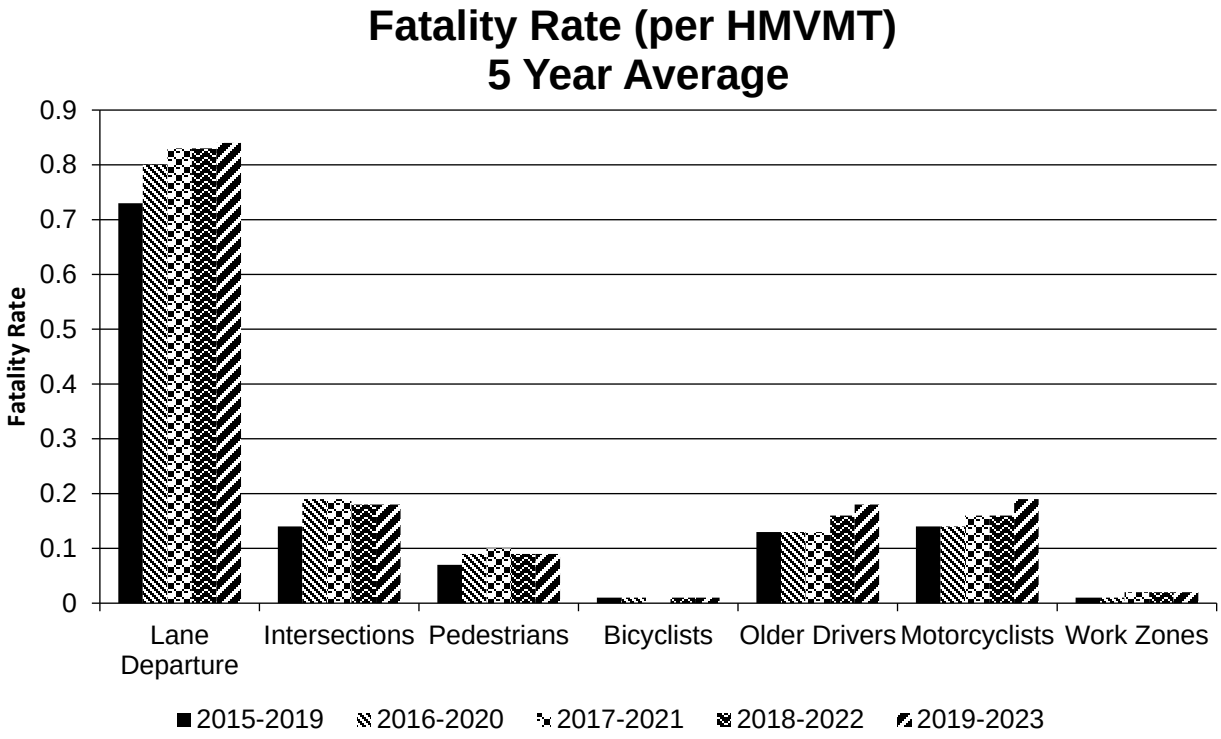
Present and describe trends in SHSP emphasis area performance measures.

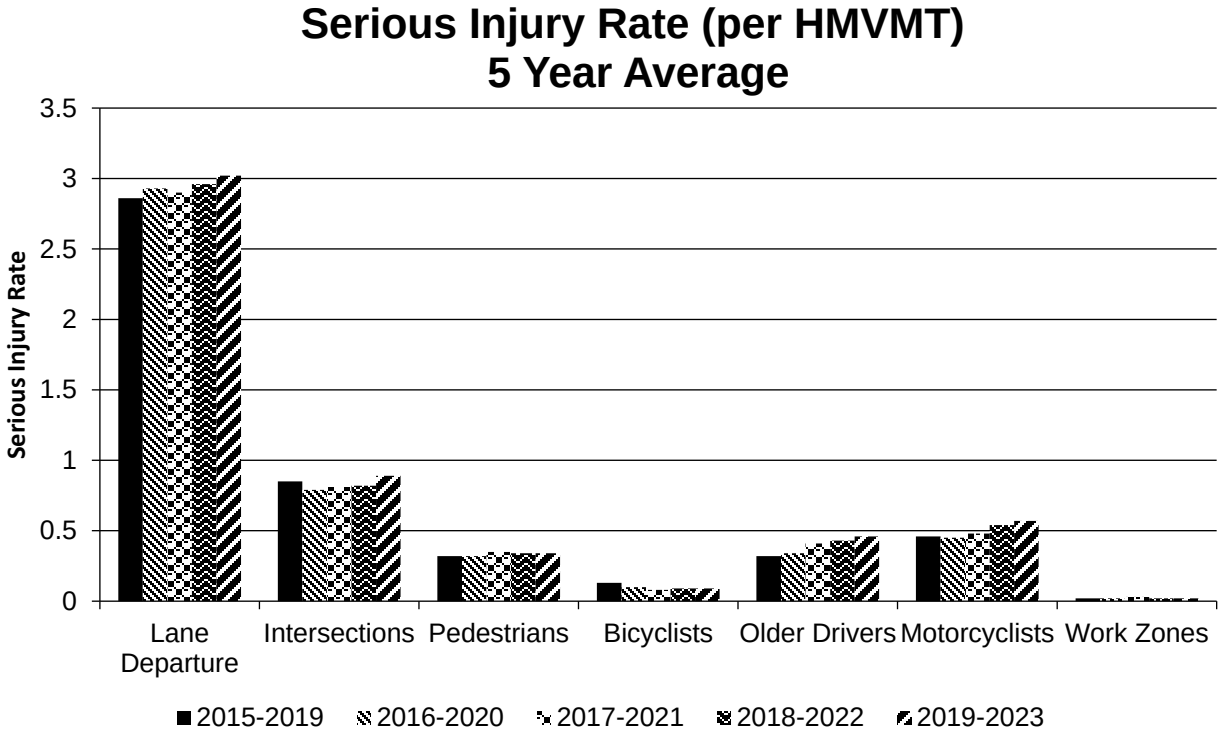
Year 2023

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		56.8	206	0.84	3.02
Intersections		11.8	61.6	0.18	0.89
Pedestrians		6	23.6	0.09	0.34
Bicyclists		0.6	6.2	0.01	0.09
Older Drivers		12.4	31.2	0.18	0.46
Motorcyclists		13.2	39	0.19	0.57
Work Zones		1.2	1.2	0.02	0.02


Number of Fatalities
5 Year Average
Fatalities
60
50
40
30
20
10
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2015-2019
2016-2020
2017-2021
2018-2022
2019-2023


Number of Serious Injuries
5 Year Average
Serious Injuries
250
200
150
100
50
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2015-2019
2016-2020
2017-2021
2018-2022
2019-2023





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

Yes

Please provide the following summary information for each countermeasure effectiveness evaluation.

CounterMeasures:	All-Way Stop Control
Description:	Convert two-way stop-controlled intersections on rural-two lane roads to all-way stop control.
Target Crash Type:	All
Number of Installations:	3
Number of Installations:	3
Miles Treated:	
Years Before:	3
Years After:	3
Methodology:	Before/after using empirical Bayes or Full Bayes
Results:	The safety effectiveness was determined to be a 54% reduction.

File Name: Hyperlink

CounterMeasures:	New Signal
Description:	Convert minor road stop-controlled intersections on rural-two lane roads to signalized intersections.
Target Crash Type:	All
Number of Installations:	3
Number of Installations:	3
Miles Treated:	
Years Before:	3
Years After:	3
Methodology:	Before/after using empirical Bayes or Full Bayes
Results:	When considering all crashes, this countermeasure was not found to be effective as the safety effectiveness was determined to be a 53% increase.

File Name: Hyperlink

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)
SHELBURNE-SOUTH BURLINGTON NHG SGNL(51)C/1	Urban Principal Arterial (UPA) - Other	Intersection traffic control	Modify traffic signal timing – signal coordination	52.00	35.00			2.00		13.00	6.00	67.00	41.00	2.54
WEST RUTLAND STPG SGNL(50)	Rural Principal Arterial (RPA) - Other	Intersection traffic control	Modify traffic signal – modernization/replacement	3.00	3.00					4.00	1.00	7.00	4.00	2.57
BARRE TOWN STP HES 0169(8)	Urban Major Collector	Intersection geometry	Intersection realignment	2.00	1.00					1.00		3.00	1.00	0.57

The table reports the evaluation of projects that were constructed in 2019 and 2020 with HSIP funds. The evaluation was performed using the Simple Before-After Method with three full years of before and after crash data. The evaluation results represent the benefits to costs ratio (B/C) for each project.

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

Of the emphasis areas identified in the SHSP, lane departure crashes and intersection crashes are the two areas that specifically relate to engineering and the HSIP.

The 2022-2026 SHSP has target reductions for the intersection and lane departure emphasis areas that have been set at 15% and 10% of 2021 average thresholds. This represents a five-year target of 50 major crashes for intersection crashes and a five-year average target of 194 major crashes for lane departure crashes.

The latest five-year average (2019-2023) for lane departure and intersection crashes indicates that these crashes are trending upward.

The latest five-year average (2019-2023) for lane departure crashes is 222.8 major crashes and is above the five-year average for 2017-2021 of 200.8 major crashes. Similarly, the latest five-year average (2019-2023) for intersection crashes is 64.4 major crashes and is above the five-year average for 2017-2021 of 59.0 major crashes.

Compliance Assessment

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

06/03/2022

What are the years being covered by the current SHSP?

From: 2022 To: 2026

When does the State anticipate completing its next SHSP update?

2027

Vermont's current SHSP 2022 -2026 was approved by the Secretary of the Vermont Agency of Transportation on June 3, 2022. FHWA confirmed the approval of the process used to update Vermont's SHSP 2022 -2026 on June 16, 2022. The next update of the SHSP is due July 1, 2027.

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]	95	95								
	Access Control (22) [23]	100	100								
	One/Two Way Operations (91) [93]	100	100								
	Number of Through Lanes (31) [32]	100	100					100	62		
	Average Annual Daily Traffic (79) [81]	88	88					100	96		
	AADT Year (80) [82]	88	88								
	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]			97	99						
	Intersection/Junction Traffic Control (131) [131]			92	98						
	AADT for Each Intersecting Road (79) [81]			83	96						
	AADT Year (80) [82]			83	96						
	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]					20	20				
	Roadway Type at End Ramp Terminal (199) [189]					20	20				
	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):		**98.39**	**98.39**	**94.38**	**98.63**	**85.45**	**85.45**	**100.00**	**95.33**	**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.

VTrans continues to work to meet the MIRE fundamental data element (FDE) requirements by September 30, 2026. Over the last several years, VTrans has migrated core data to the MIRE data schema and worked to populate missing FDEs. VTrans has built an extract, transform and load (ETL) process for roadway segments that pulls from the master data layers and formats any elements that can not be migrated in the near term to the MIRE schema, creating a MIRE compliant roadway segment layer. The plan is to build out a similar process for intersections. For the interchange ramps, a data table was developed using the MIRE data schema and is currently in the process of being populated with the FDEs.

Much of the data needed to support the FDE requirements exist at VTrans to support the Highway Performance Monitoring System (HPMS) or other systems, but there were some elements that were identified at the beginning of the process that didn’t exist. There has been significant progress toward meeting the MIRE FDE requirements, but there is still work remaining to fill data gaps and complete the build out the ETL processes

The MIRE data that is generated from the ETL process will be posted to the enterprise GIS repository and then served to the open geodata portal through feature services. This will provide access to internal GIS at VTrans and to external users.

In 2021, the FHWA Office of Safety performed an assessment for the VTrans MIRE data and provided a scorecard. Based on this, VTrans is between 84% and 100% complete on having the coverage and format necessary to meet the MIRE FDE requirements. This assessment identified several areas where attributes at VTrans do not meet the required criteria and there will need to be revisions to the VTrans process for maintaining and reporting these fields. There were also gaps identified in data that need to be filled and some alterations to how data is currently being classified.

VTrans had a Traffic Records Assessment performed in the spring of 2022, which provided a review of the roadway data elements and assessment of any gaps in the data. This has prompted development of the addition of MIRE specific roadway element fields, such as Route Type and Federal Aid.

One area of success for MIRE is the development of the intersection data, coordination with a vendor early in the process to build out data for the federal aid highways, working with the Regional Planning Commissions (RPCs) to build out local road data, and the integration of processes to pull data from other sources to map to the data elements in the intersection point (nodes) and approach (node legs) data layers. Over the last year, there has been considerable work by the RPCs to build out the local paved road intersection FDEs and other data elements needed for safety analysis. This is still more work to be done, but significant progress has been made toward completion of this data.

Tasks needed to comply with the 2026 deadline include:

· Review of the areas for improvement identified in the 2021 FHWA MIRE Assessment and 2022 Traffic Records Assessment

· Build out some data elements to match MIRE requirements, such as non-NHS highways to have full coverage of the ARNOLD data.

· Incorporate more detailed pavement classification to match MIRE schema

· Perform a rigorous assessment of what exists, identify gaps, and develop a data acquisition plan.

· Continue to develop validation tools and processes to ensure the highest quality of data.

· Expand the technology and methodologies for collecting the MIRE FDEs.

· Develop extract, transform and load (ETL) processes to reformat existing enterprise data to the MIRE data element schema for intersections.

· Determine a process for data exchange with other agencies that will collect data.

· Estimating the costs, levels of staffing, or resource requirements to collect the MIRE FDEs.

· Identifying funding for the collection, storage, and maintenance of the MIRE FDE data.

· Making the data accessible through the on-line geodata portal through web services.

Optional Attachments

Program Structure:

Vermont HSIP Low Cost Program October 2016.pdf
Systemic Local Road Safety Program.pdf
VTrans HSIP Manual Nov 2022-Final.pdf
Project Implementation:

Safety Performance:

Vermont Status Progress Towards Meeting its Safety Targets.pdf
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.