



RHODE ISLAND

**HIGHWAY SAFETY  
IMPROVEMENT PROGRAM**  
**2018 ANNUAL REPORT**



U.S. Department of Transportation  
Federal Highway Administration

Photo source: Federal Highway Administration

## Table of Contents

Table of Contents .....	2
Disclaimer .....	3
Executive Summary .....	4
Introduction.....	5
Program Structure .....	5
Program Administration.....	5
Program Methodology .....	9
Project Implementation.....	18
Funds Programmed .....	18
General Listing of Projects .....	20
Safety Performance .....	22
General Highway Safety Trends.....	22
Safety Performance Targets.....	33
Applicability of Special Rules .....	35
Evaluation .....	37
Program Effectiveness .....	37
Effectiveness of Groupings or Similar Types of Improvements .....	38
Year 2017.....	38
Project Effectiveness.....	42
Compliance Assessment .....	43

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

## **Executive Summary**

The Rhode Island Department of Transportation (RIDOT) has followed the Highway Safety Manual process to guide their HSIP. RIDOT currently uses societal crash cost ranking to identify top crash site-specific locations as well as systemic type issues statewide. RIDOT reviews the top crash lists/types to develop and fine tune a plan of incorporating safety improvements through new and existing spot location/systemic projects. Rhode Island also has a HSIP committee that uses a data-driven approach to making any safety related decision and has developed a ranking form based on safety benefits, feasibility and policy conformance to be used whenever HSIP funds are considered for a project.

RIDOT's HSIP program has been ever-evolving since 2010, as other RIDOT programs, sections, and administrations have changed. Most recently, RIDOT's administration has placed a renewed focus on upgrading and maintaining our bridges and roads. As with any new administration, it takes time and adjustments to conduct business in a new and exciting way. RIDOT now has a 10-year plan for all of its core programs (traffic/safety, road, and bridge) that budgets projects based on focus areas. The emphasis on bridges and roads does not mean safety projects are ignored. Safety will always be a critical and necessary program, and while available funding may fluctuate in any given year, RIDOT is collecting the data and possessing the tools to make more informed data-driven decisions to spend safety dollars in the most beneficial way to the State.

## 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.**

Since 2010, The Rhode Island Department of Transportation (RIDOT) has followed the Highway Safety Manual process to guide their HSIP. For network screening, RIDOT currently uses societal crash cost ranking using the KABCO scale to identify top crash site-specific locations as well as systemic type issues statewide. The systemic approach is a risk based approach that examines roadway types that are susceptible to a specific crash type (roadway departure, intersection) and identified through high-level queries. RIDOT reviews the top crash lists/types to develop and fine tune a plan of incorporating safety improvements through new and existing spot location/systemic projects.

The HSIP Committee is made up of safety stakeholders, including RIDOT, FHWA, and RIDOT HSIP Engineering Support Services consultant that meets monthly to develop the HSIP program, approve HSIP projects and requests for projects, and discuss other safety related issues. The HSIP committee uses a data-driven approach to making any safety related decision and has developed a ranking form based on safety benefits, feasibility and policy conformance to be used whenever HSIP funds are considered for a project. Not only does the HSIP committee review internal requests for funds, but also requests that come in from the local municipalities.

As part of the HSIP project ranking form, points are given for conducting a Road Safety Assessment (RSA) at the location under consideration for safety improvements. The RSA's follow federal RSA guidelines and RI has embraced the usefulness of the RSA process. The RSA process also promotes involvement from stakeholders outside of RIDOT and strengthens relationships between RIDOT and participating municipalities. These strengthening relationships will prove to be imperative for sharing/updating roadway data to allow for predictive network screening and state-specific SPF development in the future.

The collection of the MIRE elements will also assist with the selection of systemic project locations and countermeasures with the risk for specific crash types (i.e. Curves). RIDOT also uses FHWA low-cost proven safety countermeasures, NCHRP, FHWA reports, and other safety documents to assist with countermeasure identification. Again, the MIRE data collection and sharing with municipalities will improve the overall HSIP program as it will provide the municipalities additional tools to conduct RSA's and submit strong safety project candidates for HSIP committee review and approval. RIDOT is expected to begin implementation of SPF's for FY19 once the MIRE data is processed.

## 2018 Rhode Island Highway Safety Improvement Program

RIDOT prioritizes projects based on the ranking scores and how the improvements fit into the roadway departure, local safety, safety corridor, intersections, interchanges, and vulnerable users programs. Once completed, the projects are evaluated to determine the safety effectiveness of the safety improvements. The resulting data will assist RIDOT with developing their own crash modification factors.

### **Where is HSIP staff located within the State DOT?**

Planning

### **Enter additional comments here to clarify your response for this question or add supporting information.**

RIDOT Safety section is responsible for implementation of the HSIP. They are a separate group from RIDOT Planning and focus on traffic/safety but carry out the planning function for all safety related projects.

### **How are HSIP funds allocated in a State?**

Central Office via Statewide Competitive Application Process  
SHSP Emphasis Area Data

### **Enter additional comments here to clarify your response for this question or add supporting information.**

RIDOT selects the majority of HSIP funded projects thru the SHSP EA. A small portion is allotted to outside RIDOT requests. This competitive process still requires alignment with the SHSP.

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

Network Screening - On an annual basis, the RIDOT identifies the roadway facilities exhibiting the most severe safety needs based on crash severity and frequency/exposure or the predictive method. Through the RIDOT's HSIP, ALL public roads are addressed, focusing on fatal and serious injury crashes in line with their SHSP and the performance measures set forth in MAP-21 and the FAST Act. Most of the State-owned roadway network and some of the local roadways are mapped to a Linear Referencing System; however, the majority of the local roadways is not referenced and is manually reviewed to ensure their inclusion into the HSIP process.

Diagnosis and Implementation: The RIDOT has developed a Local Safety Program to work with municipalities to identify and mitigate crash issues on locally-maintained roadways. RIDOT has developed a process for locals to request a safety improvement with the intent for locals to perform the "planning" step from the HSIP process. RIDOT will then determine if the improvement is eligible for HSIP funds and distribute the funds needed to the locals so they can administer the construction of the improvements. As part of this program, the RIDOT will provide the needed training and resources to assist the locals in the planning process with the intent for locals to perform the "planning" step independently. Initially, \$1,000,000 of funding has been allotted annually for local projects that will be ranked and awarded separately from state initiated projects. Currently, there are pilot projects that includes five (5) participating municipalities with projects scheduled for reimbursement in FY18/19 .

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

## 2018 Rhode Island Highway Safety Improvement Program

Traffic Engineering/Safety  
Governors Highway Safety Office  
Other-GIS Analysts

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Describe coordination with internal partners.**

RIDOT works internally with transportation planners (Statewide Planning), RIDOT GIS analysts, RIDOT safety engineers, RIDOT and OHS highway safety program coordinators and RIDOT operations staff as part of the entire HSIP process, including the identification of critical locations and the selection of appropriate countermeasures/ improvements. These partners are involved in Road Safety Assessments (RSAs) that were performed at many of these locations to facilitate this multidiscipline approach.

RIDOT also houses the Office of Highway Safety where the HSIP, HSP, and SHSP are all developed in a coordinated effort focused on developing consistent safety goals. Safety initiatives are now implemented in a more integrated and multi-disciplinary manner, providing RIDOT with more flexibility to direct resources to address particular safety needs. As part of the FAST Act, the RIDOT and OHS along with RI's Office of Performance Management coordinated the development of performance measurement and targets for FY19.

**Identify which external partners are involved with HSIP planning.**

Regional Planning Organizations (e.g. MPOs, RPOs, COGs)  
Tribal Agency  
Law Enforcement Agency  
Academia/University  
FHWA

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Describe coordination with external partners.**

RIDOT works with University of RI to develop SPFs.

LEL and FHWA are involved in bi-monthly safety meetings.

The MPO is involved in the TIP process (specifically for safety projects)

RIDOT address all public roads, including tribal agency roadways.

**Have any program administration practices used to implement the HSIP changed since the last reporting period?**

No

**Are there any other aspects of HSIP Administration on which the State would like to elaborate?**

Yes

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

Beginning in 2015, the RIDOT performs a semi-annual review of safety improvement proposals for selection. Local governments and RIDOT staff submit engineering studies of potential safety projects. These safety proposals are evaluated to focus limited resources on areas of greatest need. HSIP funds are available for locations or corridors where a known 'substantive safety' problem exists as indicated by location specific data on severe crashes or where a risk based analysis has demonstrated the need for systemic countermeasures. All HSIP expenditures require that a specific project action can produce a measureable and significant reduction in the number or risk of severe crashes. To achieve the maximum benefit, the focus of the program is on cost effective use of the funds allocated for safety improvements. RIDOT's HSIP project selection methods prioritize safety proposals that align with the SHSP, address roadways with actual or potential for higher deaths and serious injuries, and target the underlying safety issue.

The Multi-Disciplinary HSIP Selection Committee is made up of the HSIP Program Manager, FHWA Safety and Operations Engineer, and other RIDOT staff. The purpose of the committee is to review and select HSIP proposals for advancement. The HSIP PSC meets on a monthly basis. The selection committee also holds a separate meeting semi-annually to prioritize and select submitted HSIP Proposals received and reviewed in the previous six month period.

RIDOT has 5 different "on-call" consultant contracts. The first on-call contract involves one consultant to perform the network screening, diagnosis, and countermeasure selection (HSIP On-Call Administration Consultant). This consultant will then develop conceptual improvement plans for RIDOT's review. RIDOT then distributes all improvement projects to the other 4 on-call consultants, which are charged with advancing the conceptual plans to final design and construction. Once the improvements have been implemented, the first on-call consultant tracks these projects and develops safety effectiveness evaluations.

In 2016, RIDOT developed a 10-year Transportation Improvement Plan (TIP) that is revisited and updated annually. HSIP funded safety improvement projects included in the TIP are provided by the HSIP Selection Committee. In the TIP, there is a mix of site-specific and systemic safety improvement projects. There are also program based projects that act as placeholders for future locations to be added to. As the TIP is annually revisited, the safety projects are reviewed and edited by the HSIP Selection Committee based on the current safety needs and received HSIP Project Proposals. Safety projects may be adjusted in the TIP annually as long as they are fiscally constrained.

Safety projects added to the TIP must demonstrate a projected safety benefit that in sum meet annual goals set by RIDOT in order to meet its SHSP goals. If by any means the annual safety goal is not met for a given year, the safety projects included in the TIP will be revised by the HSIP Selection Committee the following year to increase the projected safety benefits to ensure the goal is still obtainable.

Projected safety benefits are provided by the HSIP Proposal forms. For safety program placeholder projects, RIDOT uses national published crash modification factors to help predict the reduction in fatalities and injuries

2018 Rhode Island Highway Safety Improvement Program  
based on the type of countermeasure deployed on a wide scale basis across the State to target roadway facilities and users identified in the SHSP as emphasis area.

**Program Methodology**

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

Yes

**To upload a copy of the State processes, attach files below.**

File Name:

[HSIP Manual May8 FINAL.pdf](#)

**Select the programs that are administered under the HSIP.**

- Safe Corridor
- Roadway Departure
- Right Angle Crash
- Wrong Way Driving
- Other-Vulnerable Road Users

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Program:** Right Angle Crash

**Date of Program Methodology:** 10/1/2016

**What is the justification for this program? [Check all that apply]**

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

**What is the funding approach for this program? [Check one]**

- Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
Fatal and serious injury crashes only	Volume Lane miles	

**What project identification methodology was used for this program? [Check all that apply]**

**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

**Describe the methodology used to identify local road projects as part of this program.**

**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).**

**Relative Weight in Scoring**

Ranking based on B/C : 15

Other-Reduction in fatalities and injuries : 15

Other-Facility risk level : 20

Other-SHSP emphasis area : 15

Other-Project feasibility : 25

Other-Policy conformance : 10

Total Relative Weight : 100

**Program:** Roadway Departure

**Date of Program Methodology:** 4/19/2015

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area  
FHWA focused approach to safety

**What is the funding approach for this program? [Check one]**

Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

2018 Rhode Island Highway Safety Improvement Program

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes	Volume	Median width
Fatal and serious injury crashes only		Horizontal curvature
		Functional classification
		Roadside features
		Other-Roadway width
		Other-Clear Zone

**What project identification methodology was used for this program? [Check all that apply]**

- Relative severity index
- Excess expected crash frequency with the EB adjustment
- Other-Crash frequency - Fatal and serious crashes only
- Other-Facility risk factors/similar geometric 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

**Describe the methodology used to identify local road projects as part of this program.**

**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).

**Relative Weight in Scoring**

- Ranking based on B/C : 15
- Other-Reduction in fatalities and injuries : 15
- Other-Facility risk level : 20
- Other-SHSP emphasis area : 15
- Other-Project feasibility : 25
- Other-Policy conformance : 10

Total Relative Weight : 100

2018 Rhode Island Highway Safety Improvement Program

**Program:** Safe Corridor

**Date of Program Methodology:** 4/19/2015

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area  
FHWA focused approach to safety

**What is the funding approach for this program? [Check one]**

Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes	Traffic	Functional classification
Fatal and serious injury crashes only	Volume	Roadside features
	Other-Transit	Other-# Of Lanes

**What project identification methodology was used for this program? [Check all that apply]**

Relative severity index  
Other-Crash frequency - fatal and serious injury crashes only  
Other-Facility risk factors/similar geometric 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

**Describe the methodology used to identify local road projects as part of this program.**

**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).**

2018 Rhode Island Highway Safety Improvement Program

**Relative Weight in Scoring**

Ranking based on B/C : 15

Other-Reduction in fatalities and serious injuries : 15

Other-Facility risk level : 20

Other-SHSP emphasis area : 15

Other-Project feasibility : 25

Other-Policy conformance : 10

Total Relative Weight : 100

**Program:** Wrong Way Driving

**Date of Program Methodology:** 5/1/2015

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area

**What is the funding approach for this program? [Check one]**

Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

**Crashes**

**Exposure**

**Roadway**

Other-Wrong way driving incidents

**What project identification methodology was used for this program? [Check all that apply]**

Other-Wrong Way Driving Incidents - Potential Freeway Entry Points

**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

**Describe the methodology used to identify local road projects as part of this program.**

**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**

**Program:** Other-Vulnerable Road Users

**Date of Program Methodology:** 8/1/2013

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area  
FHWA focused approach to safety

**What is the funding approach for this program? [Check one]**

Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes	Traffic	Functional classification
Fatal and serious injury crashes only	Volume	Other-Roadway width

**What project identification methodology was used for this program? [Check all that apply]**

Crash frequency  
Other-Facility risk/similar type geometrics

**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

**Describe the methodology used to identify local road projects as part of this program.**

**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).**

**Relative Weight in Scoring**

Ranking based on B/C : 15

Other-Reduction in fatal and serious injury crashes : 15

Other-facility risk level : 20

Other-Project feasibility : 25

Other-Policy conformance : 15

Other-SHSP emphasis area : 10

Total Relative Weight : 100

**What percentage of HSIP funds address systemic improvements?**

43

**HSIP funds are used to address which of the following systemic improvements? Please check all that apply.**

Cable Median Barriers

Install/Improve Signing

Horizontal curve signs

High friction surface treatment

Wrong way driving treatments

**Enter additional comments here to clarify your response for this question or add supporting information.**

**What process is used to identify potential countermeasures? [Check all that apply]**

Engineering Study

Road Safety Assessment

Crash data analysis

SHSP/Local road safety plan

Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)

Other-Crash Modification Clearinghouse

Other-NCHRP Report 500 Series

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Does the State HSIP consider connected vehicles and ITS technologies?**

Yes

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

RIDOT has created a working Connected/Autonomous Vehicle (CAV) group made up of various departments with RIDOT including Traffic Safety. RIDOT is exploring CAV and its impact to safety.

RIDOT has issued a RFP for a autonomous shuttle as a pilot program.

RIDOT has placeholders in the TIP for CAV projects related to safety.

RIDOT may participate in the AASHTO SPAT Challenge with a focus on a high crash corridor.

**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.**

RIDOT refers to the HSM methodologies on all aspects of safety where possible, including in the network screening, diagnosis, countermeasure selection, prioritization, and safety effectiveness evaluation categories. Please see attached HSIP Program Manual for more information.

**Have any program methodology practices used to implement the HSIP changed since the last reporting period?**

Yes

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

RIDOT continues to work towards implementation of the predictive method. RIDOT is able to obtain locations using this method for rural segments. RIDOT is working on developing SPFS for intersections and urban segments over the next 2 years. RIDOT is also looking to enhance the systemic program by developing a detailed risk based process.

**Are there any other aspects of the HSIP methodology on which the State would like to elaborate?**

Yes

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

RIDOT encourages using the predictive method to use a more sound, data-driven approach to allocating resources that results in fewer fatalities and serious injuries on the nation's roadways. The predictive method (Excess expected crash frequency using SPFs, EB adjustment,) combines crash, roadway inventory and traffic volume data to provide more reliable estimates of an existing or proposed roadway's expected safety performance, such as crash frequency and severity. To achieve this goal, RIDOT is currently undergoing a large data collection effort to obtain all of the Model Inventory of Roadway Data Elements (MIRE), which included roadway, traffic, and other data needed to assist the RIDOT make the most efficient decisions where to allocate safety funds and resources. The RIDOT also is working on developing a data maintenance effort to ensure all data collected is updated on a timely basis. RIDOT has begun using the predictive method for some rural segment and will continue to expand in the coming years.

RIDOT is expanding its systemic program in the next few years, including creating a detailed risk based analysis and process. RIDOT is looking to automate this process by developing a tool that resided on a GIS platform. The network screening portion of the tool would automate the site-specific and systemic identification process which is currently performed manually. For site-specific analysis, the tool will use state-specific SPF equations for all facility types, addressing the predictive analysis requirements. The tool will provide a list of locations ranked by Excess Excepted Crash Frequency (Expected Crashes – Predicted Crashes). The systemic analysis will use allow the user to identify potential trends (geometry, traffic volumes) that have a higher occurrence of fatal and serious injury crashes in RI using the crash and MIRE data incorporated into the tool. Once the potential trends (aka risk factors) are identified, the tool will identify locations that have similar trends which could lead to fatal or serious injury crashes. The user can assign a weighted “point “system for each trend to help prioritize locations based on severity or number of trends at a given site. This allows the tool to provide the user with a “ranked” list of risk-based locations

RIDOT also has its own HSIP Program Manual. The purpose of this document is to describe RIDOT's processes for planning, implementing, and evaluating HSIP funded improvements and to describe its relationship to other safety initiatives found in Rhode Island's SHSP. This document not only helps Rhode Island to demonstrate their own successes, but also serves as a mechanism for other states to achieve improved highway safety.

2018 Rhode Island Highway Safety Improvement Program

## Project Implementation

**Funds Programmed**

**Reporting period for HSIP funding.**

Federal Fiscal Year

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	\$21,681,505	\$24,047,773	110.91%
HRRR Special Rule (23 U.S.C. 148(g)(1))	\$0	\$0	0%
Penalty Funds (23 U.S.C. 154)	\$0	\$0	0%
Penalty Funds (23 U.S.C. 164)	\$0	\$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	\$0	\$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	\$12,675,100	\$12,675,100	100%
State and Local Funds	\$50,000	\$69,000	138%
<b>Totals</b>	<b>\$34,406,605</b>	<b>\$36,791,873</b>	<b>106.93%</b>

**Enter additional comments here to clarify your response for this question or add supporting information.**

Other federal aid funds include August Redistribution funding allocated to RIDOT.

State funds programmed for safety are part of a larger maintenance budget and is approximated each year.

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

\$17,000

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

\$17,000

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

\$1,500,000

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

2018 Rhode Island Highway Safety Improvement Program

\$1,500,000

**Enter additional comments here to clarify your response for this question or add supporting information.**

**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%

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

RIDOT's HSIP program has been ever-evolving since 2010, as other RIDOT programs, sections, and administrations have changed. Most recently, RIDOT's administration has placed a renewed focus on upgrading and maintaining our bridges and roads. As with any new administration, it takes time and adjustments to conduct business in a new and exciting way. RIDOT now has a 10-year plan for all of its core programs (traffic/safety, road, and bridge) that budgets projects based on focus areas. The emphasis on bridges and roads does not mean safety projects are ignored. Safety will always be a critical and necessary program, and while available funding may fluctuate in any given year, RIDOT is collecting the data and possessing the tools to make more informed data-driven decisions to spend safety dollars in the most beneficial way to the State. The 10-year plan (aka STIP) identifies HSIP programmed projects for FY2018 - FY 2026.

**Does the State want to elaborate on any other aspects of it's progress in implementing HSIP projects?**

No

2018 Rhode Island Highway Safety Improvement Program

**General Listing of Projects**

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

													RELATIONSHIP TO SHSP	
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	EMPHASIS AREA	STRATEGY
2018 Roadway Departure Mitigation Contract 1	Roadside	Barrier end treatments (crash cushions, terminals)	12	Approaches	\$1424271	\$1424271	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Interstate	75,000	65	State Highway Agency	Systemic	Roadway Departure	Roadway Departure
2018 High Friction Surface Treatment	Roadway	Pavement surface - high friction surface	2	Curves	\$959878	\$959878	HSIP (23 U.S.C. 148)	Rural Minor Arterial	15,000	35	State Highway Agency	Spot	Roadway Departure	Roadway Departure
Intersection Safety Improvements to Lower Aquidneck Avenue	Intersection traffic control	Modify control - traffic signal to roundabout	2	Intersections	\$618000	\$618000	HSIP (23 U.S.C. 148)	Urban Minor Arterial	30,000	35	State Highway Agency	Spot	Intersections	Intersection Right Angle
Intersection Safety Improvements to Route 114 between Bear Hill and I-295	Intersection traffic control	Modify control - two-way stop to roundabout	2	Intersections	\$8280441	\$8280441	HSIP (23 U.S.C. 148)	Urban Minor Arterial	35,000	35	State Highway Agency	Spot	Intersections	Intersection Right Angle
Intersection Safety Improvements to Route 44/Smithfield Commons	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	\$781700	\$781700	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	35,000	35	State Highway Agency	Spot	Intersections	Intersection Right Angle
1R Improvements to US Route 44 - Road Diet	Roadway	Roadway narrowing (road diet, roadway reconfiguration)	5	Miles	\$0	\$8235099	Other Federal-aid Funds (i.e. STBG, NHPP)	Rural Principal Arterial (RPA) - Other	15,000	45	State Highway Agency	Spot	Roadway Departure	Roadway Departure
Roadway Departure Mitigation - Guardrail and Median Improvements to Route 1	Roadside	Barrier- metal	2	Miles	\$2538790	\$2538790	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other Freeways and Expressways	50,000	55	State Highway Agency	Systemic	Roadway Departure	Roadway Departure
Wrong Way Driving Mitigation - Geometric Improvements to Ramp Facilities	Intersection geometry	Intersection geometrics - miscellaneous/other/unspecified	12	Ramps	\$1004692	\$1004692	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Interstate	30,000	30	State Highway Agency	Systemic	Older Drivers	Wrong Way Driving
Wrong Way Driving Mitigation - Detection Systems	Advanced technology and ITS	Advanced technology and ITS - other	4	Ramps	\$750000	\$750000	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Interstate	30,000	30	State Highway Agency	Systemic	Older Drivers	Wrong Way Driving
2018 Intersection Safety Improvements	Intersection traffic control	Systemic improvements - signal-controlled	3	Miles	\$2665800	\$2665800	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	35,000	35	State Highway Agency	Systemic	Intersections	Intersection Right Angle
On-Call Highway Safety	Non-infrastructure	Transportation safety planning	1	Consultant	\$1500000	\$1500000	HSIP (23 U.S.C. 148)	All	1	1	State Highway Agency	Spot & Systemic	All	All

2018 Rhode Island Highway Safety Improvement Program

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	RELATIONSHIP TO SHSP	
													EMPHASIS AREA	STRATEGY
Improvement Program Engineering Support Services														
2018 High Friction Surface Treatment - I-95 Curves Pawtucket, Route 24, & Route 37	Roadway	Pavement surface - high friction surface	10	Curves	\$2366268	\$2366268	Other Federal-aid Funds (i.e. STBG, NHPP)	Urban Principal Arterial (UPA) - Interstate	100,000	55	State Highway Agency	Spot	Roadway Departure	Roadway Departure
Safety Corridor Project - Route 2 and Route 101	Roadway	Roadway - restripe to revise separation between opposing lanes and/or shoulder widths	10	Miles	\$1157932	\$1157932	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other	20,000	55	State Highway Agency	Systemic	Roadway Departure	Roadway Departure
2018 STC Contract 1	Intersection traffic control	Systemic improvements - signal-controlled	5	Intersections	\$0	\$2440000	Other Federal-aid Funds (i.e. STBG, NHPP)	Urban Principal Arterial (UPA) - Other	15,000	35	State Highway Agency	Spot	Intersections	Intersection Right Angle
2018 STC Contract 2	Intersection traffic control	Systemic improvements - signal-controlled	5	Intersections	\$0	\$2000000	Other Federal-aid Funds (i.e. STBG, NHPP)	Urban Principal Arterial (UPA) - Other	15,000	35	State Highway Agency	Spot	Intersections	Intersection Right Angle
Immediate Action - Curves	Roadway signs and traffic control	Curve-related warning signs and flashers	10	Curves	\$0	\$20000	State and Local Funds	All	20,000	35	State Highway Agency	Systemic	Roadway Departure	Roadway Departure
Immediate Action - Signal Timings	Intersection traffic control	Modify traffic signal timing - general retiming	5	Intersections	\$0	\$5000	State and Local Funds	All	20,000	35	State Highway Agency	Systemic	Intersections	Intersection Right Angle
Immediate Action - Signalized Intersection Signage	Intersection traffic control	Systemic improvements - signal-controlled	7	Intersections	\$0	\$14000	State and Local Funds	All	20,000	35	State Highway Agency	Systemic	Intersections	Intersection Right Angle
Immediate Action - Unsignalized Intersection Signage	Intersection traffic control	Systemic improvements - stop-controlled	5	Intersections	\$0	\$10000	State and Local Funds	All	20,000	35	State Highway Agency	Systemic	Intersections	Intersection Right Angle
Immediate Action - Pedestrian Crossing Signage/Striping	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists	10	Crosswalks	\$0	\$20000	State and Local Funds	All	20,000	35	State Highway Agency	Systemic	Pedestrians	Vulnerable Road User

Enter additional comments here to clarify your response for this question or add supporting information.

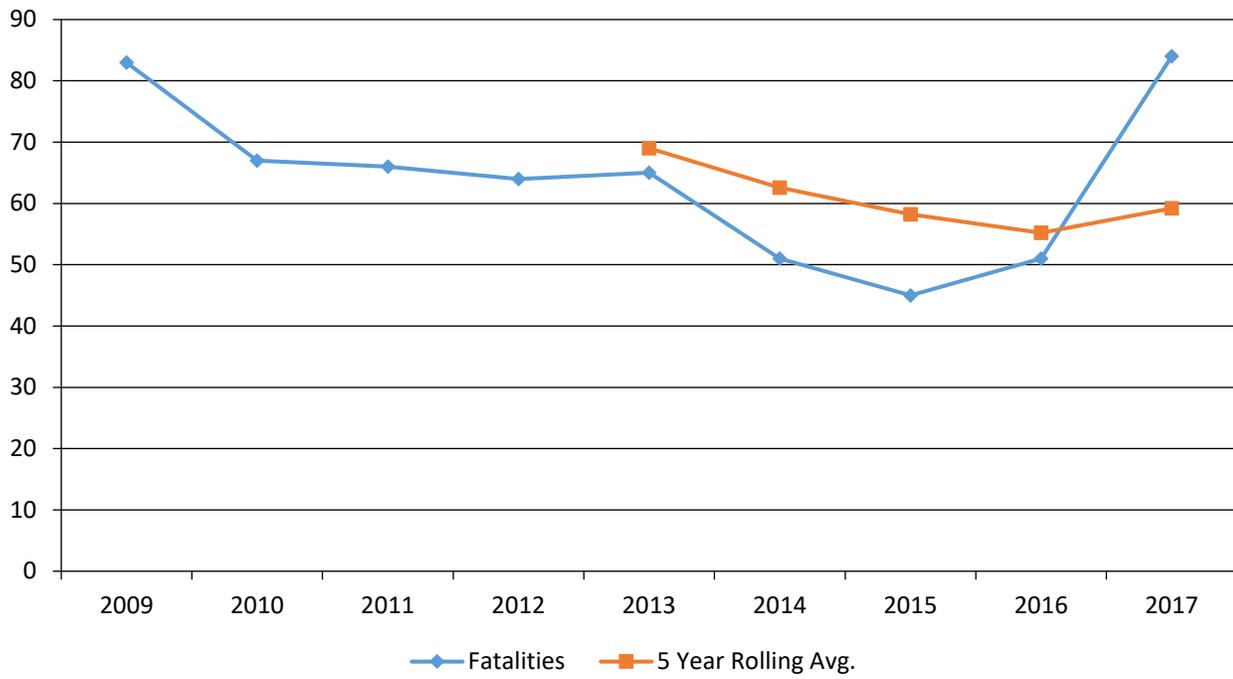
## Safety Performance

### *General Highway Safety Trends*

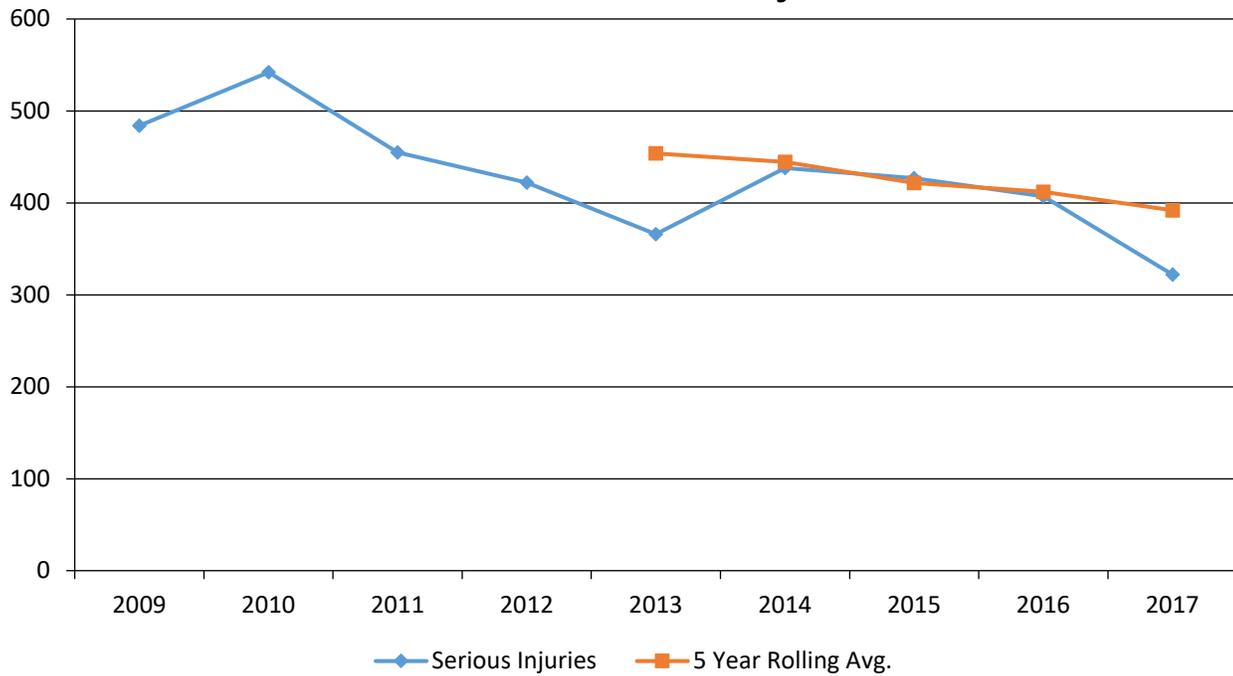
Present data showing the general highway safety trends in the State for the past five years.

PERFORMANCE MEASURES	2009	2010	2011	2012	2013	2014	2015	2016	2017
Fatalities	83	67	66	64	65	51	45	51	84
Serious Injuries	484	542	455	422	366	438	427	407	322
Fatality rate (per HMVMT)	1.010	0.810	0.840	0.820	0.840	0.660	0.570	0.640	1.050
Serious injury rate (per HMVMT)	5.870	6.570	5.759	5.405	4.707	5.705	5.451	5.108	4.024
Number non-motorized fatalities	16	11	14	7	17	14	8	16	22
Number of non-motorized serious injuries	90	85	91	88	69	75	80	57	74

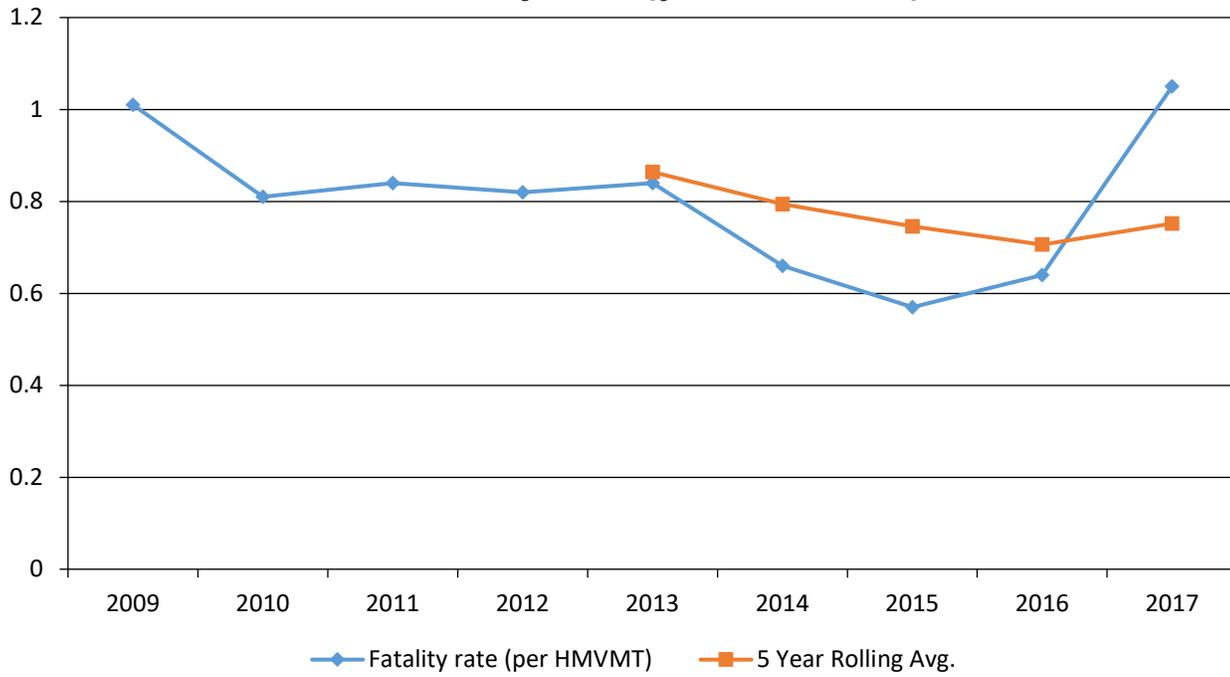
### Annual Fatalities



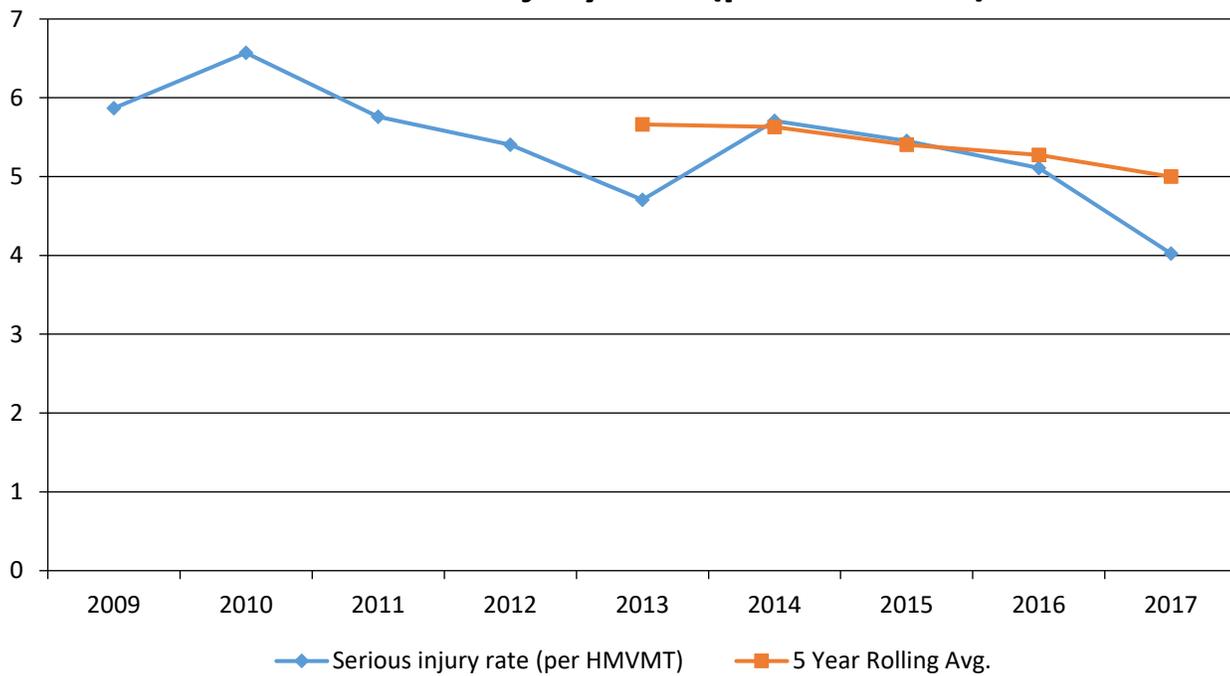
### Annual Serious Injuries



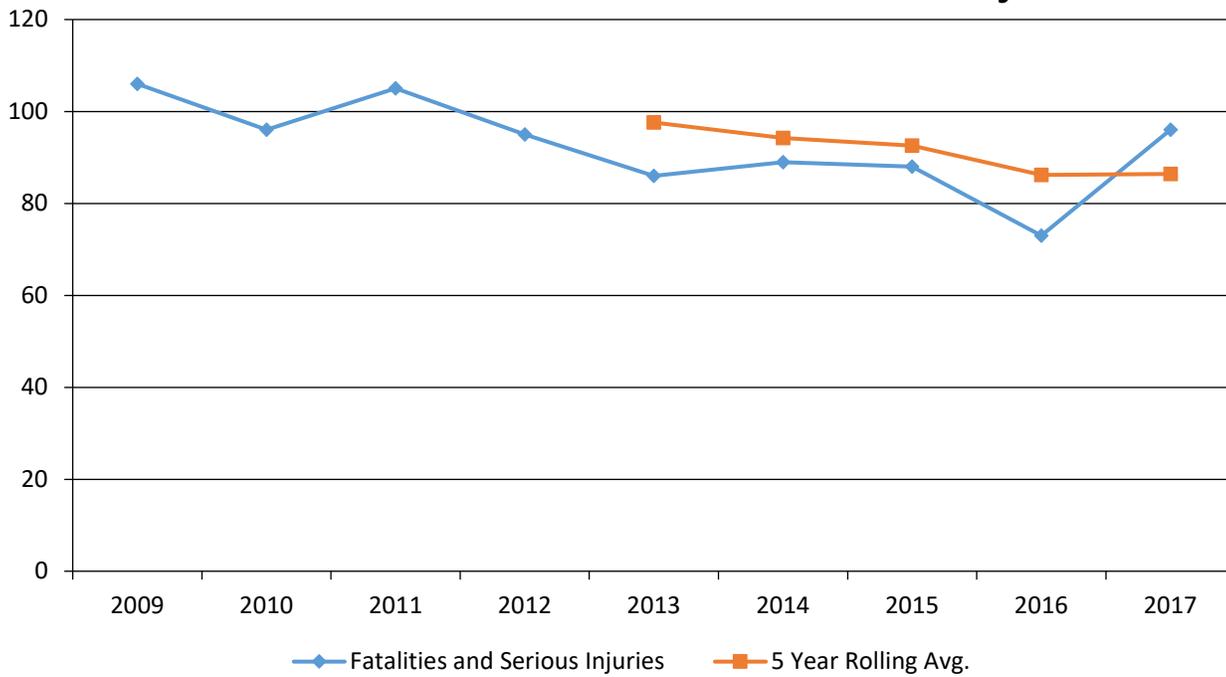
### Fatality rate (per HMVMT)



### Serious injury rate (per HMVMT)



### Non Motorized Fatalities and Serious Injuries



Enter additional comments here to clarify your response for this question or add supporting information.

Describe fatality data source.

FARS

Enter additional comments here to clarify your response for this question or add supporting information.

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

#### Year 2017

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	1.4	7.2	0.46	2.34
Rural Principal Arterial (RPA) - Other Freeways and Expressways	0.6	9	0.67	7.39
Rural Principal Arterial (RPA) - Other	2.4	7.2	1.06	3.16
Rural Minor Arterial	3	12	2.64	10.28
Rural Minor Collector	0.2	3.8	0.14	5.02
Rural Major Collector	0.8	7.2	1.83	8.15

## 2018 Rhode Island Highway Safety Improvement Program

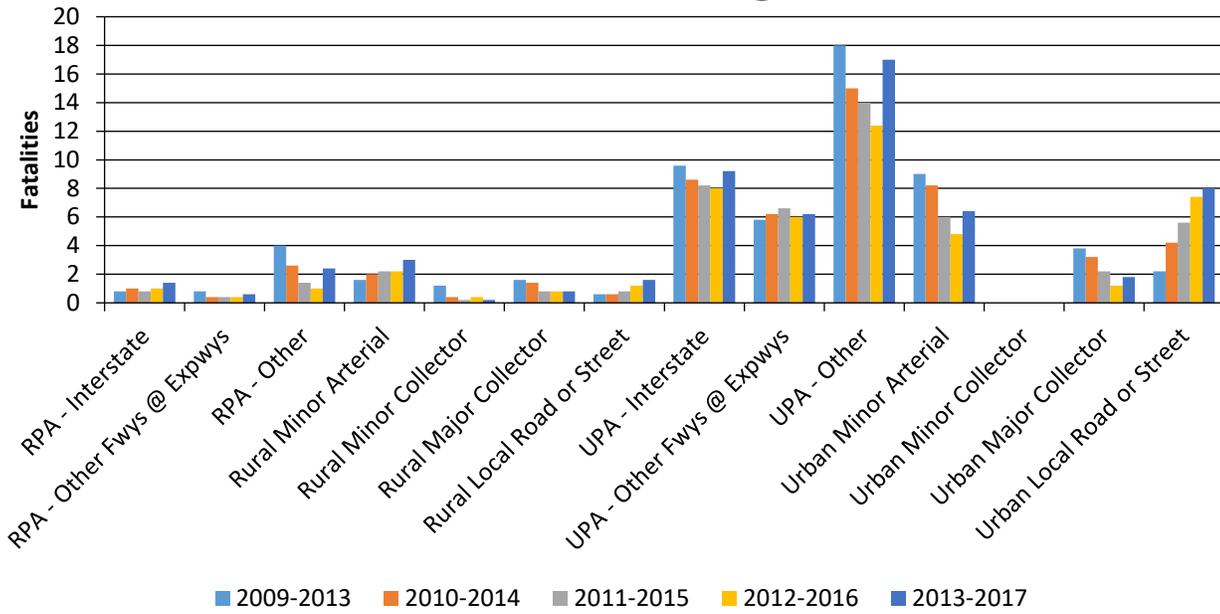
Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Local Road or Street	1.6	4.8	7.27	21.82
Urban Principal Arterial (UPA) - Interstate	9.2	32.8	0.5	1.79
Urban Principal Arterial (UPA) - Other Freeways and Expressways	6.2	24.2	0.54	2.07
Urban Principal Arterial (UPA) - Other	17	119.2	0.91	6.39
Urban Minor Arterial	6.4	76	0.64	7.48
Urban Minor Collector	0	14.8	0	2.44
Urban Major Collector	1.8	25	8.29	10.52
Urban Local Road or Street	8	30.2	2.08	7.82

2018 Rhode Island Highway Safety Improvement Program

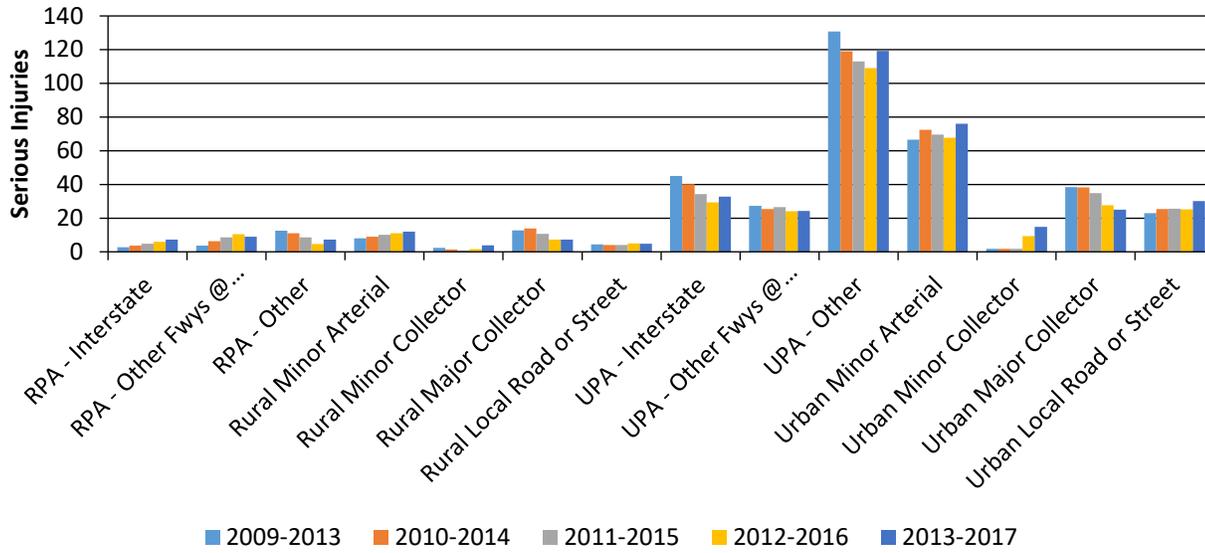
**Year 2014**

<b>Roadways</b>	<b>Number of Fatalities (5-yr avg)</b>	<b>Number of Serious Injuries (5-yr avg)</b>	<b>Fatality Rate (per HMVMT) (5-yr avg)</b>	<b>Serious Injury Rate (per HMVMT) (5-yr avg)</b>
State Highway Agency	32	191.2		
County Highway Agency				
Town or Township Highway Agency	10.2	101.4		
City of 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				

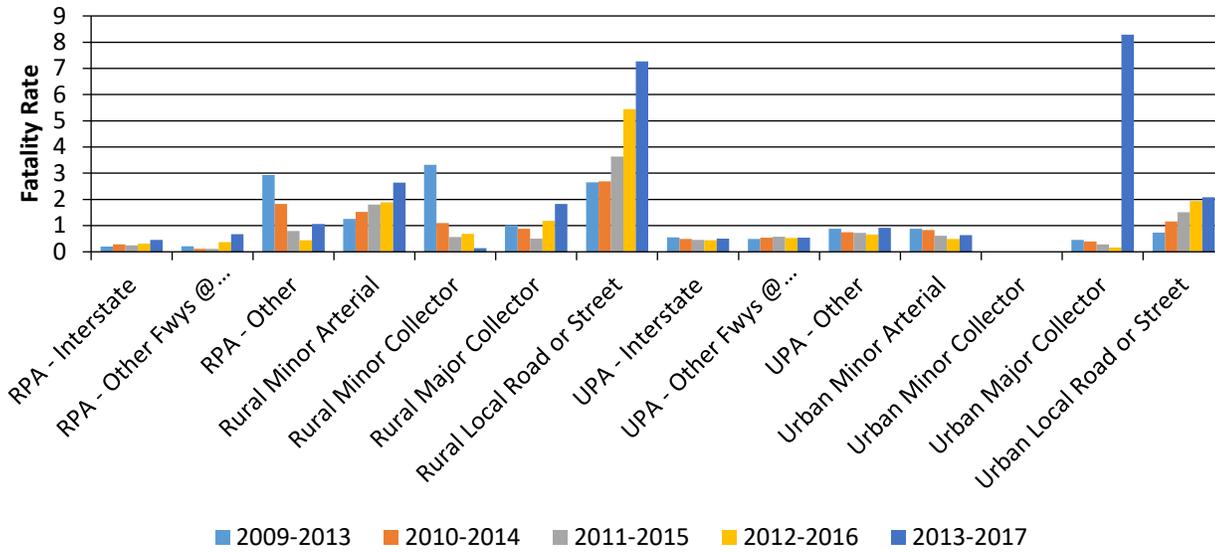
## Number of Fatalities by Functional Classification 5 Year Average



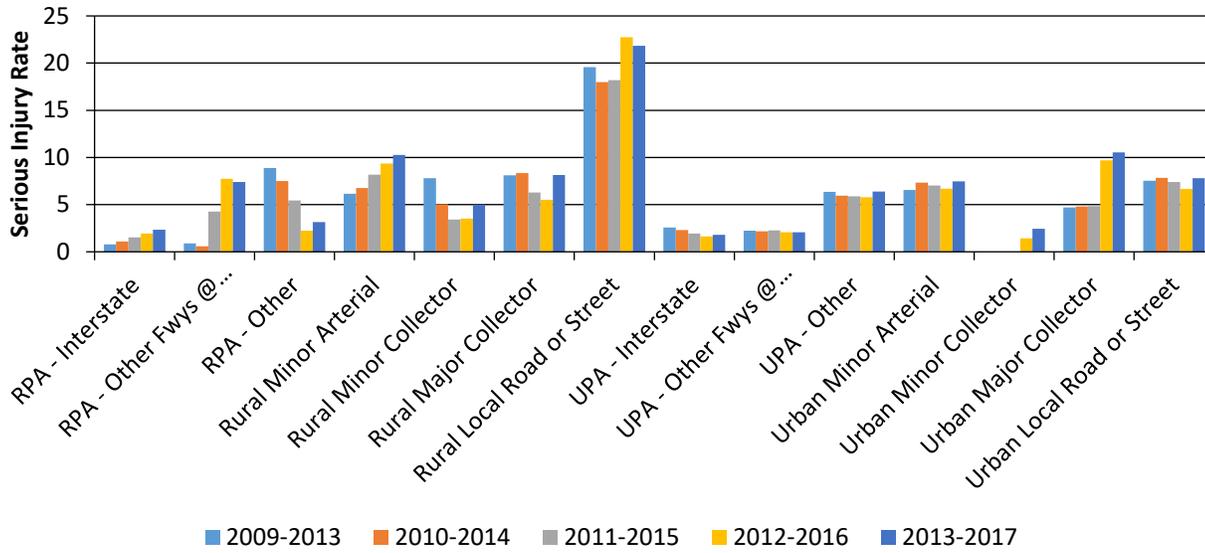
## Number of Serious Injuries by Functional Classification 5 Year Average



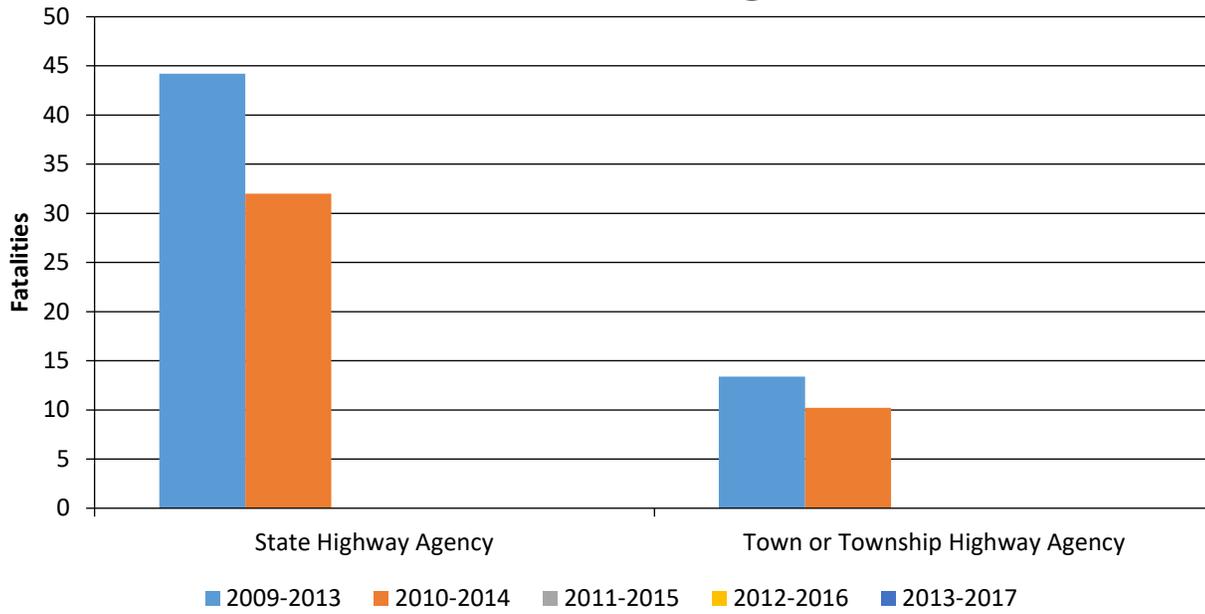
## Fatality Rate (per HMVMT) by Functional Classification 5 Year Average



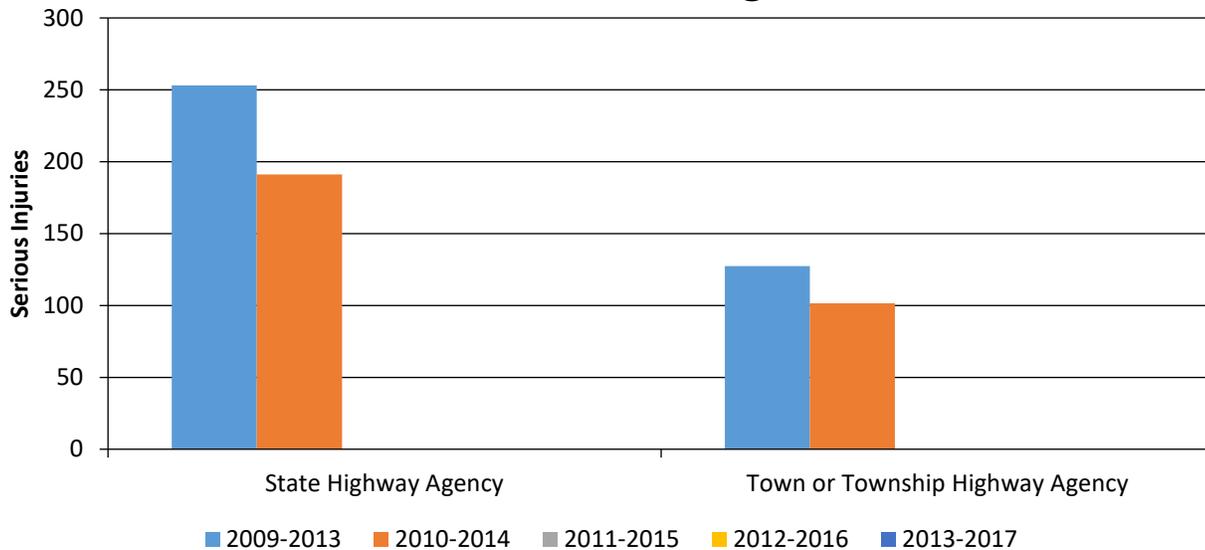
## Serious Injury Rate (per HMVMT) by Functional Classification 5 Year Average



## Number of Fatalities by Roadway Ownership 5 Year Average



## Number of Serious Injuries by Roadway Ownership 5 Year Average



**Enter additional comments here to clarify your response for this question or add supporting information.**

**Are there any other aspects of the general highway safety trends on which the State would like to elaborate?**

Yes

**Provide additional discussion related to general highway safety trends.**

RIDOT updated their Functional Classification in 2015. Therefore, the figures reported on in previous years HSIP Annual report will differ. In future years, the previous FC data will drop out of the 5-year rolling average calculation.

**Safety Performance Targets**

**Safety Performance Targets**

**Calendar Year 2019 Targets \***

**Number of Fatalities** 57.0

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

## 2018 Rhode Island Highway Safety Improvement Program

Fatalities have steadily declined in recent years. Based on preliminary data there were 84 fatalities in 2017, an increase to levels seen in 2005 and 2006. This increase is associated with a rise in speeding, pedestrian, and young driver crashes. A conservative target of a two percent annual decrease was chosen that accounts for the 2017 increase but helps to push Rhode Island toward the original SHSP goal of TZD with a baseline of 2011. RIDOT and OHS worked together to align targets with those within the Rhode Island FFY 2019 HSP.

**Number of Serious Injuries** 369.0

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

The five-year rolling average for Rhode Island's serious injuries have steadily decreased for the last five years, however the serious injuries per year have fluctuated with a low of 366 in 2013 and a high of 455 in 2011. Serious injuries are projected to be lower than average, with 322 in 2017. Rhode Island's 2019 target maintains the course of working toward the SHSP goal of TZD with a baseline of 2011 and a three percent annual decrease. RIDOT and OHS worked together to align targets with those within the Rhode Island FFY 2019 HSP.

**Fatality Rate** 0.720

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

While the fatality crash rate has declined slightly in recent years, preliminary data in 2017 shows an increase back to 2015 levels. The conservative target of shown in the fatality performance measure is also reflected here, with a long-term goal of moving back toward the SHSP goal of TZD with a baseline of 2011. RIDOT and OHS worked together to align targets with those within the Rhode Island FFY 2019 HSP.

**Serious Injury Rate** 4.710

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

This goal is consistent with the latest revision of the 2017-2022 SHSP and its TZD target of halving fatalities and serious injuries by 2030 using 2011 as the base-year (2011–2015 five-year averages). RIDOT and OHS worked together to align targets with those within the Rhode Island FFY 2019 HSP.

**Total Number of Non-Motorized Fatalities and Serious Injuries** 85.0

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

Preliminary data indicate there were 21 pedestrian fatalities in 2017, which is 50 percent higher than in 2016. Bicyclist fatalities have been very low in Rhode Island over the past five years. With increased focus on statewide vulnerable road user programs targeting Providence and other municipalities with high pedestrian crashes, we believe we will move back toward the TZD trend. RIDOT and OHS worked together to align targets with those within the Rhode Island FFY 2019 HSP.

**Enter additional comments here to clarify your response for this question or add supporting information.**

OHS and RIDOT conducted a target setting workshop in Spring 2018 to finalize performance targets that are consistent between the SHSP, HSP, and HSIP for Fiscal Year 2019 (Fatality, Fatality Rate, Serious Injuries) as required by the FAST Act. As part of the target setting exercise, data was projected using the FORCAST function in Excel using 2011-2015 averages as the baseline. Staff then compared the projected crashes based on the historical trendline and discussed if and how Rhode Island could maintain this trendline. Factors such as current year fatality and serious injury projections, recently implemented and proposed programs and projects, and funding were considered when determining targets for Fiscal Year 2019.

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

RIDOT and OHS worked together with the State MPO to align targets with those within the Rhode Island FFY 2019 HSP and the 2017-2022 SHSP. As part of this effort, OHS and RIDOT conducted a target setting workshop in Spring 2018 to finalize performance targets that are consistent between the SHSP, HSP, and HSIP for Fiscal Year 2019 (Fatality, Fatality Rate, Serious Injuries) as required by the FAST Act. As part of the target setting exercise, data was projected using the FORCAST function in Excel using 2011-2015 averages as the baseline. Staff then compared the projected crashes based on the historical trendline and discussed if and how Rhode Island could maintain this trendline. Factors such as current year fatality and serious injury projections, recently implemented and proposed programs and projects, and funding were considered when determining targets for Fiscal Year 2019.

**Does the State want to report additional optional targets?**

No

**Enter additional comments here to clarify your response for this question or add supporting information.**

***Applicability of Special Rules***

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

No

**Enter additional comments here to clarify your response for this question or add supporting information.**

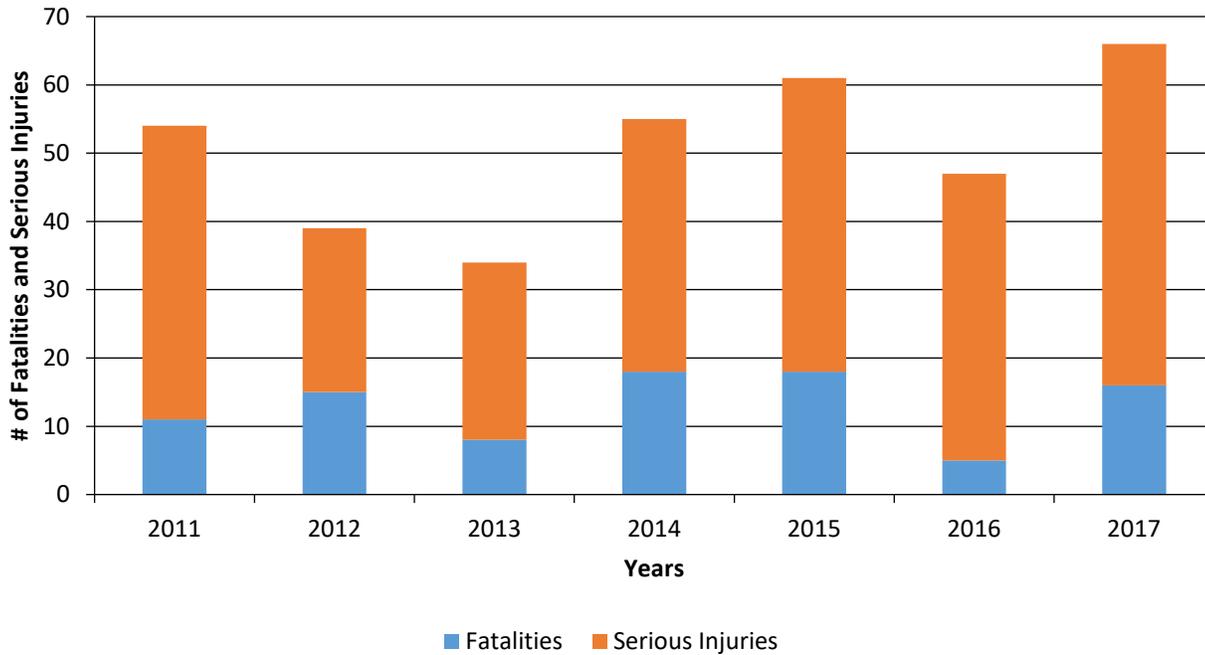
**Provide the number of older driver and pedestrian fatalities and serious injuries 65 years of age and older for the past seven years.**

PERFORMANCE MEASURES	2011	2012	2013	2014	2015	2016	2017

2018 Rhode Island Highway Safety Improvement Program

Number of Older Driver and Pedestrian Fatalities	11	15	8	18	18	5	16
Number of Older Driver and Pedestrian Serious Injuries	43	24	26	37	43	42	50

**Number of Older Driver and Pedestrian Fatalities and Serious Injuries by Year.**



Enter additional comments here to clarify your response for this question or add supporting information.

## Evaluation

### *Program Effectiveness*

#### **How does the State measure effectiveness of the HSIP?**

Change in fatalities and serious injuries  
Lives saved

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

As RIDOT installs more HSIP projects and continues to track their safety performance, RIDOT will report back on the overall B/C. It is difficult to calculate an overall B/C for all HSIP projects as most do not have sufficient after data at this time to provide a statistically significant result. RIDOT has deployed policy changes and passed a primary seat belt law could result in the consistent decrease in the 5 year rolling average of fatalities and serious injuries in the state. While RIDOT has ramped up their HSIP program the past few years, there are a few project improvement types that were ready to track improvements on this period. These projects are listed in the following questions.

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

More systemic programs  
# RSAs completed  
HSIP Obligations

**Enter additional comments here to clarify your response for this question or add supporting information.**

RIDOT performs RSAs for all HSIP projects.

RIDOTs HSIP obligations have increased significantly in the past few years. The 10 year TIP is programmed to continue to expend the annual obligations for HSIP.

RIDOT expand its programs to include more systemic countermeasures.

#### **Are there any significant programmatic changes that have occurred since the last reporting period?**

No

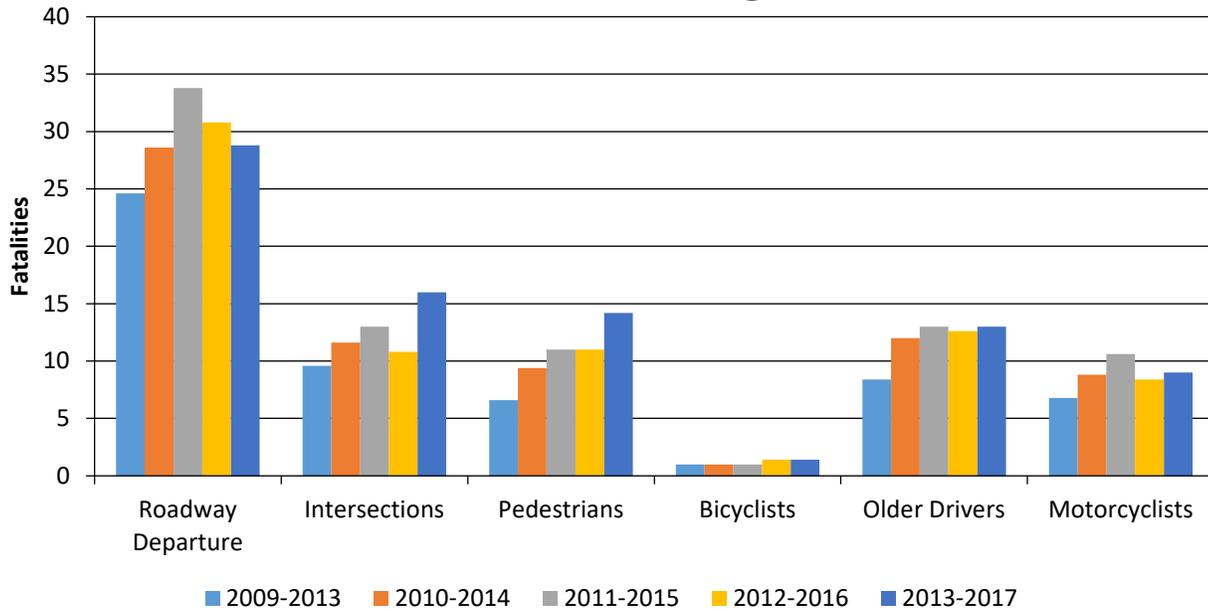
2018 Rhode Island Highway Safety Improvement Program  
*Effectiveness of Groupings or Similar Types of Improvements*

Present and describe trends in SHSP emphasis area performance measures.

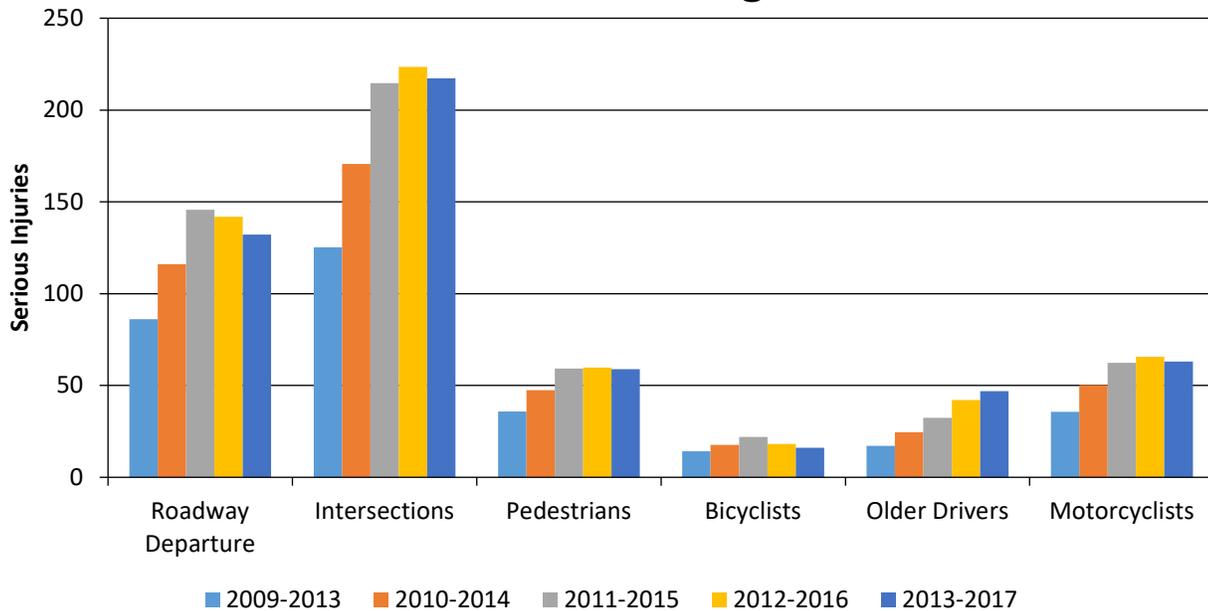
**Year 2017**

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)	Other 1	Other 2	Other 3
Roadway Departure		28.8	132.2	0.37	1.69	0	0	0
Intersections		16	217.2	0.2	2.77	0	0	0
Pedestrians		14.2	58.8	0.18	0.75	0	0	0
Bicyclists		1.4	16	0.02	0.2	0	0	0
Older Drivers		13	47	0.16	0.6	0	0	0
Motorcyclists		9	63	0.11	0.8	0	0	0

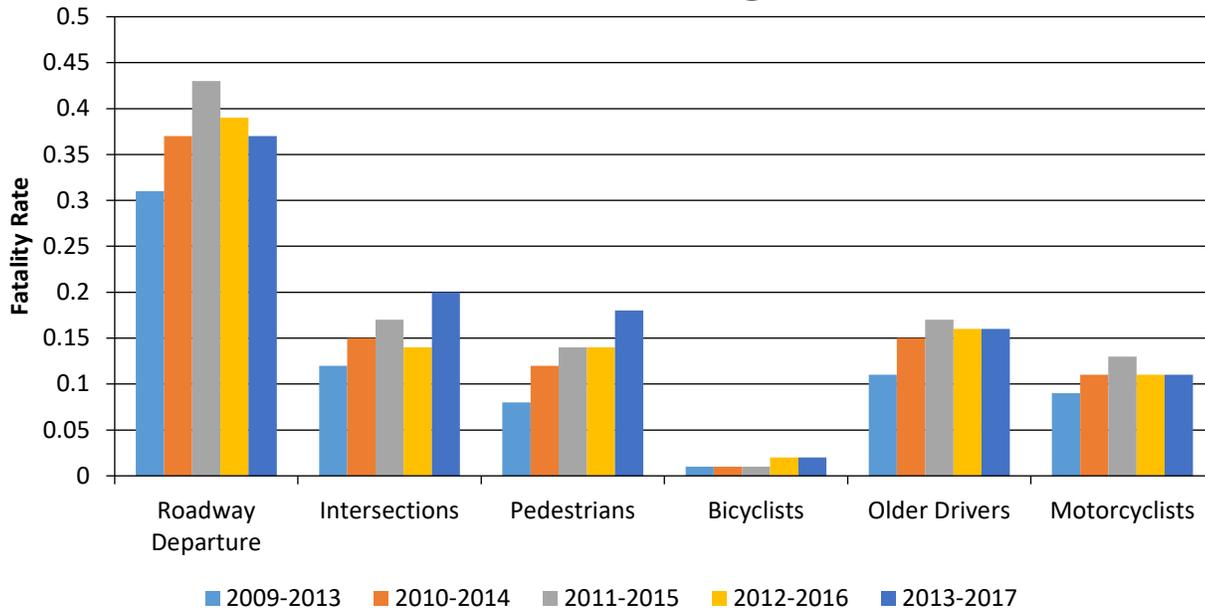
## Number of Fatalities 5 Year Average



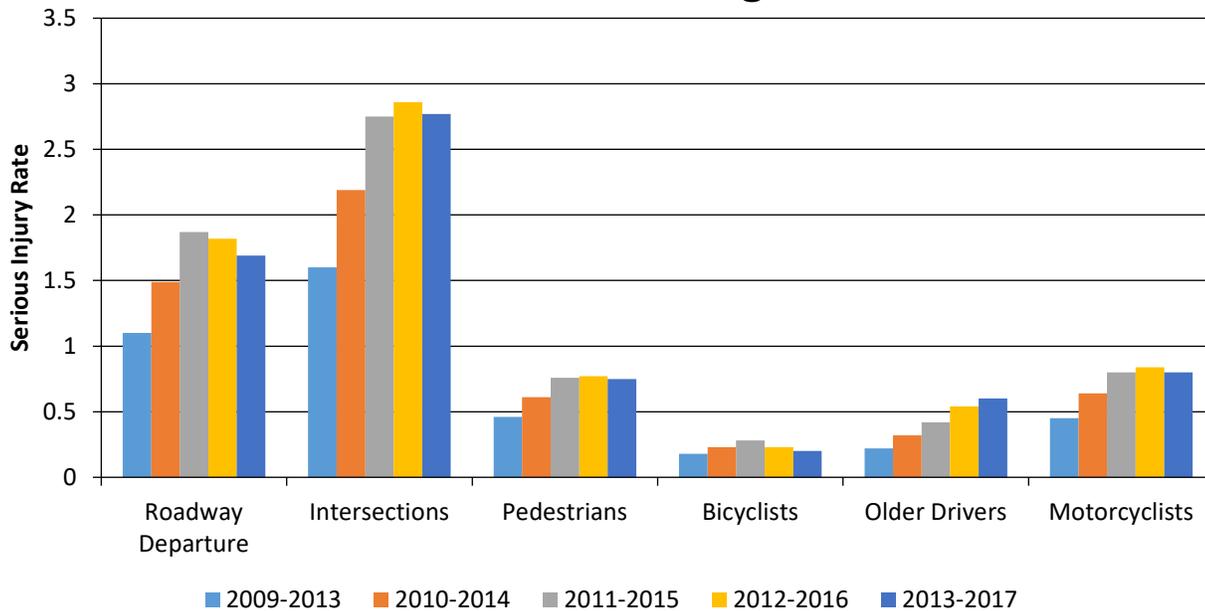
## Number of Serious Injuries 5 Year Average



### Fatality Rate (per HMVMT) 5 Year Average



### Serious Injury Rate (per HMVMT) 5 Year Average



Enter additional comments here to clarify your response for this question or add supporting information.

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

Yes

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

<b>CounterMeasures:</b>	High Friction Surface Treatment
<b>Description:</b>	
<b>Target Crash Type:</b>	Run-off-road
<b>Number of Installations:</b>	10
<b>Number of Installations:</b>	10
<b>Miles Treated:</b>	
<b>Years Before:</b>	5
<b>Years After:</b>	3
<b>Methodology:</b>	Simple before/after
<b>Results:</b>	75% reduction in crash severity with no fatalities at treatment locations.
<b>File Name:</b>	<a href="#">Hyperlink</a>
<b>CounterMeasures:</b>	Systemic Horizontal Curves
<b>Description:</b>	
<b>Target Crash Type:</b>	Run-off-road
<b>Number of Installations:</b>	20
<b>Number of Installations:</b>	20
<b>Miles Treated:</b>	
<b>Years Before:</b>	5
<b>Years After:</b>	3
<b>Methodology:</b>	Simple before/after
<b>Results:</b>	35% reduction in crash severity with no fatalities and 50% in serious injuries.
<b>File Name:</b>	<a href="#">Hyperlink</a>
<b>CounterMeasures:</b>	Road Diets
<b>Description:</b>	
<b>Target Crash Type:</b>	All
<b>Number of Installations:</b>	8
<b>Number of Installations:</b>	8
<b>Miles Treated:</b>	
<b>Years Before:</b>	5
<b>Years After:</b>	3
<b>Methodology:</b>	Simple before/after
<b>Results:</b>	95% reduction in crash severity with 90% in fatalities and 72% reduction in serious injuries.
<b>File Name:</b>	<a href="#">Hyperlink</a>

**Project Effectiveness**

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

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
Wrong Way Driving	Urban Principal Arterial (UPA) - Interstate	Advanced technology and ITS	Advanced technology and ITS - other			8.00		10.00		13.00	1.00	31.00	1.00	20

**Enter additional comments here to clarify your response for this question or add supporting information.**

Please note that there were no fatal or serious injury crashes at any locations where wrong way driving detections systems were installed in the period analyzed. The online reporting tool will not allow RIDOT to input the value zero (0) into the above table, therefore it is blank.

**Are there any other aspects of the overall HSIP effectiveness on which the State would like to elaborate?**

Yes

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

In the past few years, RIDOT has revamped the HSIP to develop subprograms (as listed in this report). RIDOT is currently tracking on the safety effectiveness of all improvements implemented under these subprograms. Systemic improvements have been recently implemented and sufficient safety crash data is not yet available. RIDOT will be able to present before and after crash data for each subprogram (including systemic) using more advanced evaluations (compared to simple before-after).

## Compliance Assessment

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

07/25/2017

**What are the years being covered by the current SHSP?**

From: 2017 To: 2022

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

2022

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

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
<b>ROADWAY SEGMENT</b>										
Segment Identifier (12)	1	1					1	1	1	1
Route Number (8)	0.99991672218521	0.999883990719258								
Route/Street Name (9)	0.987425049966689	0.657424593967517								
Federal Aid/Route Type (21)	0.449866755496336	0.109628770301624								
Rural/Urban Designation (20)	0.999666888740839	1					1	1		
Surface Type (23)	1	1					1	1		
Begin Point Segment Descriptor (10)	1	1					1	1	1	1
End Point Segment Descriptor (11)	1	1					1	1	1	1
Segment Length (13)	1	1								
Direction of Inventory (18)	0.99975016655563	1								
Functional Class (19)	1	1					1	1	1	1
Median Type (54)	0.99991672218521	0.999883990719258								
Access Control (22)	0.845602931379081	0.440255220417633								

2018 Rhode Island Highway Safety Improvement Program

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
One/Two Way Operations (91)	1	1								
Number of Through Lanes (31)	1	0.910788863109049					1	1		
Average Annual Daily Traffic (79)	0	0					0	0		
AADT Year (80)	0	0								
Type of Governmental Ownership (4)	1	1					1	1	1	1
<b>INTERSECTION</b>										
Unique Junction Identifier (120)			1	0						
Location Identifier for Road 1 Crossing Point (122)			1	0						
Location Identifier for Road 2 Crossing Point (123)			1	0						
Intersection/Junction Geometry (126)			0.896518007496334	0						
Intersection/Junction Traffic Control (131)			0.896409364984518	0						
AADT for Each Intersecting Road (79)			0	0						
AADT Year (80)			0	0						
Unique Approach Identifier (139)			1	0						
<b>INTERCHANGE/RAMP</b>										
Unique Interchange Identifier (178)					1	0				
Location Identifier for Roadway at Beginning of Ramp Terminal (197)					1	0				
Location Identifier for Roadway at Ending Ramp Terminal (201)					1	0				
Ramp Length (187)					1	0				
Roadway Type at Beginning of Ramp Terminal (195)					1	0				
Roadway Type at End Ramp Terminal (199)					0.0999099909990999	0				

2018 Rhode Island Highway Safety Improvement Program

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
Interchange Type (182)					1	0				
Ramp AADT (191)					0	0				
Year of Ramp AADT (192)					0	0				
Functional Class (19)					0	0				
Type of Governmental Ownership (4)					0	0				
<b>Totals (Average Percent Complete):</b>	<b>0.85</b>	<b>0.78</b>	<b>0.72</b>	<b>0.00</b>	<b>0.55</b>	<b>0.00</b>	<b>0.89</b>	<b>0.89</b>	<b>1.00</b>	<b>1.00</b>

\*Based on Functional Classification

**Enter additional comments here to clarify your response for this question or add supporting information.**

1. RIDOT's road inventory includes 3,324 segments (3.8% of the inventory) that are not coded with the Type of Government Ownership. 62% are non-local paved roads.
2. RIDOT's intersection inventory does not contain Functional Classification or Ownership fields. The intersection inventory percent complete information is a summary of interections.
3. It is anticipated that an additional 500 to 1,500 additional intersection need to be inventoried to capture all Non-Local Paved Road Intersections.
4. RIDOT's Ramp inventory does not include Functional Classification or Ownership Fields. The ramp inentory percent complete information is a summary of all ramps.
5. RIDOT's road/intersection inventory does not include roads/intersections within the Narragansett Indian Tribe.

**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.**

Historically, RIDOT maintained a road inventory database for State owned and Federal Aid roads to meet Highway Performance Monitoring (HMPS) reporting requirements. Through coordination with other agencies (e-911 and the State's GIS clearinghouse) a local roads layer had been maintained. In 2013, RIDOT conducted a detailed assessment of existing road inventory databases in Rhode Island, and developed an RFP for a state-wide MIRE data collection project. In 2014, RIDOT selected a road inventory vendor to conduct the collection of MIRE elements on approximately, 6,500 roadway miles, 16,000 intersections (estimated), and 445 ramps. The inventory was finalized and delivered to RIDOT in 2016.

RIDOT's MIRE inventory includes 174 MIRE elements. Several of these elements are included in the inventory, but were not field populated (elements related to speed and traffic flow were not collected). RIDOT's MIRE data inventory consists of three separate inventories, broken down into the following categories.

1. Roadway Segment Descriptors - Consists of approximately 86,500 tenth of mile roadway segments, with 105 MIRE elements for all public roads in Rhode Island. Of the 105 elements, there are several placeholder elements (non-physical elements such as AADT, truck speeds, Etc.) that RIDOT may populate at a later date.
2. Intersection Inventory - Consists of junction (intersection points) and junction approach (intersection approach) elements. The inventory includes approximately 18,000 intersection locations with 18 junction elements and 40 junction approach elements. It is important to note that the intersection inventory was not prioritized based on the functional classification of the intersecting roads. The 18,000 intersections included in the inventory does not include all non-local paved roads based on roadway functional classification.
3. Ramp Inventory - Consists of 445 individual ramps associated with 105 unique interchange locations. Included in the ramp inventory are 21 of the 24 MIRE Interchange and Ramp Descriptors. MIRE elements not include are Interchange Entering Volume, Ramp AADT, and Year of Ramp AADT.

RIDOT's MIRE inventory includes 31 of the 37 MIRE FDEs for non-local paved roads. Elements highlighted in yellow are absent from the inventory. As previously stated, RIDOT's intersection inventory was not prioritized based on roadway functional classification and does not include all State/State and State/local intersections. To comply with FHWA's MIRE FDE requirements, RIDOT will need to complete the intersection inventory for any State/local intersections not included in the inventory. It is estimated that an additional 500 to 1,500 intersections need to be inventoried. This effort begun in 2018 and will continue over FY19 and 20 given staffing levels.

2018 Rhode Island Highway Safety Improvement Program  
Future Steps

RIDOT's early response to FHWA's MIRE requirements and their intent to conduct more advanced safety analyses, have put them in a good position from a MIRE FDE compliance standpoint. Completion of the intersection inventory to include non-local paved roads. Additional work is needed for the estimation of traffic volumes to comply with the AADT requirements. In addition, within the State of Rhode Island there is one Federally and State recognized tribe, Narragansett Indian Tribe, whose roadways need to be added to the MIRE inventory. RIDOT should coordinate with the Narragansett Indian Tribe to determine the extent of their data collection efforts.

When Rhode Island's Traffic Records Strategic Plan is updated by the Traffic Records Coordinating Committee RIDOT will propose inclusion of this plan, and or the remaining action items associated with this plan. In the meantime, RIDOT will continue to implement the Plan as outlined in this document to ensure MIRE FDE are collected for all public roads by September 30, 2026.

Furthermore, RIDOT must coordinate with all localities (i.e., Metropolitan Planning Organizations (MPOs), Counties, cities, and towns) and other public roadway owners (i.e., Federal, Tribal, and private road owners) that maintain their own roadways to determine the extent of their data collection efforts. RIDOT must determine the availability, completeness, and compatibility of the FDE data on non-RIDOT maintained, public roads.

Below is a list of action items for RIDOT to complete:

1. Coordinate with the Narragansett Indian Tribe to understand the extent of their road network.
  - a. Provide background information to the Tribe on the FHWA MIRE FDE data requirements and the steps that RIDOT has taken to meet the requirements.
  - b. Assess the Tribes road mileage and existing GIS data that maybe available and develop a cost estimate to be complete the inventory.
  - c. Seek assistance from the Tribe in completing the inventory. It is anticipated that the additional inventory could be completed without the use of any special equipment such as a mobile data collection vehicle. The State's existing high resolution aerial photography should be sufficient for locating the roadways. Attribution of the roads could be completed by the Tribe through a web-portal provided by RIDOT using their existing GIS infrastructure.
  - d. If Tribal staff are to complete the inventory, prepare training material on how to use any tools provided by RIDOT and background material on MIRE. There are a number of existing MIRE resources such as the MIRE Version 1.0 Report, MIRE Data Collection Guidebook that can found at <https://safety.fhwa.dot.gov/rsdp/mire.aspx>.
2. Finalize the MIRE Intersection Inventory for non-local paved roads.
  - a. As part of RIDOT's MIRE data collection project, the location of all intersections within the State was identified by RIDOT GIS staff and RIDOT's MIRE vendor. It is anticipated that between 500 and 1,500 additional intersection locations need to be added to RIDOT's existing intersection inventory. A more detailed assessment should occur to accurately estimate the cost to complete the remaining intersections.
  - b. When finalizing the intersection inventory, RIDOT should evaluate if all of the intersection elements currently included in their inventory should be collected or if the collection should be limited to MIRE FDE's or combination. It is recommended that RIDOT collect the MIRE FDEs and any additional elements required of their AASHTOWare Safety Analyst implementation.
  - c. The data collection effort can likely be completed through a desktop data collection effort using the video log from RIDOT's MIRE data collection effort, existing aerial photography, and other sources of street imaging.
3. Expand the traffic count program for non-local paved roads and local paved roads.
  - a. RIDOT should develop separate methodologies for accurately estimating AADT for non-local and local paved roads.
  - b. RIDOT should evaluate their existing traffic count program and HMPS reporting to identify gaps in their traffic count program. Emphasis should be on lower roadway functional classification roads and ramp facility types.
  - c. Based on the results of traffic volume gap analysis, RIDOT should release an RFP to enhance their traffic count program.

In addition to expanding their traffic count program, RIDOT should develop a methodology to distribute/estimate traffic volumes across their network so that all roadway, ramps, and intersection approaches meeting the MIRE FDE requirements

**Provide the suspected serious injury identifier, definition and attributes used by the State for both the crash report form and the crash database using the table below. Please also indicate whether or not these elements are compliant with the MMUCC 4th edition criteria for data element P5. Injury Status, suspected serious injury.**

CRITERIA	SUSPECTED SERIOUS INJURY IDENTIFIER(NAME)	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY DEFINITION	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY ATTRIBUTES(DESCRIPTORS)	MMUCC 4TH EDITION COMPLIANT *
Crash Report Form	Incapacitating Injury	No	N/A	No	N/A	No

2018 Rhode Island Highway Safety Improvement Program

CRITERIA	SUSPECTED SERIOUS INJURY IDENTIFIER(NAME)	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY DEFINITION	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY ATTRIBUTES(DESCRIPTORS)	MMUCC 4TH EDITION COMPLIANT *
Crash Report Form Instruction Manual	Incapacitating Injury	No	N/A	No	N/A	No
Crash Database	Incapacitating Injury	No	N/A	No	N/A	No
Crash Database Data Dictionary	Incapacitating Injury	No	N/A	No	N/A	No

**Please describe the actions the State is taking to become compliant by April 15, 2019.**

The Rhode Island Uniform Crash Report will be revised to include new fields and make the crash report consistent with the latest version of the MMUCC by April 2019. RIDOT has allocated funding for this task.

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

No

**When does the State plan to complete it's next HSIP program assessment.**

2019

**Enter additional comments here to clarify your response for this question or add supporting information.**

RIDOT will be asking FHWA to provide assistance in setting up an HSIP program assessment in 2019.

## **Optional Attachments**

Program Structure:

[HSIP Manual May8 FINAL.pdf](#)

Project Implementation:

Safety Performance:

Evaluation:

Compliance Assessment:

## Glossary

<b>5 year rolling average</b>	means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).
<b>Emphasis area</b>	means a highway safety priority in a State’s SHSP, identified through a data-driven, collaborative process.
<b>Highway safety improvement project</b>	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.
<b>HMVMT</b>	means hundred million vehicle miles traveled.
<b>Non-infrastructure projects</b>	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.
<b>Older driver special rule</b>	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.
<b>Performance measure</b>	means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.
<b>Programmed funds</b>	mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.
<b>Roadway Functional Classification</b>	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.
<b>Strategic Highway Safety Plan (SHSP)</b>	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.
<b>Systematic</b>	refers to an approach where an agency deploys countermeasures at all locations across a system.
<b>Systemic safety improvement</b>	means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.
<b>Transfer</b>	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.