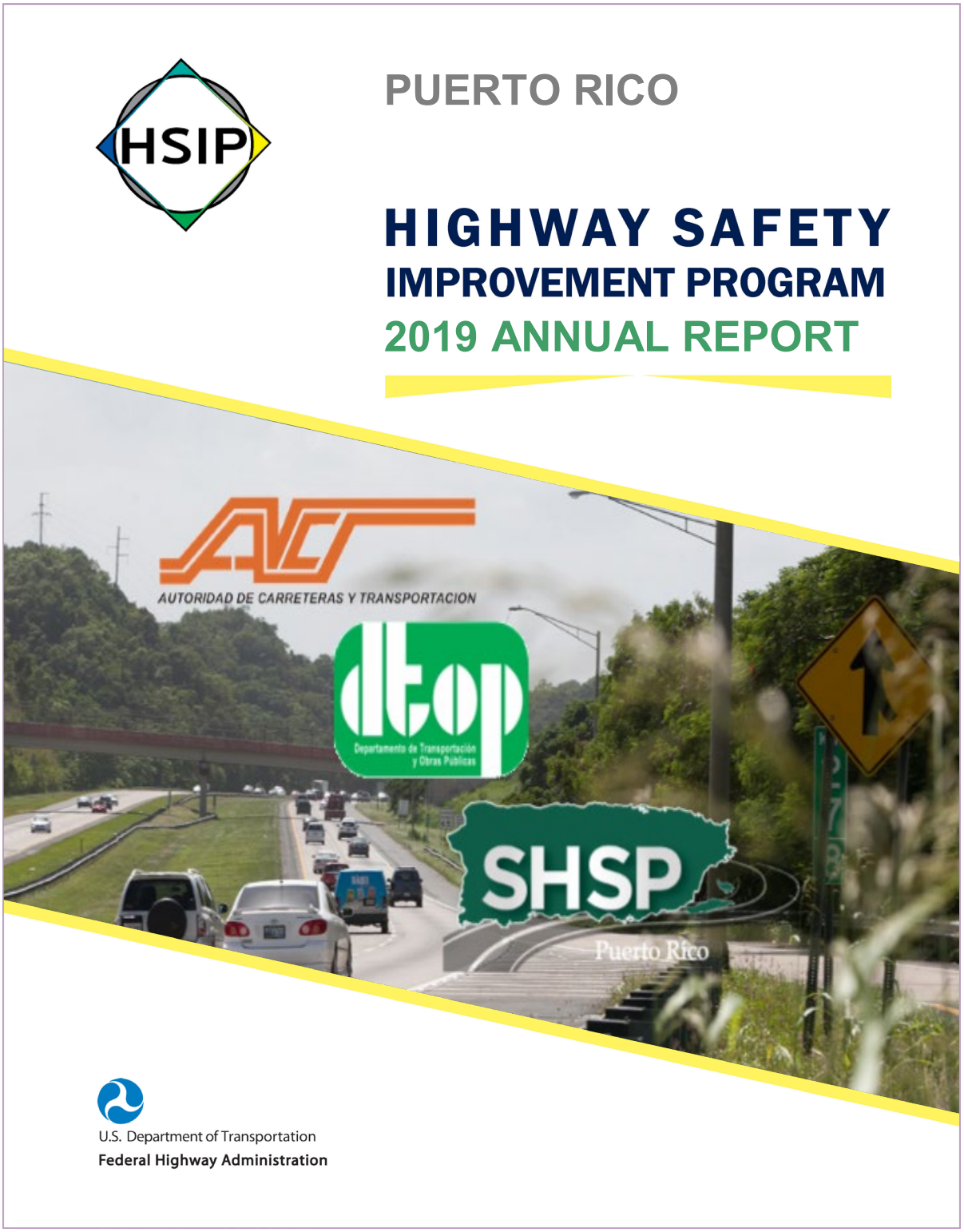

Photo Source:
Photo image courtesy of PRHTA.

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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. 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 HSIP is responsible for managing the 25% of federal funds allocated for Puerto Rico under the ZP-30 Fiscal Management Information System program code for highway safety improvement projects. This program does not have any subprogram. The SHSP is a key element of the HSIP in Puerto Rico, being responsible of coordinating with internal and external partners from all sectors (see Program Structure Flowchart in Optional Attachments).

In terms of programmed funds, Puerto Rico obligated $37.1 Million distributed in eight (8) highway safety improvement projects. The 37.5% of these projects addressed systemic safety improvements, including signing, pavement marking, rumble strips, and guardrails. The other 62.5% were targeted as hot spot approach procedure.

The PRHTA performed several crash data analyses to identify potential countermeasures in corridors of the Puerto Rico Highway Systems. In addition, Puerto Rico is participating in the Every Day Counts Federal Highway Administration (FHWA) Program with the Safe Transportation for Every Pedestrian (STEP) initiative.

Finally, there is no funds allocated for local or tribal roads and for non-infrastructure projects. Allocating federal funds to improve highway safety through the State highway system had been essential to stop the increase in the number of fatal and injury crashes in Puerto Rico. The traffic fatalities data from 2014 to 2016 demonstrated that Puerto Rico was experiencing a consistent reduction until 2017. The increase in fatalities continued during 2018, which is why the combined efforts of the safety stakeholders have worked together to reduce these values during the year 2019.

Finally, the PRHTA, together with the PRTSC and all safety stakeholders around the island, started the update of the new SHSP 2019-2023 in the last quarter of year 2018. This SHSP Update Process began with a Study of Emphasis Areas where the best databases of crashes, injuries transported in ambulances and fatalities were used to define the most pressing road safety needs of Puerto Rico. This study recommended about seven (7) areas of emphasis for the new SHSP 2019-2023, two less than the previous SHSP, with the intention of focusing road safety efforts more effectively in the next five (5) years. The update efforts continued during 2019 in order to have it ready before July 2019 and in compliance with federal regulation.

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 Puerto Rico Highway and Transportation Authority (PRHTA) manages a Highway Safety Improvement Program (HSIP) focused on the development of safety improvement projects. As part of this program, PRHTA is implementing a Strategic Highway Safety Plan (SHSP) since 2014. PRHTA uses local and federal funds to implement highway safety improvement projects.

Under the title 23 U.S.C. Section 165, Territorial and Puerto Rico Highway Program, Puerto Rico is authorized to receive $158,000,000 annually for fiscal years 2016 through 2020. The responsible agency for receiving these funds is the PRHTA. From these funds, the Highway Safety Improvement Program (HSIP) is responsible for managing the 25% under the ZP-30 Fiscal Management Information System program code for highway safety improvement projects. Additionally, the PRHTA applies ZP-40 Section 154 Penalty (Open Container Requirements) and ZP-50 Section 164 Penalty (Minimum Penalties for Repeated Offenders) funds to HSIP eligible activities.

The project selection is summarized in the following steps:

- Crash data collection in the Puerto Rico Department of Transportation and Public Works (PRDTPW).
- Development of the High Crash Location (HCL) Report. In this report, the PRHTA establishes the list of high crash locations by corridors, segments, and intersections.
- Evaluations of the high crash locations identified to determine the highway safety improvement projects to be included in the Statewide Transportation Improvement Program (STIP). Those projects are divided into systemic or hot spot approach. This evaluation considers the use of funds through to the five (5) PRHTA Regions.
- Selection of consultants for the development of PS&E in compliance with the latest engineering standards in Puerto Rico.
- Inclusion of the highway safety improvement projects in the STIP for the evaluation and approval of the Metropolitan Planning Organization (MPO).
- Bidding and construction processes.

Where is HSIP staff located within the State DOT?

Engineering

How are HSIP funds allocated in a State?

- SHSP Emphasis Area Data

- Other-Crash Analysis

The Highway Safety Improvement Program (HSIP) is responsible for managing the 25% under the ZP-30 Fiscal Management Information System program code for highway safety improvement projects. The project selection is summarized in the following steps:

- Development of the High Crash Location (HCL) Report. In this report, the PRHTA establishes the list of high crash locations by corridors, segments, and intersections. Also, an analysis of corridors per SHSP Emphasis Area is done to help us in the establishment of priorities in the obligation of federal funds.
- Evaluations of the high crash locations identified to determine the highway safety improvement projects to be included in the Statewide Transportation Improvement Program (STIP). Those projects are divided into systemic or hot spot approach. This evaluation considers the use of funds through to the five (5) PRHTA Regions.
- Inclusion of the highway safety improvement projects in the STIP for the evaluation and approval of the Metropolitan Planning Organization (MPO).

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

In Puerto Rico, local roads are addressed by municipalities. As part of the Strategic Highway Safety Plan (SHSP) the municipalities are invited to participate in the emphasis areas meetings' discussion to provide information about the highway safety of their roads. If there is a safety problem in the local roads, the PRHTA provide technical resources to find countermeasures and encourage a reduction in the severe crashes.

Puerto Rico does not have tribal roads, thus is not applicable.

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

- Design
- Operations
- Planning
- Traffic Engineering/Safety

Describe coordination with internal partners.

The PRHTA Office Directors held several meetings to coordinate the selection and integration of their programs using a data driven process. Some of the internal partners are Planning and Programming Area, Design Area, and Traffic Engineering and Operations Area, among others.

Identify which external partners are involved with HSIP planning.

- Academia/University
- FHWA
- Governors Highway Safety Office
- Law Enforcement Agency
- Local Government Agency
- Local Technical Assistance Program
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)
- Other-Non-profit organizations

Describe coordination with external partners.

As part of the Puerto Rico SHSP, the external partners can discuss and participate in quarterly meetings, and road safety audits, among other events. Through the Emphasis Areas Teams Meetings (i.e. roadway departure, vulnerable road users, intersections, young drivers, alcohol impaired driving, and aggressive driving) these partners collaborate in the progress of the Puerto Rico SHSP. In addition, some of them participate in the road safety evaluations supporting the decision-making processes of the highway safety improvement projects. The development and implementation of the Puerto Rico SHSP is funded through the HSIP.

The PRHTA (HSIP) coordinates with the Puerto Rico Traffic Safety Commission (PRTSC) and the Automobile Accident Compensation Administration (ACAA, by its Spanish Acronym) the crash data used to establish performance measures and the data-driven highway safety improvement projects. The PRTSC is responsible of managing the Puerto Rico Fatalities database through the Planning Area and for the CARE software (software created to access and analyze the Puerto Rico crash data) developed by the University of Alabama and managed by the Carlos Albizu University (San Juan, Puerto Rico). The ACAA provides the number of injured people that were transported in an ambulance because of a traffic crash.

The ALIANZA (Spanish name for the coalition of the third sector, including several non-profit and professional organizations) has been working together to enhance their participation into the Puerto Rico SHSP. The HSIP promote this alliance by encouraging them to unite efforts and providing technical references for their studies and activities (i.e. statistical crash analysis and profile of pedestrian crashes).

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

The PRHTA continue the methodology for choosing the safety improvement projects combining the PRHTA's crash data, within the High Crash Location Report, and the PRHTA's pavement condition database.

Program Methodology

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

No

The PRHTA is being increasingly using the best and pertinent data available since the approval of the Puerto Rico SHSP in July 2014. The data has helped to develop studies and evaluation of the performance measures, among others. As mentioned before, the PRHTA is performing a process to define the highway safety improvement projects. PRHTA's executive and supporting decision makers, consider a broad spectrum of information (i.e., HCLR, previous projects) to identify the list of project's candidates (see High Crash Location Methodology in the Optional Attachments). The result of this evaluation, where the priorities from all the PRHTA programs are considered, is a plan of integrated projects by funding designation. The decision makers recommend a fund designation to each project candidate based on all the information available. For example, if the site was included based on the poor pavement condition, it shall be classified under the Pavement Program Funding, but project scope will also include the necessary highway safety improvements. In cases where the data shows a good pavement condition and a good bridge condition of a High Crash Location, the site will be classified under the ZP-30 funding class (HSIP funds). The top management officials decided to develop an accelerated highway design program to fasten the design process of projects meeting the Categorical Exclusion criteria. To include a project into this program, the executive level consults the

Metropolitan Planning Organization (MPO) for their approval. Then, PRHTA contracts design firms to prepare the Preliminary Engineering Reports (PER) and the Abbreviated Plans, Specifications, and Estimate (APS&E). These documents are used for the bidding and construction processes. Finally, PRHTA evaluates the effectiveness of the countermeasures implemented performing Before and After Studies.

Select the programs that are administered under the HSIP.

- HSIP (no subprograms)

Program: HSIP (no subprograms)

Date of Program Methodology:7/1/2017

What is the justification for this program?

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

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
Fatal and serious injury crashes only	Lane miles	Functional classification

What project identification methodology was used for this program?

- Crash frequency

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

No

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

How are projects under this program advanced for implementation?

- selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must

equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Relative Weight in Scoring

Available funding:100
Total Relative Weight:100

What percentage of HSIP funds address systemic improvements?

37.5

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

- Add/Upgrade/Modify/Remove Traffic Signal
- High friction surface treatment
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing
- Rumble Strips
- Upgrade Guard Rails

What process is used to identify potential countermeasures?

- Crash data analysis
- Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)
- Engineering Study
- Road Safety Assessment
- SHSP/Local road safety plan
- Stakeholder input

Does the State HSIP consider connected vehicles and ITS technologies?

Yes

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

If a safety project recommends ITS technology as part of the countermeasures proposed, PRHTA will propose the use of HSIP funds for the development and implementation of the technology (i.e. traffic signal, dynamic message sign, TMC).

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.

The PRHTA used the HSM as a reference to develop current procedures to determine the high crash locations, perform the Before and After studies, and develop the Puerto Rico Crash Modification Factors database. The PRHTA methodology for determining the high crash locations (HCL report) includes a Crash Cost Factor (CCF) and a Frequency Index (FI), corresponding to the Crash Rate and Severity Index presented in the HSM. PRHTA have not been able to use the HSM in the full extends because the KABCO injury

classification is not implemented in Puerto Rico and the traffic data is very limited. The crash costs used for determining the CCF and for the justification of highway safety improvement projects are those included in the HSM. Currently, the process for performing the Before and After studies was based on the process contained in the HSM, except for those elements that were limited by the local available data. PRHTA participated in the Data-Driven Safety Analysis FHWA Initiative. As part of this initiative, a series of workshops to enhance the technical knowledge of the professional community (internal and external) on the application of the HSM in Puerto Rico were provided during the year 2018.

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

As part of the methodology of the HSIP, the PRHTA participate in several activities that includes education, enforcement, emergency medical response, and engineering. The PRHTA is fully supporting the efforts of the Puerto Rico Police and the Traffic Records Coordinating Committee in developing the digital crash form. This effort will help the PRHTA to perform a faster and accurate crash analysis. In addition, the PRHTA participated in activities related to the academia, where the message of highway safety and its problems was taken directly to the engineering students looking for new ideas and creating awareness between them. Also, the PRHTA had promoted an educational campaign of the PRTSC targeted to aggressive drivers among the safety stakeholders and public.

Other activities supported by the HSIP methodology includes trainings for road safety educators on issues of penalties for driving under the influence of alcohol and how an educator should prepare to create an effective presentation. Also, support was provided to alliances in the third sector with the objective of following up on the SHSP Action Plan strategies and coordinating joint activities. In addition, the HSIP supports and shares, through the SHSP efforts, the educational campaigns of the PRHTA, such as drunk drivers, creation and distribution of educational material in car dealerships, and impact on crosswalks, among others.

In terms of technical activities, several seminars have been supported, such as High-Friction Surface Treatment and the Interactive Highway Safety Design Model application.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

Calendar Year

From January 1 to December 31, 2018.

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$39,500,000	$37,110,924	93.95%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 154)	$1,600,000	$0	0%
Penalty Funds (23 U.S.C. 164)	$1,600,000	$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$0	$0	0%
Totals	$42,700,000	$37,110,924	86.91%

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

$0

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

$0

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

$0

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

$0

How much funding was transferred in to the HSIP from other core program areas during the reporting period under 23 U.S.C. 126?

$0

How much funding was transferred out of the HSIP to other core program areas during the reporting period under 23 U.S.C. 126?

$0

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

There were no major impediments to obligate the HSIP funds in this period, except for the penalty funds that were not obligated due a redistribution of funds from the previous federal fiscal year (as shown in the Q23).

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

PRHTA is developing a highway safety culture by including highway safety improvement in all projects independently of the project scope and the corresponding allocated program. Also, at the end of 2018, Puerto Rico selected the Every Day Counts' Safe Transportation for Every Pedestrian (STEP) initiative to identify countermeasures in order to reduce the pedestrian fatalities due to traffic crashes. This action will encourage the PRHTA to evaluate projects aimed at pedestrian facilities as part of the HSIP investment.

General Listing of Projects

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

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Safety Improvements PR-173 Km 0.0 to Km 9.0 (AC-017333)	Roadside	Barrier- metal	4	Miles	$2695587.95	$2753313.75	HSIP (23 U.S.C. 148)	Rural	Minor Collector	9,219	25	State Highway Agency	Systemic	Roadway Departure	Implement engineering measures to remove and/or shield fixed-objects located within roadside clear recovery area in accordance with current standards
Safety Improvements PR-102 Km 7.6 to Km 17.6 (AC-010272)	Roadway delineation	Longitudinal pavement markings - remarking	6	Miles	$2960790.8	$2960790.8	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	6,650	25	State Highway Agency	Systemic	Roadway Departure	Implement engineering measures to remove and/or shield fixed-objects located within roadside clear recovery area in accordance with current standards
Safety Improvements PR-10 Km 0 to Km 29.8 (AC-100088)	Roadway	Rumble strips - center	8	Miles	$17159629.3	$17260719.3	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	15,000	55	State Highway Agency	Systemic	Roadway Departure	Implement engineering measures to remove and/or shield fixed-objects located within roadside clear recovery area in accordance with current standards
Managed Lines or Dynamic Toll	Roadway	Roadway widening - add	2	Lanes	$5600000	$21033731.13	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	55	State Highway Agency	Spot	Roadway Departure	Implement engineering measures to

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Lanes PR-52 Phase II Unit 1 (AC-520131)		lane(s) along segment													remove and/or shield fixed-objects located within roadside clear recovery area in accordance with current standards
Managed Lines or Dynamic Toll Lanes PR-52 Phase II Unit 2 (AC-520143)	Roadway	Roadway widening - add lane(s) along segment	2	Lanes	$2852859.34	$13352665.98	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	55	State Highway Agency	Spot	Roadway Departure	Implement engineering measures to remove and/or shield fixed-objects located within roadside clear recovery area in accordance with current standards
Managed Lines or Dynamic Toll Lanes PR-18 Phase III Unit 1 (AC-001870)	Roadway	Roadway widening - add lane(s) along segment	2	Lanes	$1179384.84	$5882790.06	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	50	State Highway Agency	Spot	Roadway Departure	Implement engineering measures to remove and/or shield fixed-objects located within roadside clear recovery area in accordance with current standards
Managed Lines or Dynamic Toll Lanes PR-18 Phase III Unit 2 (AC-001872)	Roadway	Roadway widening - add lane(s) along segment	2	Lanes	$1559609.97	$7277144.46	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	50	State Highway Agency	Spot	Roadway Departure	Implement engineering measures to remove and/or shield fixed-objects located within roadside clear

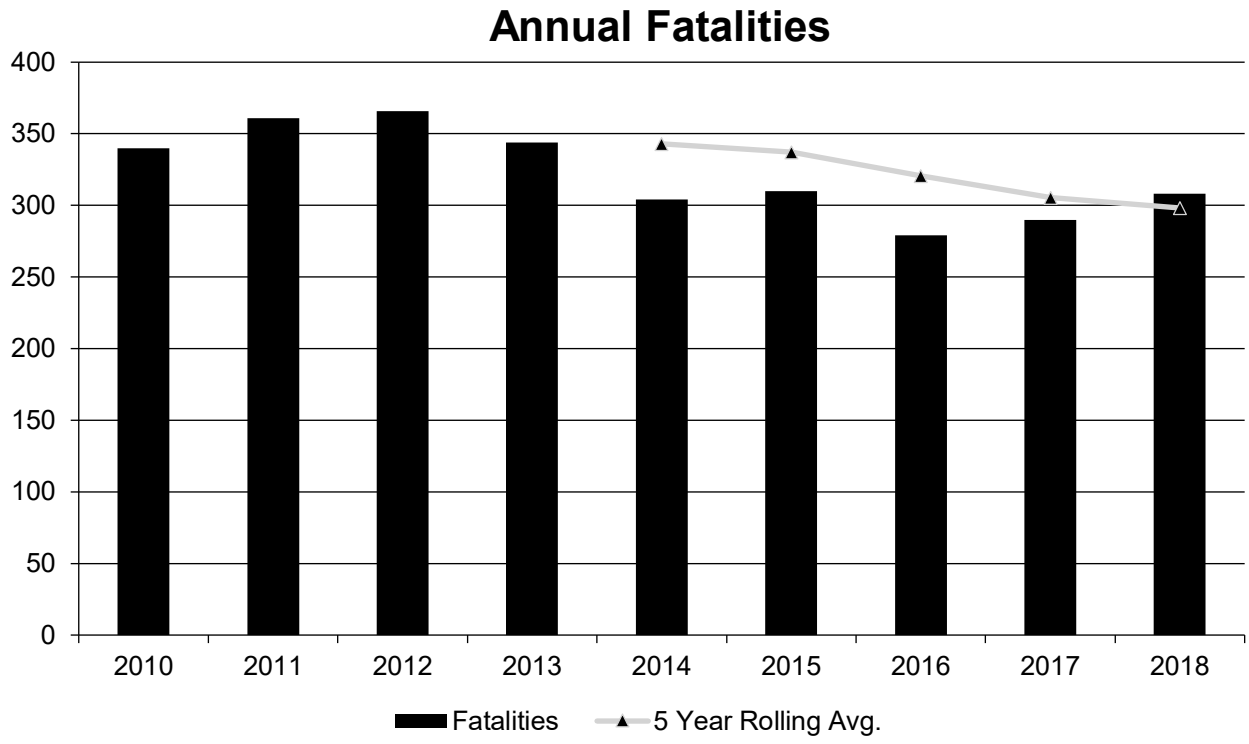
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
															recovery area in accordance with current standards
Managed Lines or Dynamic Toll Lanes PR-52 Phase III Unit 3 (AC-800534)	Roadway	Roadway widening - add lane(s) along segment	2	Lanes	$3103061.52	$15327639.56	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	0	55	State Highway Agency	Spot	Roadway Departure	Implement engineering measures to remove and/or shield fixed-objects located within roadside clear recovery area in accordance with current standards

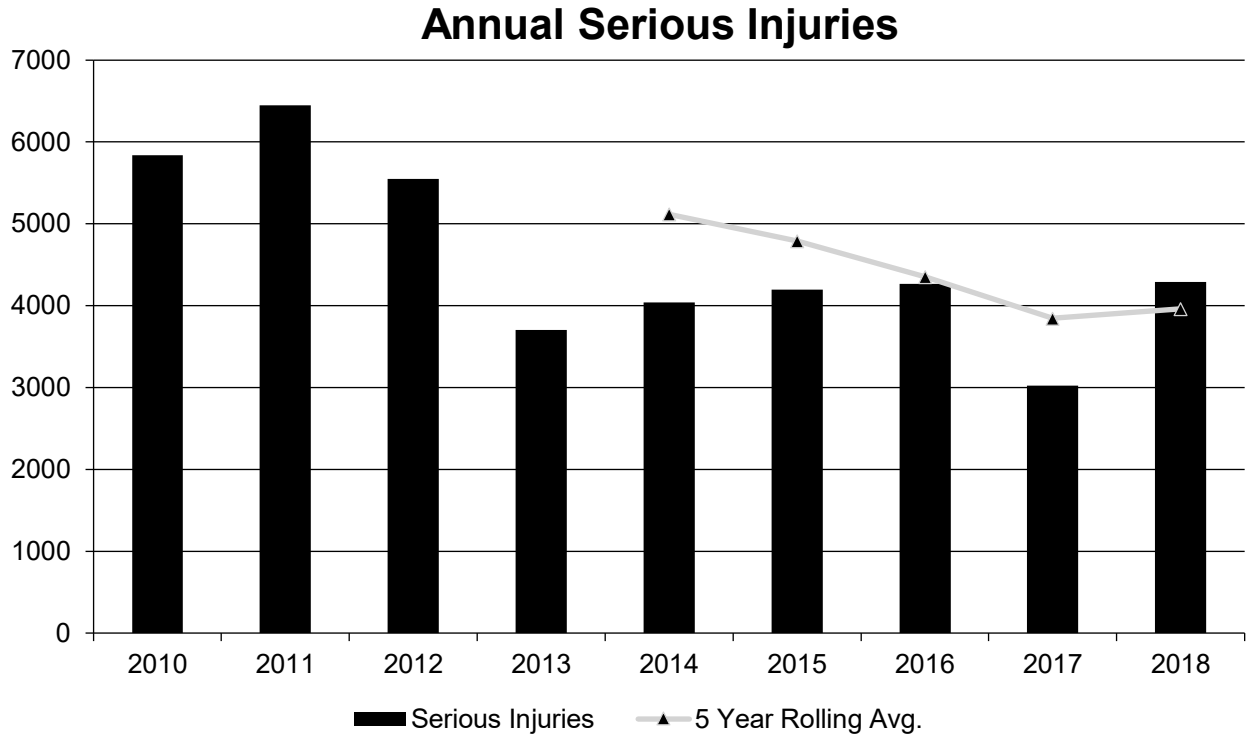
Safety Performance

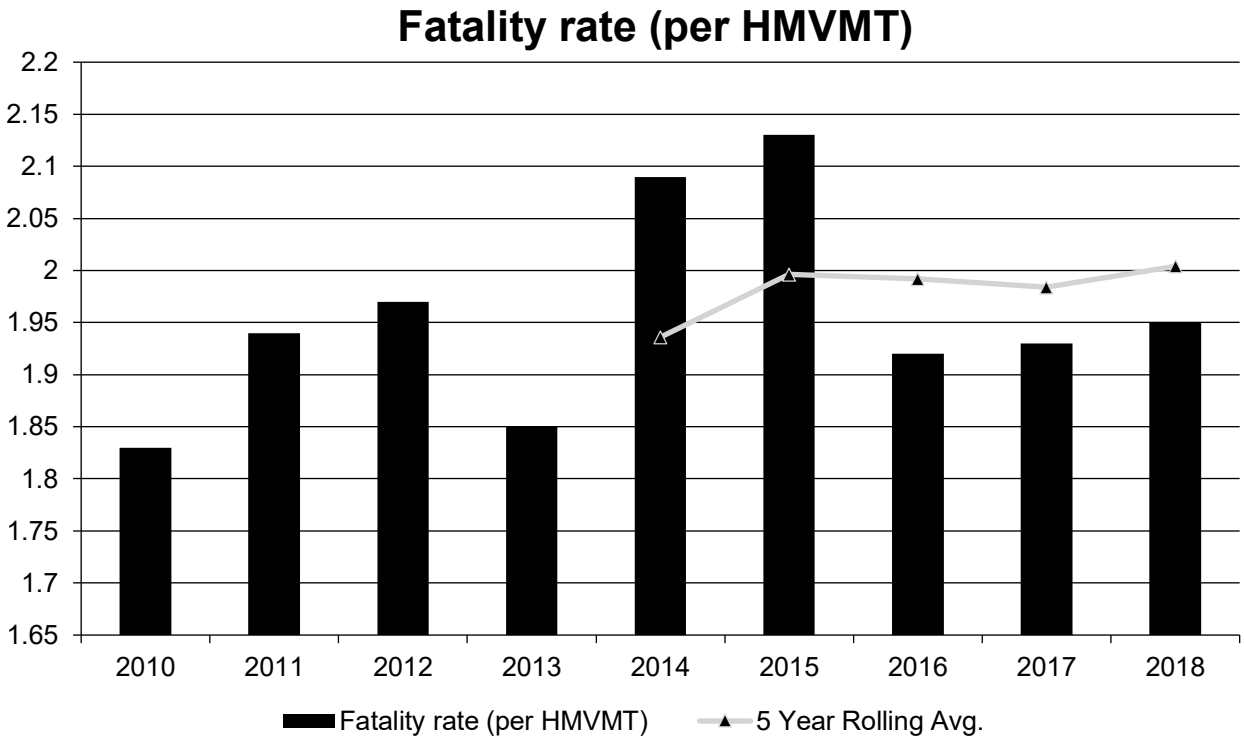
General Highway Safety Trends

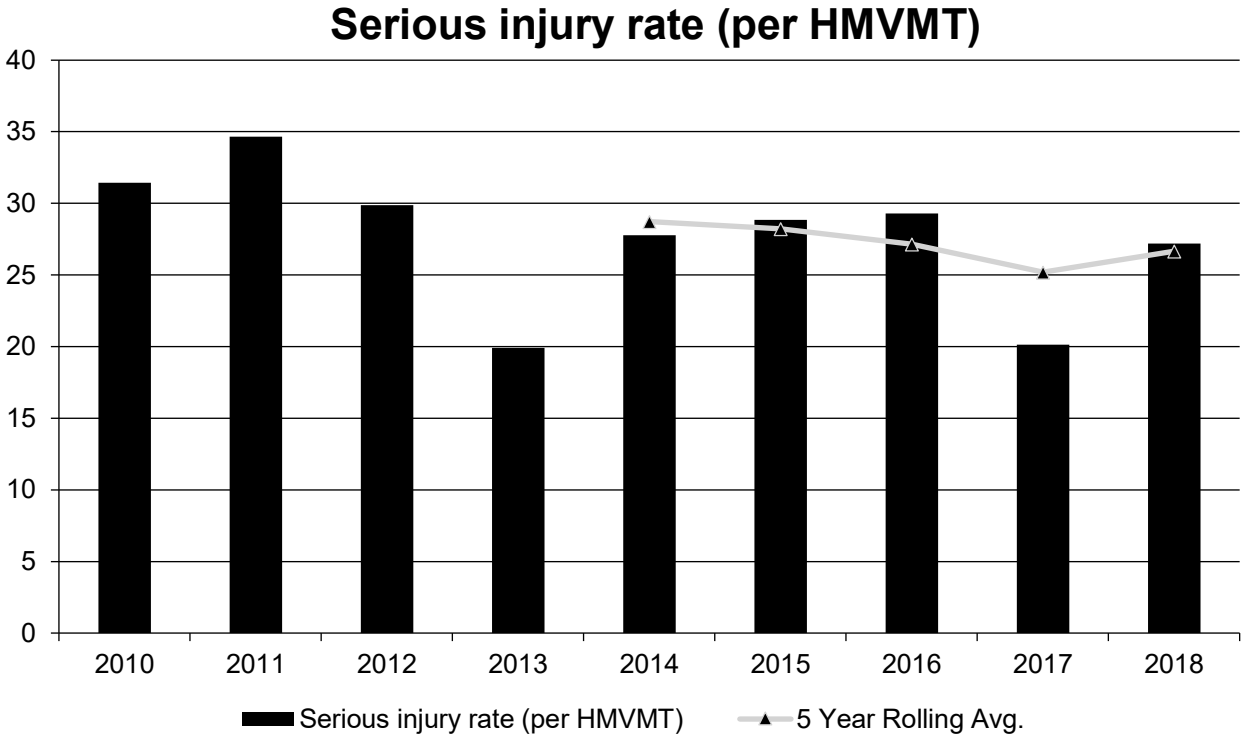
Present data showing the general highway safety trends in the State for the past five years.

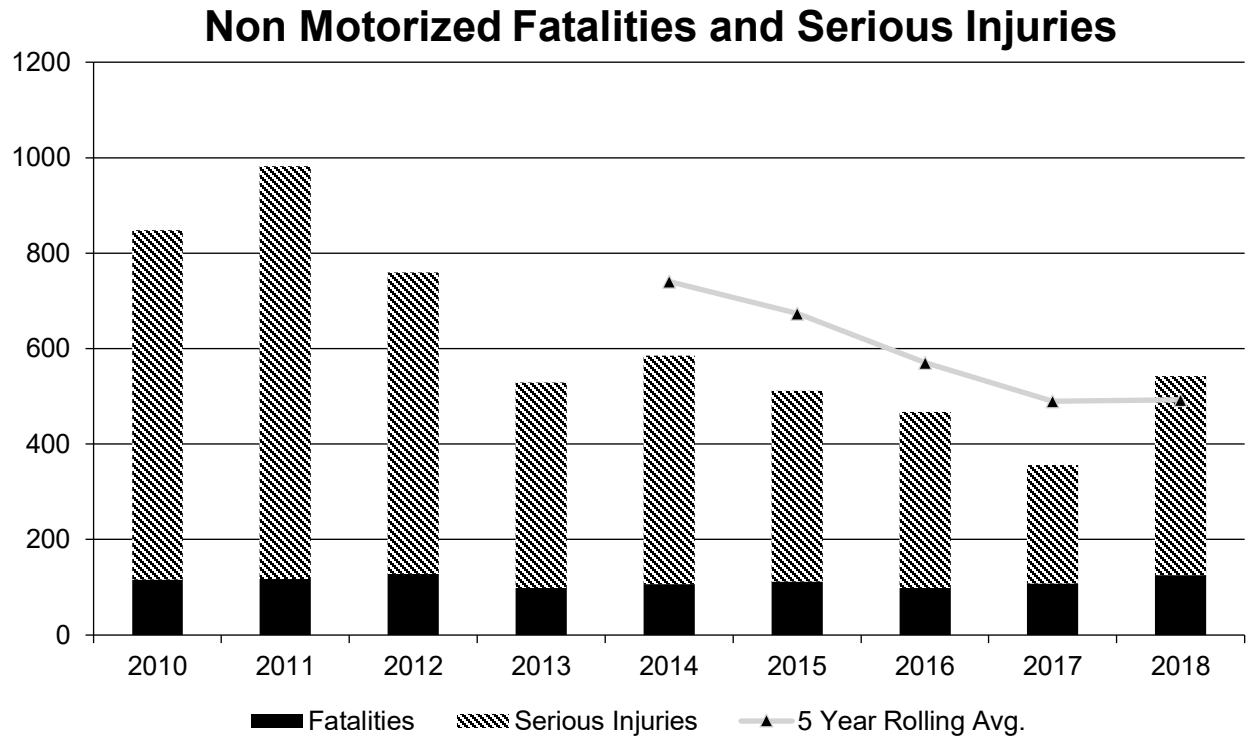
PERFORMANCE MEASURES	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fatalities	340	361	366	344	304	310	279	290	308
Serious Injuries	5,838	6,449	5,551	3,705	4,040	4,199	4,267	3,024	4,290
Fatality rate (per HMVMT)	1.830	1.940	1.970	1.850	2.090	2.130	1.920	1.930	1.950
Serious injury rate (per HMVMT)	31.423	34.657	29.878	19.925	27.776	28.851	29.300	20.150	27.180
Number non-motorized fatalities	116	118	128	98	107	112	98	108	125
Number of non-motorized serious injuries	732	864	631	431	478	400	369	248	418


Annual Fatalities
400
350
300
250
200
150
100
50
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
7000
6000
5000
4000
3000
2000
1000
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
2.2
2.15
2.1
2.05
2
1.95
1.9
1.85
1.8
1.75
1.7
1.65
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
40
35
30
25
20
15
10
5
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
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 2016

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	0	0	0	0
Rural Principal Arterial (RPA) - Other Freeways and Expressways	0	0	0	0
Rural Principal Arterial (RPA) - Other	0	0	0	0
Rural Minor Arterial	0	0	0	0
Rural Minor Collector	0	0	0	0
Rural Major Collector	0	0	0	0
Rural Local Road or Street	0	0	0	0

2019 Puerto Rico 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)**
Urban Principal Arterial (UPA) - Interstate	0	0	0	0
Urban Principal Arterial (UPA) - Other Freeways and Expressways	0	0	0	0
Urban Principal Arterial (UPA) - Other	0	0	0	0
Urban Minor Arterial	0	0	0	0
Urban Minor Collector	0	0	0	0
Urban Major Collector	0	0	0	0
Urban Local Road or Street	0	0	0	0

Year 2018

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	298.2	3,964	2	26.65
County Highway Agency				
Town or Township Highway Agency				
City or Municipal Highway Agency				
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency				
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)				
Indian Tribe Nation				

In the present, Puerto Rico's crash and HPMS (Highway Performance Monitoring System) databases aren't integrated. This limitation in the integration of databases doesn't permit Puerto Rico to provide the information of crashes per functional classification. At the beginning of year 2019, the Office of Accident Analysis (OAA) in the Puerto Rico Department of Transportation began to collect the data of functional classification in the crash database. The personnel of OAA compare the crash location in the crash form with the functional classification of the road in the HPMS report. Puerto Rico expects to provide information of the crashes per functional classification in the years to come.

Provide additional discussion related to general highway safety trends.

Since 2018, the PRHTA is reporting the same values of the Vehicle Miles Traveled (VMT) reported by FHWA. This action was taken to be in accordance with the requirements that NHTSA requested to the PRTSC. This

change may affect several performance measures values, such as fatality and serious injury rate, due to new and forecasted values of VMT from 2016 to 2018.

In addition, the Puerto Rico Police is in the middle of a transition to a digital crash report form. The transition will finish in October 2019, where 100% of the police officers are expected to fill out the crash report digitally. The benefits of this digital crash report form are that it includes new information fields such as the KABCO injury classification scale and the definition of serious injuries according to the MMUCC.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2020 Targets *

Number of Fatalities:292.0

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

The database used to forecast the number of fatalities was the Puerto Rico FARS Database. The years considered during the analysis were from 2008 to 2018. To obtain the safety performance target of the number of fatalities, it was analyzed several trendline options (i.e., exponential, linear, logarithmic, polynomial, and power) to forecast the 2020 fatalities. In addition, because the next year (2020) is an election year in Puerto Rico, the fatality forecast must take into consideration an analysis of historical data, with emphasis on the behavior in the past election events. The analysis of the historical data from 1975 until 2018, shows that in every election year Puerto Rico experience an average increase of 7 traffic fatalities. After having selected a power trendline of y = 455x^ (-0.174), with an R2=86.2%, and take into consideration the historical data analysis, the forecast for the 2020 5-year moving average safety performance target is 292.0.

Number of Serious Injuries:3983.0

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

The database used to forecast the number of serious injuries was the Automobile Accident Compensation Administration (ACAA, by its Spanish acronym). The years considered during the analysis were from 2007 to 2018. To obtain the safety performance target of the number of serious injuries, it was analyzed several trendline options (i.e. exponential, linear, logarithmic, polynomial, and power) to forecast the 2020 serious injuries. After having selected a logarithmic trendline of y = -2,093 ln(x) + 8842, with an R2=87.0%, the forecast of the 2020 5-year moving average safety performance target for the number of serious injuries is 3,983.

Fatality Rate:1.913

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

The database used to forecast the fatality rate were from the Puerto Rico FARS Database and the values of the Vehicle Miles Traveled (VMT) reported by Federal Highway Administration (FHWA). The years considered during the analysis were from 2008 to 2018, for the Puerto Rico FARS Database, and from 2007 to 2017, for the FHWA VMT. The fatality rate forecast is based on the 2020 5-yr MA of fatalities and VMT. Also, it was analyzed several trendline options (i.e. exponential, linear,

logarithmic, polynomial, and power) to forecast the 2020 fatality rate. After having selected a power trendline of y=455x^ (-0.174), with a R2=86.2%, while the VMT forecast uses a logarithmic trendline of y =-21.59ln(x) + 207.56, with a R2=57.6%, the 5-year moving average (5-yr MA) for the 2020 fatality rate was forecasted to 1.913.

Serious Injury Rate:26.082

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

The database used to forecast the serious injury rate were from the Automobile Accident Compensation Administration (ACAA, by its Spanish acronym) and the values of the Vehicle Miles Traveled (VMT) reported by Federal Highway Administration (FHWA). The years considered during the analysis were from 2008 to 2018, for the ACAA Database, and from 2007 to 2017, for the FHWA VMT. The serious injury rate forecast is based on the 2020 5-yr MA for serious injuries and VMT. Also, it was analyzed several trendline options (i.e. exponential, linear, logarithmic, polynomial, and power) to forecast the 2020 serious injury rate. After having selected a logarithmic trendline of y = -2093ln(x) + 8842, with a R2=87%, while the VMT forecast uses a logarithmic trendline of y = -21.59ln(x) + 207.56, with a R2=57.6%, the 5-year moving average (5-yr MA) for the 2020 serious injury rate was forecasted to 26.082.

Total Number of Non-Motorized Fatalities and Serious Injuries:445.0

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

The databases used to forecast the number of non-motorized fatalities and serious injuries were the Puerto Rico FARS Database, for the fatalities, and the Automobile Accident Compensation Administration (ACAA, by its Spanish acronym), for the serious injuries. The years considered during the analysis were from 2008 to 2018, for the Puerto Rico FARS Database, and from 2008 to 2018, for the ACAA Database. To obtain the safety performance target of the number of non-motorized fatalities and serious injuries, it was analyzed several trendline options (i.e., exponential, linear, logarithmic, polynomial, and power) to forecast the 2020 non-motorized fatalities and serious injuries. After having selected a logarithmic trendline of y = -272.4 ln(x) + 1069.3, with an R2=79.7%, the 5-year moving average (5-yr MA) for the 2020 non-motorized fatalities and serious injuries is 445.0.

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

During this reporting period, Puerto Rico defined the safety performance targets for 2020 in a close coordination with the Federal Program Manager of the Planning Division of the PRTSC. This coordination consisted in several meetings during May 2019, where technical personnel of the PRHTA, the Puerto Rico SHSP and the PRTSC analyzed the trends and forecasts for each one of the safety performances targets. From this meetings and analyses, were established the traffic safety performance measures, or core outcomes, for the Puerto Rico Highway Safety Plan that is required by NHTSA.

In addition, following FHWA Rule 23 CFR 490, the target reported to 2019 were submitted by letter to the Metropolitan Planning Organizations (MPO) and the PRHTA performed a meeting with them to receive the approval of the targets. On January 17, 2018, the PRHTA's Highway Safety Office, presented the SHSP's safety targets for the five (5) performance measures reported. The MPO had two (2) alternatives upon this decision: (1) agree with the safety target settings established for the SHSP, or (2) commit with new targets for

the MPO. After consulting the Puerto Rico's MPOs, all the SHSP safety targets for 2019 were approved. Thus, the MPOs adopted the safety targets of the Puerto Rico SHSP.

Does the State want to report additional optional targets?

No

Not Applicable.

Describe progress toward meeting the State's 2018 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.

Safety Performance Targets	2018 Targets	2018 Results	Change %
Number of Fatalities	292.2	298.2	2.1%
Number of Serious Injuries	4079	3964	-2.8%
Fatality Rate	1.69	2.01	18.9%
Serious Injury Rate	23.51	26.65	13.4%
Number of Non-Mot F+SI	564	493	-12.6%

Number of Fatalities

The PRHTA established for the 2018 target a 5-yr MA of the number of fatalities the value of 292.2 and the result was 298.2. There are several reasons to explain the difference between the 2018 target and outcome. The number of fatalities increase from 290 in 2017 to 308 in 2018 due to the aftermath after María, where the highway condition Islandwide presented landslides, collapsed bridges, non-operational traffic signals, debris in the transportation facilities, and lack of lighting to all the road users. The Police enforcement efforts during 2018 were compromised to the recovery plan established by the government of Puerto Rico as part of the hurricane impact.

Number of Serious Injuries

The 5-year MA of the number of serious injuries shown a positive difference between the 2018 target and outcome. The PRHTA and the safety stakeholders will continue with the implementation of the safety efforts to achieve proposed targets and goals in the next years.

Fatality Rate

The PRHTA established for the 2018 target a 5-yr MA of fatality rate the value of 1.69 and the result was 2.01. There are two main reasons for this difference. First, the number of fatalities dramatically increase as we explain in the number of fatalities safety performance targets. Second, since 2018, the PRHTA has been reporting the same values of the Vehicle Miles Traveled (VMT) reported by FHWA. This action was taken to be in accordance with the requirements that NHTSA requested to the PRTSC. This change affected several performance measures values, such as fatality and serious injury rate, due to new and forecasted values of VMT from 2016 to 2018.

Serious Injury Rate

The PRHTA established for the 2018 target a 5-yr MA of serious injuries rate the value of 23.51 and the result was 26.65. The main reason for this difference is that the PRHTA has been reporting the same values of the Vehicle Miles Traveled (VMT) reported by FHWA. This action was taken to be in accordance with the requirements that NHTSA requested to the PRTSC. This change affected several performance measures values, such as fatality and serious injury rate, due to new and forecasted values of VMT from 2016 to 2018.

Number of Non-Motorized F+SI

The 5-year MA of the number of serious injuries shown a positive difference between the 2018 target and outcome. The PRHTA and the safety stakeholders will continue with the implementation of the safety efforts to achieve proposed targets and goals in the next years.

Applicability of Special Rules

Does the HRRR special rule apply to the State for this reporting period?
No

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

PERFORMANCE MEASURES	2012	2013	2014	2015	2016	2017	2018
Number of Older Driver and Pedestrian Fatalities	49	59	49	42	55	76	50
Number of Older Driver and Pedestrian Serious Injuries	496	449	337	402	457	495	514

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Other-Comparison in the number of fatalities and serious injuries

The PRHTA and safety stakeholders evaluate and compare every day the number of fatalities and serious injuries with the established targets and the values obtained in previous years.

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

The PRHTA established for the 2018 target a 5-yr MA of the number of fatalities the value of 292.2 and the result was 298.2. There are several reasons to explain the difference between the 2018 target and outcome. The number of fatalities increase from 290 in 2017 to 308 in 2018 due to the aftermath after María, where the highway condition Islandwide presented landslides, collapsed bridges, non-operational traffic signals, debris in the transportation facilities, and lack of lighting to all the road users. The Police enforcement efforts during 2018 were compromised to the recovery plan established by the government of Puerto Rico as part of the hurricane impact.

The 5-year MA of the number of serious injuries shown a positive difference between the 2018 target and outcome. The PRHTA and the safety stakeholders will continue with the implementation of the safety efforts to achieve proposed targets and goals in the next years.

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

- # RSAs completed
- HSIP Obligations
- Increased awareness of safety and data-driven process

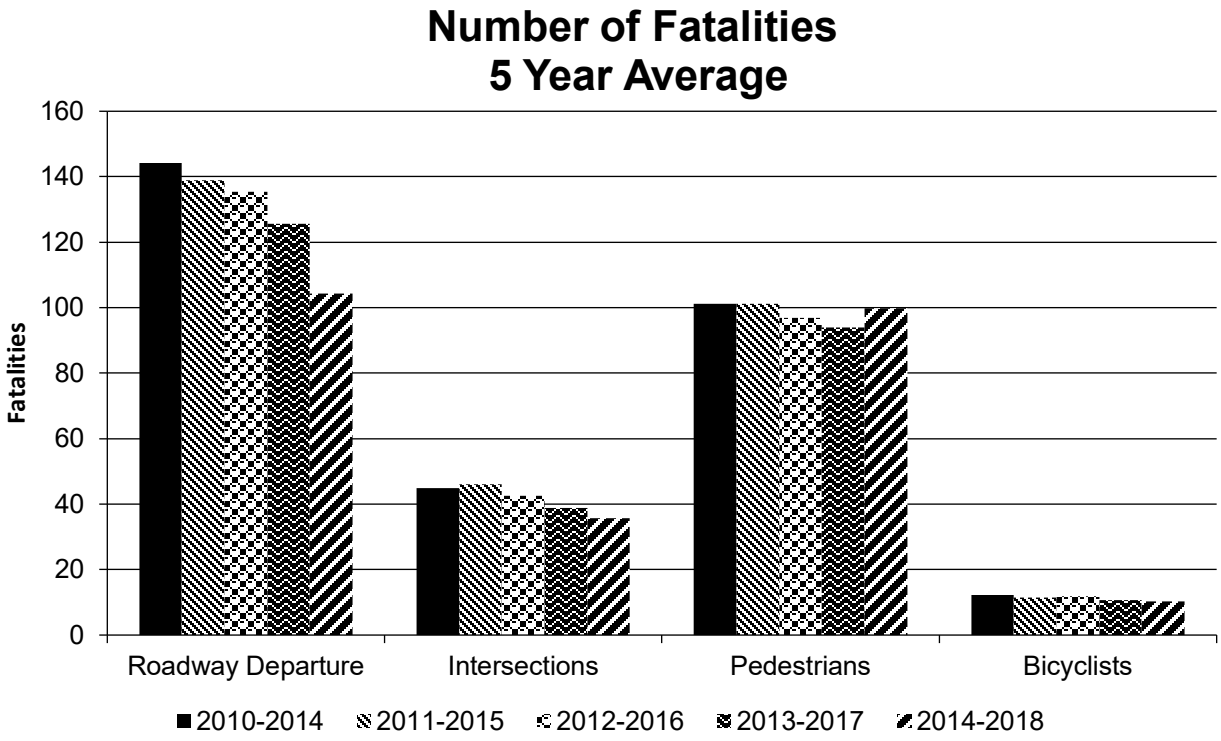
The three indicators of success in Puerto Rico are the following:
1- # RSAs completed - the Road Safety Audits/Evaluations are formal safety performance examination of an existing or future road or intersection by a multidisciplinary team. This process provides a report identifying the safety issues and possible countermeasures to reduce the number of severe crashes in the highway infrastructure. In the year 2018, Puerto Rico developed three (3) Road Safety Evaluations in highways PR-173, PR-102, and PR-10 that were included as safety projects in the HSIP.
2- HSIP Obligations - provide the information of federal funds that will be invested in the highway infrastructure. During year 2018, the 94% of the programmed federal funds where obligates in eight (8) projects.
3- Increased awareness of safety and data-driven process - the safety area is characterized to be a data-driven process. In Puerto Rico the analysis of safety data has improved in the latest years, as part of the SHSP development and implementation. During Every Day Counts (EDC) round 4, Puerto Rico selected Data Driven Safety Analysis (DDSA) as one of the initiative to be implemented in the DOT. This initiative will help us to identify high crash locations and to develop projects in a systemic way to support the performance measures that were identified in the SHSP and HSIP report. In the year 2018, Puerto Rico DOT continued the education of transportation professionals in the DDSA initiative with a training of the Highway Safety Manual.

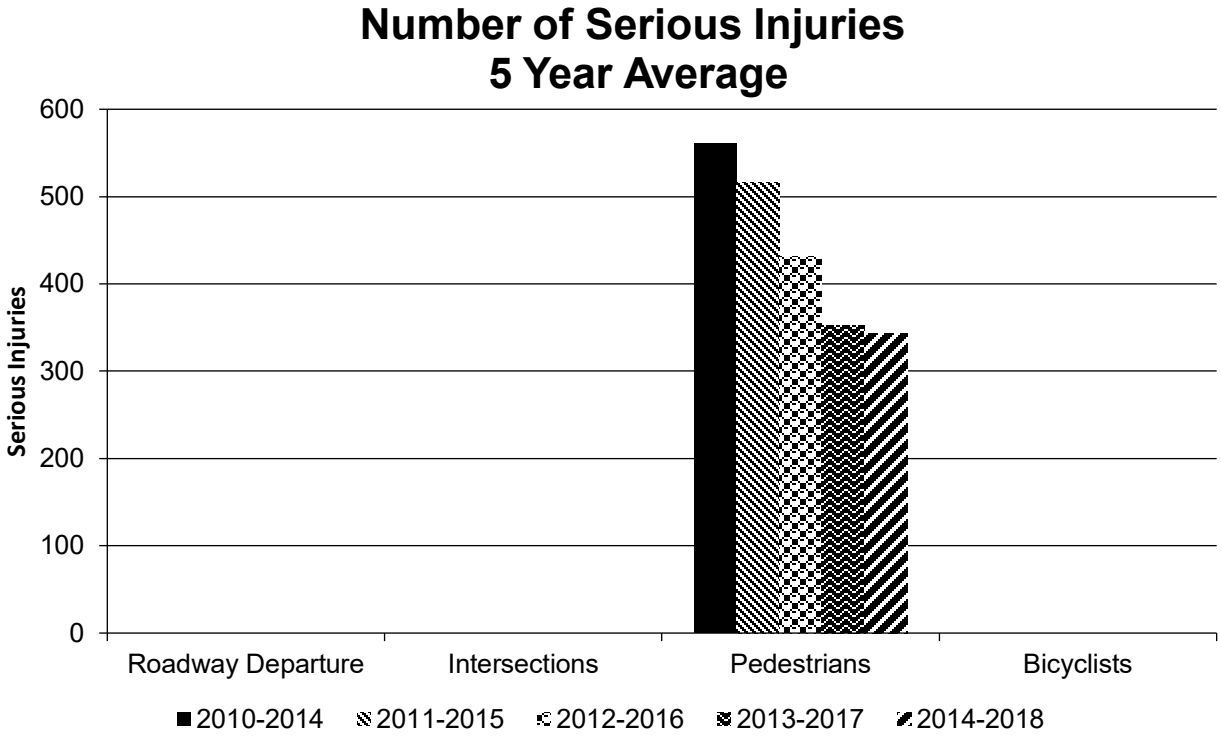
Effectiveness of Groupings or Similar Types of Improvements

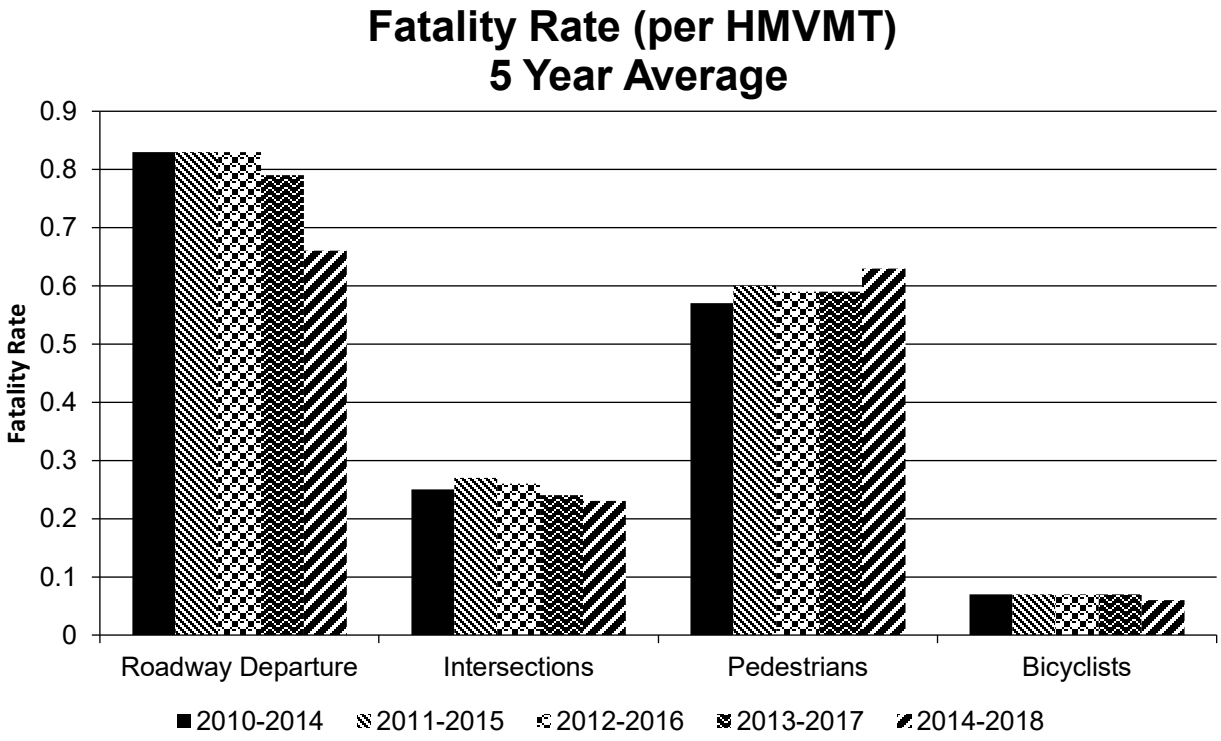
Present and describe trends in SHSP emphasis area performance measures.

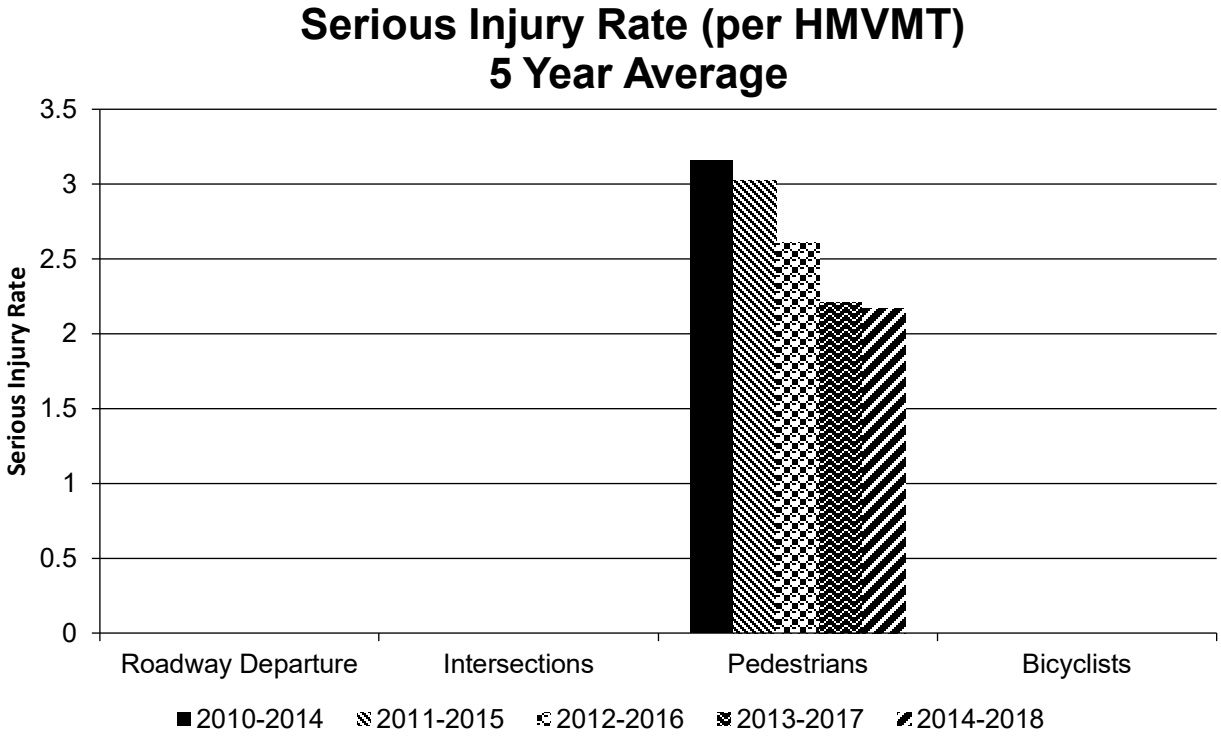
Year 2018

SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Roadway Departure		104.4		0.66	
Intersections		35.6		0.23	
Pedestrians		99.8	342.6	0.63	2.17
Bicyclists		10.2		0.06	


Number of Fatalities
5 Year Average
Fatalities
160
140
120
100
80
60
40
20
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018


Number of Serious Injuries
5 Year Average
Serious Injuries
600
500
400
300
200
100
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018





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

No

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)
Not applicable														

Compliance Assessment

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

07/30/2014

What are the years being covered by the current SHSP?

From: 2014 To: 2019

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

2019

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

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	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
ROADWAY SEGMENT	Segment Identifier (12)	100						1.7			
	Route Number (8)	100									
	Route/Street Name (9)	100									
	Federal Aid/Route Type (21)	100									
	Rural/Urban Designation (20)	100						1.7			
	Surface Type (23)	100						1.7			
	Begin Point Segment Descriptor (10)	100						1.7			
	End Point Segment Descriptor (11)	100						1.7			
	Segment Length (13)	100									
	Direction of Inventory (18)	100									
	Functional Class (19)	100						1.7			
	Median Type (54)	100									
	Access Control (22)	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	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	One/Two Way Operations (91)	100									
	Number of Through Lanes (31)	100						1.7			
	Average Annual Daily Traffic (79)	100						1.7			
	AADT Year (80)	100									
	Type of Governmental Ownership (4)	100						1.7			
INTERSECTION	Unique Junction Identifier (120)										
	Location Identifier for Road 1 Crossing Point (122)										
	Location Identifier for Road 2 Crossing Point (123)										
	Intersection/Junction Geometry (126)										
	Intersection/Junction Traffic Control (131)										
	AADT for Each Intersecting Road (79)										
	AADT Year (80)										
	Unique Approach Identifier (139)										
INTERCHANGE/RAMP	Unique Interchange Identifier (178)										
	Location Identifier for Roadway at Beginning of Ramp Terminal (197)										
	Location Identifier for Roadway at Ending Ramp Terminal (201)										
	Ramp Length (187)										

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	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	Roadway Type at Beginning of Ramp Terminal (195)										
	Roadway Type at End Ramp Terminal (199)										
	Interchange Type (182)										
	Ramp AADT (191)										
	Year of Ramp AADT (192)										
	Functional Class (19)										
	Type of Governmental Ownership (4)										
Totals (Average Percent Complete):		**100.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.70**	**0.00**	**0.00**	**0.00**

*Based on Functional Classification

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.

To achieve the required MIRE FDE for year 2026, Puerto Rico developed the MIRE FDE Action Plan and submitted as part of the Traffic Records Coordinating Committee (TRCC) Action Plan. The PRHTA have several coordination and information meetings during this period to discuss the MIRE FDE Action Plan. Based on the aspects discussed, the following actions are important steps to achieve the collection of the MIRE FDE:

Action 1 - Develop the list of roadway segments, intersections, and ramps to be included in the Puerto Rico MIRE FDE database, including GIS. Currently, the PRHTA is planning to obtain the necessary contract to prepare the required database (warehouse of the MIRE FDE).

Action 2 - MIRE FDE data gathering. This action has made some progress since the Traffic Data Gathering Office has selected two consultants to simultaneously collect traffic volume data along roadway segments.

Action 3 - MIRE FDE integration with other databases. Programs within the PRHTA and PRTSC need information collected in the MIRE FDE, it becomes important to integrate the MIRE FDE with other updated databases. This will be especially valuable for calculating the Vehicle Mile Traveled (VMT); an essential element to determine the Puerto Rico SHSP and HSP performance measures (i.e. fatality rate and serious injury rate).

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

No

The PRHTA is planning to perform a HSIP Self-Assessment following the criteria established by the HSIP Assessment Toolbox (FHWA). This Self-Assessment will be implemented every two (2) years with of the SHSP Steering Committee.

When does the State plan to complete its next HSIP program assessment.

2020

Optional Attachments

Program Structure:

Structural Program HSIP-SHSP.pdf
HCL Methodology.pdf
Project Implementation:

Safety Performance:

2020 HSIP Safety Performance 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.