



2019 - 2023

# PUERTO RICO SHSP

*Strategic Highway Safety Plan*



Dear Safety Stakeholder:

Your commitment, enthusiasm and collaborative work during these years have been key to the historic reduction of traffic crash fatalities on our roads. In addition, you have managed to work and join efforts by maximizing the resources available to improve the safety, mobility and accessibility of all users on Puerto Rico's public roads.

The Strategic Highway Safety Plan prompted the updating of crash data within the Puerto Rico Department of Transportation and Public Works' (PRDTPW) Accident Analysis Office and, after a decade of efforts, Puerto Rico counts on the Puerto Rico Police digital traffic crash form. In addition, this new form (PPR-621.4) includes essential elements for each of the government agencies, including the KABCO crash classification scale. Having a Strategic Highway Safety Plan in Puerto Rico has helped to improve training for safety educators from multiple sectors, improve communication between public agencies and non-governmental entities, keep the public informed on highway safety issues including statistics and related activities on the island, has helped institutionalize highway safety in the Puerto Rico Highways and Transportation Authority's (PRHTA) projects, as well as to expand the impact of the educational campaigns of the Puerto Rico Traffic Safety Commission (PRTSC) and other entities. Finally, one of the most significant achievements has been the effort to relocate the ambulance stations closer to the main highways, through collaborative agreements with the PRHTA, starting with the two Traffic Incident Management Center (TMC) on the PR-52 Caguas and the PR-66 Canóvanas. These centers will have a traffic operations center, police headquarters and ambulance dispatch center.

Puerto Rico achieved a historic reduction in traffic crash fatalities in 2016 with 279, the first time that less than 300 fatalities occurred. This is why this plan is committed to the Zero Deaths Vision and PEDESTRIANS are our first priority. We know that for decades, in Puerto Rico, deaths of people walking on public roads have accounted for 30% to 38% of total traffic fatalities per year. This is unacceptable, so every opportunity to share this information becomes necessary and valuable to address this highway safety crisis in Puerto Rico.

Finally, I urge you to take into account everyone's safety when walking, cycling, motorcycling, driving a vehicle, going as a passenger and even riding horses. Because responsibility is everyone's. In highway safety every detail counts, let's keep the focus on our route by leaving behind texting and social networks and focusing all our senses in the way. In this document you will see photos alluding to our beautiful island; they are meant to remind us that life is worth living fully and that we don't want any other family to lose a loved one because a traffic crash. Let's value life!



**Eng. Carlos M. Contreras Aponte**  
Secretary of the PRDTPW  
*Working Together To Save More Lives*

## PURPOSE

Focus on efforts of the safety stakeholders through prioritized lists of strategies by emphasis areas to make and keep a safe highway system.

## MISSION

Enhance the safety, mobility and accessibility of all people using the roadway network in Puerto Rico by working together and integrating efforts in the 4Es.

## VISION

Zero Deaths Vision.  
That all users of the transportation system in Puerto Rico can move safely and effectively to their destinations.

## GOAL

Achieve a reduction in fatalities and serious injuries caused by traffic crashes in Puerto Rico.



### Zero Deaths Vision

The zero deaths vision is a way of clearly and succinctly describing how an organization or individual is going to approach safety. It acknowledges that **even one death on our transportation system is unacceptable**. This idea was first adopted in Sweden in 1997 as “Vision Zero” and since then has spread around the world.

Zero deaths use a data-driven and interdisciplinary approach that targets specific areas for improvement and employs proven countermeasures that apply education, enforcement, engineering, and emergency medical services (the “4Es”) to implement safety solutions. The zero deaths concept also incorporates basic principles such as broad institutionalization of the safety culture, a systems approach, and a recognition that the nature of humans to make mistakes means that infrastructure must be designed to mitigate driver error to the greatest extent possible.

Reference: <https://safety.fhwa.dot.gov/zerodeaths/>



## Acknowledgement

Puerto Rico is privileged with a wide range of safety stakeholders representing the 4Es of highway safety from all sectors. These people work hard to reduce fatalities and serious injuries caused by traffic crashes. The engagement of the highway safety delegates has been the key element for the success of the first five (5) years of implementation of the Strategic Highway Safety Plan (SHSP). During 2016, they achieved the 2018 goal of reducing to less than 300 the number of fatalities associated to traffic crashes.

The active participation of the safety stakeholders during these years have contributed to the definition of this 2019-2023 SHSP. Their recommendations and experiences were used to define the strategies governing highway safety in Puerto Rico for the next five (5) years. The entities engaged to improve highway safety deserve to be recognized for their contribution to this plan; their names and logos are included below as a humble sign of gratitude.

# SAFETY STAKEHOLDERS

	Puerto Rico Highway and Transportation Authority (PRHTA)		Independent Living Movement		Federal Transit Administration
	Puerto Rico Department of Transportation and Public Works (PRDTPW)		Decade of Action for Road Safety		National Highway Traffic Safety Administration
	Federal Highway Administration (FHWA)		Office of the Procurator for the Elderly		Puerto Rico Professional College of Engineers and Land Surveyors
	Puerto Rico Traffic Safety Commission (PRTSC)		University of Puerto Rico (UPR)		Court Administration
	Puerto Rico Police (PRP)		Ana G. Méndez University System		CEMEX
	Automobile Accident Compensation Administration		Puerto Rican Planning Society		9-1-1
	Puerto Rico Emergency Medical Corps Bureau		National University College (NUC)		Compulsory Insurance Administration
	Puerto Rico Health Department (PRHD)		Puerto Rico Institute of Transportation Engineers (PRITE)		Puerto Rico Firefighters Corps
	Department of Justice		Metropistas		Institute of Forensic Sciences
	Directorate of Drivers Services		Puerto Rico Transportation Technology Transfer Center (PRTTTC)		Caribbean Sign Supply
	AARP		Administration of Mental Health and Anti-Addiction Services		Department of Education
	MAPFRE Foundation		Transportation and Other Public Services Bureau		Multiple Insurance of Puerto Rico
	Institute of Civil Engineers		Federal Motor Carrier Safety Administration		Fundación LSG
	Metric Engineering		Steer		Department of Public Safety





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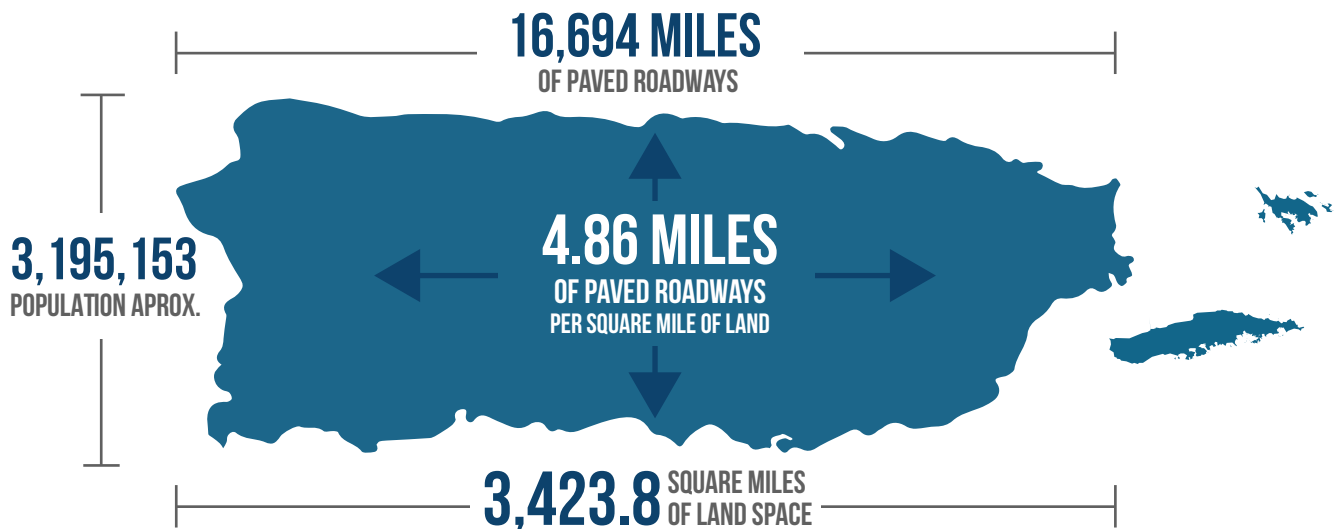
# ABBREVIATIONS AND ACRONYMS

<b>4Es</b>	Engineering, Enforcement, Education and Emergency Medical Services
<b>ACAA</b>	Automobile Accident Compensation Administration
<b>BAC</b>	Blood Alcohol Concentration
<b>CARE</b>	Critical Analysis Reporting Environment
<b>CVSP</b>	Commercial Vehicle Safety Plan
<b>DUI</b>	Driving Under the Influence
<b>EMS</b>	Emergency Medical Services
<b>EA</b>	Emphasis Area
<b>EPM</b>	Evaluation Process Model
<b>FARS</b>	Fatality Analysis Reporting System
<b>FHWA</b>	Federal Highway Administration
<b>FIESTA</b>	Facilitadores y Educadores en Seguridad en el Tránsito y Alcohol (Spanish Acronym)
<b>FMCSA</b>	Federal Motor Carrier Safety Administration
<b>HCLR</b>	High Crash Location Report
<b>HSIP</b>	Highway Safety Improvement Program
<b>HSP</b>	Highway Safety Plan
<b>IPM</b>	Implementation Process Model
<b>ITE</b>	Institute of Transportation Engineers, A community of transportation professionals
<b>ITS</b>	Intelligent Transportation System
<b>LRTP</b>	Long Range Transportation Plan
<b>MA</b>	Moving Average
<b>MIRE</b>	Model Inventory of Roadway Elements
<b>MOA</b>	Memorandum of Agreement
<b>MOU</b>	Memorandum of Understanding
<b>MPO</b>	Metropolitan Planning Organization
<b>NHTSA</b>	National Highway Traffic Safety Administration
<b>PRDTPW</b>	Puerto Rico Department of Transportation and Public Works
<b>PREMS</b>	Puerto Rico Emergency Medical Services
<b>PRHTA</b>	Puerto Rico Highway and Transportation Authority
<b>PRP</b>	Puerto Rico Police
<b>PRTSC</b>	Puerto Rico Traffic Safety Commission
<b>SHSP</b>	Strategic Highway Safety Plan
<b>SPP</b>	Sociedad Puertorriqueña de Planificación (Spanish Acronym)
<b>STIP</b>	Statewide Transportation Improvement Program
<b>SWOT</b>	Strengths, Weaknesses, Opportunities, and Threats
<b>TIM</b>	Traffic Incident Management
<b>TMA</b>	Transportation Management Areas
<b>TRCC</b>	Traffic Records Coordinating Committee
<b>UMET</b>	Universidad Metropolitana (Spanish Acronym)
<b>UPR</b>	University of Puerto Rico
<b>U.S.</b>	United States
<b>VMT</b>	Vehicle Miles Traveled
<b>SJMA</b>	San Juan Metropolitan Area
<b>SMART</b>	Specific, Measurable, Action-oriented, Reasonable and Time-bound
<b>SSR</b>	Significant Safety Risk
<b>TMC</b>	Traffic Management Center
<b>TRS</b>	Traffic Records Systems
<b>USC</b>	United States Code
<b>WHO</b>	World Health Organization

## Introduction and Background

Puerto Rico is the smallest of the major islands of the Caribbean with 3,423.80 square miles of land. Puerto Rico is divided in 78 municipalities, including two municipal islands, Vieques and Culebra. According to the U.S. Census Bureau (2018) Puerto Rico has a population of approximately 3,195,153 people. The topography consists of a central mountainous region surrounded by wide coastal plain, precipitous mountains to the sea on west coast, and sandy beaches along most coastal areas; which influenced our geometric highway designs. The tropical climate includes an average rainfall rate of 70.98 inches (180.29 cm) per year from 2010 to 2018.

Puerto Rico's transportation network includes of eight (8) active airports (out of the 16), five (5) seaports, and 16,694 miles of paved roadways. In terms of paved roadways, Puerto Rico has 4.86 miles of paved roadways per square mile of land, one of the highest in the world according to the World Bank. In addition, the San Juan Metropolitan Area (SJMA) has a heavy rail urban train ("Tren Urbano") and two bus transit systems, AMA and Metrobus (public and private, respectively) to serve the most densely populated region in Puerto Rico. Also, the "públicos" have provided most of the public transit in the island, especially for the municipalities located outside of the SJMA since they are the only public system available. Taxis serve travelers around the island, and the newly private transit systems such as Uber, Pink, and others, are serving mainly the SJMA and other limited regions such as Mayagüez and Caguas.



The Puerto Rico Strategic Highway Safety Plan 2019-2023 (SHSP 2019-2023) represents the second 5-year cycle for Puerto Rico; although a one-year interim SHSP was developed in 2013. It was developed by the Puerto Rico Highway and Transportation Authority (PRHTA) in close coordination with the Puerto Rico Traffic Safety Commission (PRTSC) and the Puerto Rico Police (PRP), among many other entities from all sectors, including other public and federal agencies, non-governmental organizations, and private companies.



**“WORKING TOGETHER...  
...TO SAVE MORE LIVES”**



# What is SHSP ?

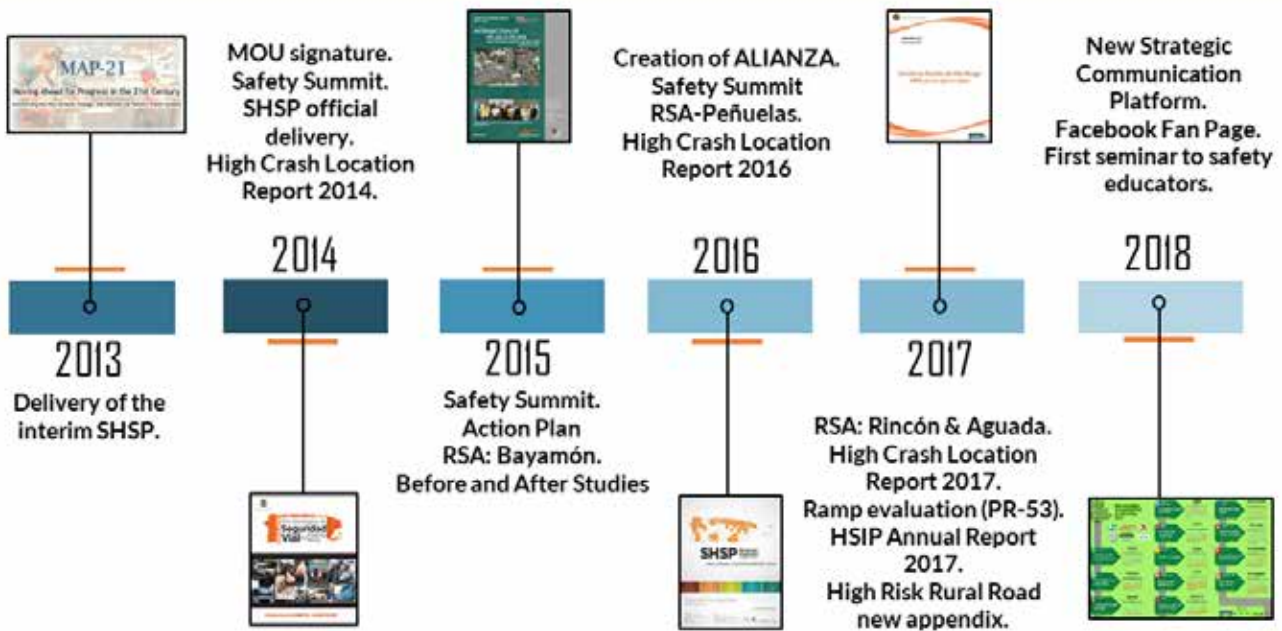
## Strategic Highway Safety Plan

- 1** Required by the Federal Highway Administration (FHWA) (23 U.S.C. § 148).
- 2** A major component and requirement of the Highway Safety Improvement Program (HSIP).
- 3** A 5-year comprehensive plan that establishes Puerto Rico's goals, objectives, and safety emphasis areas.
- 4** Developed by the PRHTA in a cooperative process with Local, State, Federal, and other public and private sector safety stakeholders.
- 5** Integrates the 4Es of highway safety: engineering, education, enforcement, and emergency medical services (EMS).
- 6** Allows highway safety stakeholders to work together in an effort to align goals, leverage resources, and collectively address Puerto Rico's safety challenges.

## Puerto Rico and the Highway Safety

The Puerto Rico Department of Transportation and Public Works' (PRDTPW) data indicates that Puerto Rico has approximately 2.8 million registered vehicles and 2.1 million licensed drivers. The most recent data for the number of 100,000 Million Vehicles Miles Traveled or VMT reflects an average of 155.08 from 2013 to 2018.

### Development of the Puerto Rico SHSP



### SHSP 2014-2018 Performance

Puerto Rico achieved most the goals established as part of the Puerto Rico SHSP 2014-2018 overall Performance Targets. The only goal not met was the 5-year moving average for the rate of total fatalities where an increase of 4.1% was observed. PRHTA expects to reduce this value in the next 5 years with the implementation of the strategies included in this Plan. The number of fatalities was dramatically reduced from 344 in 2013 to 279 in 2016, a goal established for 2018. This goal was also achieved in 2017 with 290 fatalities. In terms of the 5-year moving average (MA) of total fatalities, the established target for 2018 was 318 and this target was achieved in 2017 with the value of 306. When evaluating serious injuries, using the people transported in ambulances from the crash scenes, the results shown a significant reduction in comparison with the previous years of the SHSP 2014-2018. The following figure summarizes the results obtained after the five (5) years of implementation of the Puerto Rico SHSP 2014-2018.



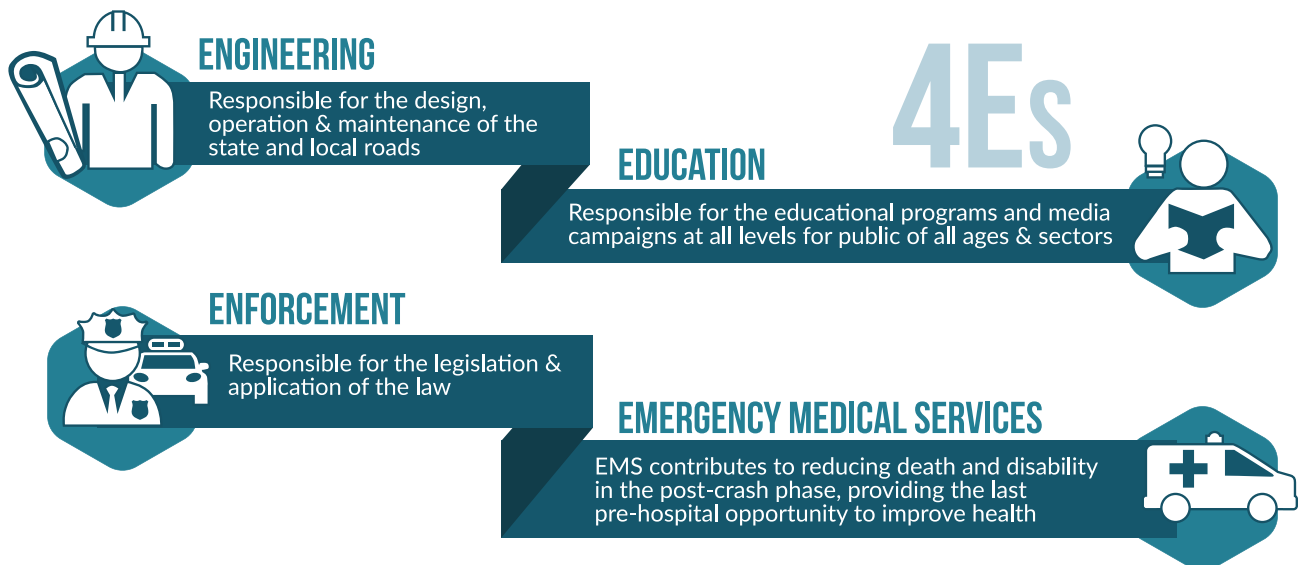


PERFORMANCE MEASURE	BASE LINE 2013	OBJECTIVES	RESULTS	EXPECTED REDUCTIONS	ACHIEVED REDUCTIONS
Total Fatalities	344	<300	279	-13%	-19%
5-yrMA Fatalities	355	318	299	-10%	-15.8%
5-yrMA Fatalities Rate	1.93	1.85	2.01	-4%	4.1%
5-yrMA Serious Injuries	6,091	5,456	3,964	-10%	-34.9%
5-yrMA Serious Injuries Rate	33.02	31.7	26.65	-4%	-19.3%

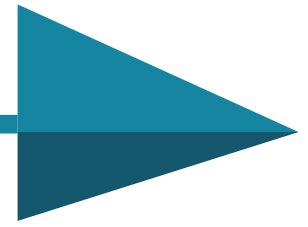
## The 4Es of Highway Safety



Every human should feel safe when moving through the roadway network in Puerto Rico or elsewhere. However, in Puerto Rico hundreds of lives are lost, and thousands are injured due to traffic crashes every year. Globally, these numbers are incredibly high: 1.3 Million and 20 to 50 Million respectively. Traffic crashes represents the eighth (8th) cause of death among all age groups in the World and the first (1st) cause of death for children and young adults aged 5-29 years old, according to the World Health Organization (WHO). In addition, this global organization indicates that “the risk of dying in a road traffic crash is more than 3 times higher in low-income countries than in high-income countries”.



# History Facts



**1** Puerto Rico, compared to other States and territories of the U.S., was the first to pass a primary seat belt law in 1975.

**2** In terms of allowable Blood Alcohol Concentration (BAC), the law establishes a limit of 0.02% for 18 to 20-year-old drivers, and 0.08% for ages 21 and over.

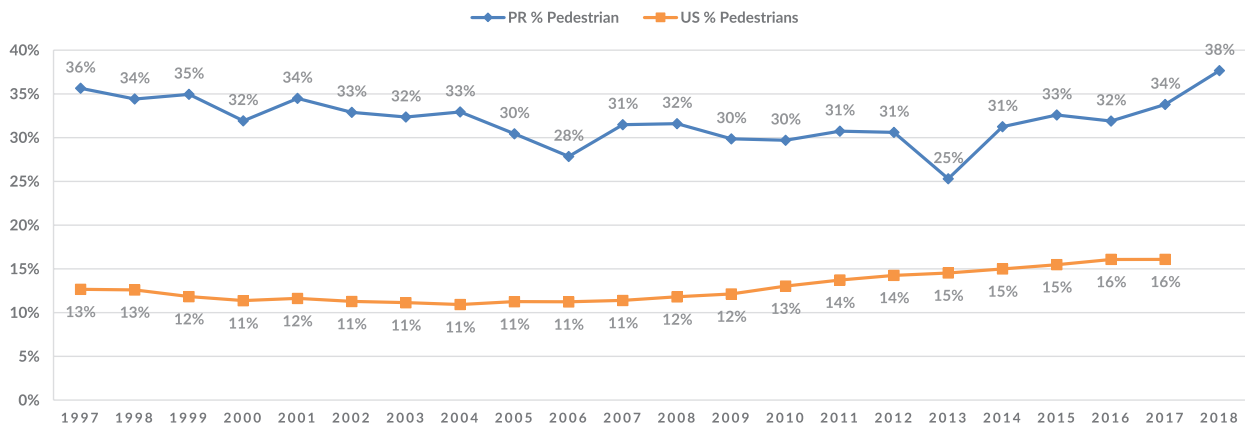
**3** The reduction in the number of fatalities in Puerto Rico has been from over 600 in the 1990's to around 300 in the last three (3) years.

**4** In November 2015, five (5) organizations from the third sector established a formal committee, called "ALIANZA" (Alliance for Accessibility, Mobility and Safety in Our Public Ways, for its English acronym). These organizations are: AARP, MAVI, SPP, ITE-Puerto Rico Section, and MAPFRE Foundation.

**5** Year 2016 was the year with the lowest recorded traffic fatalities in the history of Puerto Rico with 279 deaths.

**6** For decades, pedestrians' fatalities have accounted for an average of 32% of total traffic fatalities, the higher in the United States.

PUERTO RICO VS. US PEDESTRIAN FATALITIES



Source: FARS 1997-2018

**SHSP Benefits**  
Builds new safety coalitions

The Puerto Rico Department of Transportation and Public Works (PRDTPW) developed in 2014 an integrated Traffic Incident Management (TIM) Program as part of the Intelligent Transportation Systems (ITS) project for the San Juan Metropolitan Area (SJMA). The TIM Program consists of a planned and coordinated multi-disciplinary effort to detect, respond, and clear traffic incidents as fast and safe as possible to avoid secondary incidents. Effective TIM improve traffic operations and enhance safety for all road users, especially emergency responders and people involved in traffic crashes. In addition, the TIM program is a key element during massive evacuations caused by natural disasters or any other event.

“  
**SHSP Benefits**  
 Strengthens existing partnerships  
 ”

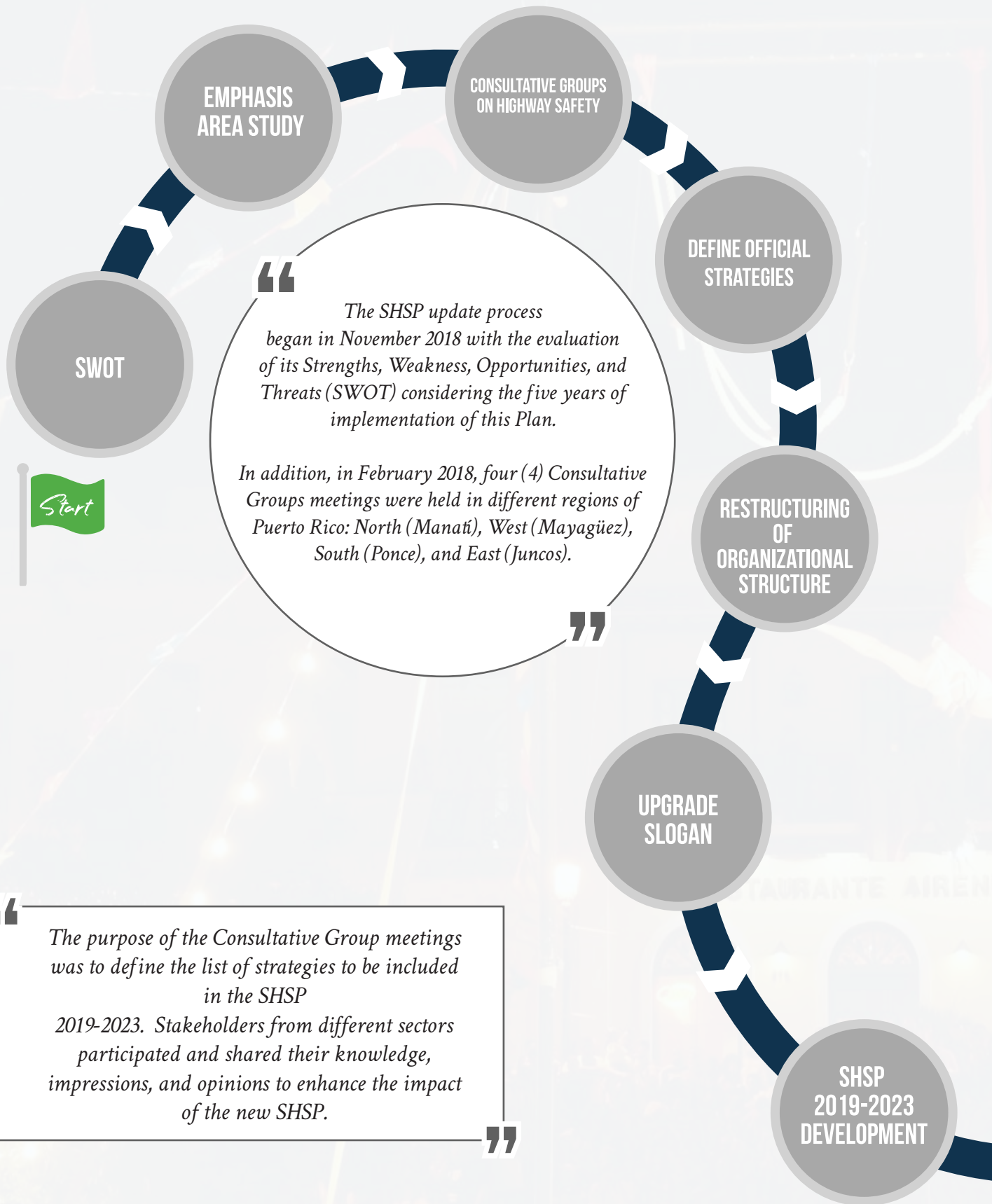


**Puerto Rico Emergency Medical Services Dispatch Areas**  
 Source: <http://www.cempr.pr.gov/Pages/Operaciones.aspx>

- North Dispatch
- East Dispatch
- South Dispatch
- West Dispatch

The dispatch areas of the Puerto Rico EMS (Negociado del Cuerpo de Emergencias Médicas, in Spanish) are divided in four (4) regional areas. The East Area, as shown in the figure, includes the medical services for emergencies occurring in the municipal islands of Vieques and Culebra.





# Update Process



*As part of the SHSP update, the web page was reviewed considering the most updated practices for this type of projects.*

*The upgraded web site contains an organized library in addition to specific information and data related to the SHSP and the safety stakeholders.*



SHSP  
2019-2023  
REVISION

APPROVAL  
OF SHSP  
2019-2023



*The detailed procedure about the Update Process is published in the Puerto Rico SHSP website [www.CarreteraSeguraPR.com](http://www.CarreteraSeguraPR.com) using the Update Process button.*



*The SHSP is a “living document” that can be revised and modified as necessary.*



WEBSITE  
UPDATE



*During the update process, the steering committee had continuous meetings to keep track of the evolution of each stage.*

*At the end, the results were presented to the Executive Committee for the final approval and then, submitted to FHWA and shared with NHTSA, FMCSA, and FTA, all agencies of the U.S. Department of Transportation.*



PRESENTATION  
OF SHSP  
2019-2023  
WEBSITE

## 1 CONSULTATION

Since the beginning of 2018, the PRHTA started informing the stakeholders about the updating process of the SHSP 2014-2018 through newsletters, emails, web page, and the presentations held during the Quarterly Meetings (Emphasis Areas Teams Meetings). Some examples were:

- Quarterly Meeting (presentation) – March 2018
- Newsletter #12 – August 2018
- Invitation to the Consultative Groups (email) – January 2019
- Follow-up emails related to the Consultative Groups Meetings (various) – February 2019
- Newsletter #14 – February 2019

During the regional consultative groups, the highway safety stakeholders provided the SHSP team with the following concerns to be included in the document:

- Strengthen the communication between judges and other safety stakeholders.
- Emphasis areas names and icons – Safety stakeholders make recommendations to change the Aggressive Driving Emphasis Area to Negligent Driving, also to change some icons to reflect easily the elements included in the Emphasis Area. They were immediately discussed and changed together with the safety stakeholders.
- Expand the DUI consequences by considering negligent driving when no drug test or medicine test is available. This concern was managed through public education regarding the effects of driving under the influence of legal drugs and by strengthening the internal enforcement protocols on how to interfere with DUI drivers.
- Innovate based on experiences from other U.S. jurisdictions and countries. For most of the Emphasis Areas, the safety stakeholders recommended to start implementing new or innovative actions within the new SHSP Action Plan. These include dummy police patrols, automated enforcement, road diets, among others. This concern was discussed, and the stakeholders agreed to include only some examples in the 5-year Plan and to define Action Plans with specific actions by emphasis areas in an annual basis.
- Enforce the law to pedestrians, especially for those walking through freeways and expressways (i.e. PR-26, PR-22, PR-18, PR-52, etc.). These corridors specifically prohibit pedestrians to protect them, but every year pedestrians die on these corridors.
- Amend the traffic law to facilitate police interventions with jockeys and bicyclists when not using personal protective devices such as the appropriate helmet. Also to facilitate interventions with motored operated bicyclists since police officers don't have the tools and trainings to identify the motor capacity, as required by law today.

In Puerto Rico, safety stakeholders from the 4Es routinely and actively receive emails, calls, and visits from the SHSP team or from other stakeholders coordinated through the SHSP efforts. These do not include tribal involvement since they don't exist in Puerto Rico, but the local involvement includes police officer (PRP), the traffic safety commission coordinators (PRTSC), members of the TRCC from several public agencies, students from different universities (FIESTA, ITE, etc.), engineers from public and private sectors (PRHTA, PRDTPW, Consultants), first responders from different public agencies (TIM), educators, etc. For the review of the SHSP document, in July 2019, the advanced draft was sent to all the stakeholders in order to provide time for them to review and comment it.

## 2 DATA ANALYSIS

PRHTA has obtained the best and most accurate and updated data related to traffic crashes, fatalities, injuries, traffic volumes, among others. Each database was evaluated, discussed and consulted with its responsible entity. This include the continuous efforts to improve or obtain traffic volumes, roadway data, and registered vehicles and motorcycles. The data analysis includes the available data for all public roads.

The crash analysis performed during the SHSP update process included several cross-tabulations within contributing circumstances, related events, and other crash data in order to facilitate the statistical analysis of the crash causes with greater impact on additional causes. For example, negligent driving includes speeding, intersections (red-light running), among other driving behaviors related to fatalities and serious injuries of all types of road users.

### 3 EMPHASIS AREA DEFINITION

In this new SHSP, the stakeholders defined a small number of Emphasis Areas. This to work more focused on the selected strategies. The strategies for every emphasis area were defined according to the priorities established by the stakeholders during the consultative groups and the following evaluations:

- The new SHSP considers a systemic approach to highway safety, targeted in reducing pedestrian fatalities and serious injuries and strengthening the traffic records systems. In both cases, focusing on low-cost alternatives involving team work within public agencies and local municipalities. A closer communication with the MPO is one of the key elements for this strategy.
- Benefit/cost analysis associated with countermeasures as part of the justification of highway safety projects with the federal agencies.
- High Crash Location reports based the frequency of crashes by type, using crash costs from the HSM 2010, the functional classifications and other classifications to define hot-spot and systemic safety issues.
- Road safety audits (RSA) to identify site specific issues and recommendations and to evaluate common countermeasures recommended for systemic improvements.

### 4 PERFORMANCE MEASURES

The SHSP goals are consistent with 23 U.S.C. 150 because it is focused on reducing the number of fatalities and serious injuries per vehicle mile traveled and the number of fatalities and serious injuries in Puerto Rico. These goals were established based on the analysis of crashes, fatalities, and serious injuries. In addition, the SHSP includes specific goals by Emphasis Areas, considering the contribution of each one to the overall goals.

The SHSP objectives are SMART (specific, measurable, action-oriented, reasonable and time bound) because they are (1) defined based on documented data, (2) each strategy is measurable, (3) promote innovative actions and updated action plans through the SHSP implementation cycle, and (4) considered the local needs and challenges as defined and approved by the safety stakeholders.

### 5 MULTIDISCIPLINARY APPROACH AND COORDINATION

In the SHSP update process, the 4Es were considered and coordinated in closed communication with the Executive Committee members. Also, the new SHSP includes a detailed analysis and evaluation of each of the performance measures and goals for the Highway Safety Plan (HSP) and the Highway Safety Improvement Program (HSIP). In addition, other coordination was made with the MPO, the Public Transportation Agencies, the Motor Carrier Safety Agency, and others.

The engineering 'E' is coordinated by PRHTA through the Highway Safety Improvement Program (HSIP). PRHTA has a new institutional process where first safety improvement projects and high-crash locations are identified or preselected and then coordinated with the overall list of highway improvement projects from the Planning and Programming Area. This way, PRHTA promotes that highway safety is incorporated in all projects. Some examples are: upgrade to MASH, signing, delineation, drainage, among other general highway improvements including safety.



## 6 IMPLEMENTATION

The implementation of the 2019-2023 SHSP will continue first with keeping safety stakeholders engaged and communicated through the Emphasis Area Team Meetings or Quarterly Meetings and the Newsletters, in addition to the emails and the web page. Second, the annual Action Plans will focus the stakeholders' work in each of the 5-years of this Plan by defining the actions to achieve progress in each strategy and establishing the champions or stakeholders in charge of the development and implementation of those actions. The combined efforts and continuous monitoring of the progress in each of the strategies will help to accomplish the targets included in the plan.

## 7 EVALUATION

The past SHSP (2014-2018) was routinely evaluated and this SHSP include a similar process but improved to strategically measure the performance by relating data to each strategy. Some of the strategies and actions are easily evaluated using measurable data but others not. In the past SHSP 2014-2018 all the actions were continuously observed, and their progress were documented but not associated to specific crash data or similar. For the upgraded SHSP, most of the actions are going to be measurable; trying to enhance the evaluation process. This was discussed with the PRTSC to try to identify measurable educational campaigns during the design process before implementing these campaigns. That will be one of the most challenging areas to measure. For highway safety improvement projects, the evaluation will be made through Before and After Studies and Cost-Benefit Analysis within the PRHTA Highway Safety Improvement Program Application (SIPA) or other safety tool adopted by the PRHTA such as the Interactive Highway Safety Design Model (IHSDM).

## 8 SPECIAL RULES

The Special rule for the HRRR definition and for the elderly drivers and pedestrians were included in the new SHSP as focus groups. This SHSP includes strategies for the elderly population to mitigate this increase. The two consecutive years where the number of fatalities and serious injuries of older drivers and pedestrians increased were 2016 and 2017. The registered numbers for fatalities and serious injuries were as follows:

PERFORMANCE MEASURES	2011	2012	2013	2014	2015	2016	2017
Number of Older Driver and Pedestrian Fatalities	50	49	59	49	42	55	76
Number of Older Driver and Pedestrian Serious Injuries	398	496	449	337	402	457	495

**The strategies to reduce the number of older drivers and pedestrians' fatalities and serious injuries are:**

- 1 Perform educational campaigns specifically designed for the elderly population of drivers and pedestrians. These campaigns are going to be discussed as part of each of the Emphasis Areas.
- 2 Ensure that representatives of the elderly population, leaded by AARP, participate in each of the Road Safety Audits (RSA) and any other safety assessment of PRHTA.
- 3 Establish a task force of safety stakeholders to evaluate the crash trends and profile of elderly pedestrians and drivers' fatalities and serious injuries.
- 4 Promote research about this topic in the post-graduate programs of the universities in Puerto Rico.
- 5 Promote the use of transit (public or private) among the elderly people.

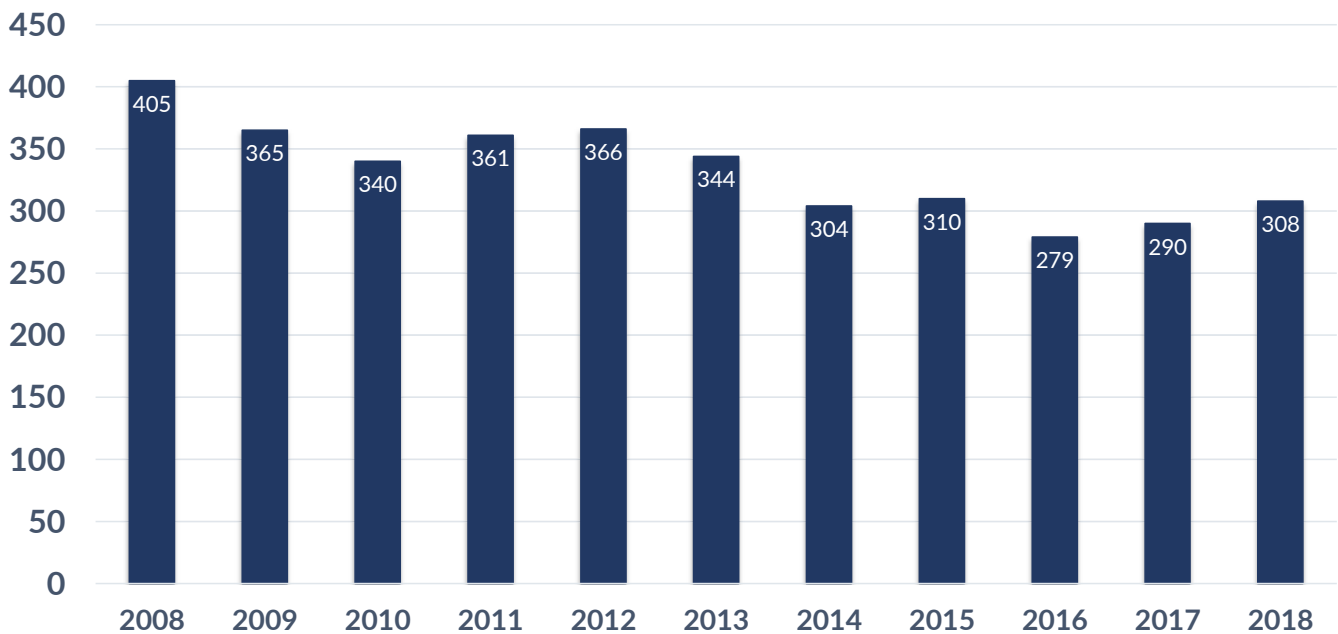
## General Profile of Traffic Fatalities and Crashes

The people living or visiting Puerto Rico loves to travel around the island and want to enjoy every part of it. No matter if they are going to school, work, market or to visit their family, everyone wants to arrive safely to their destiny.

According to the last five (5) years of crash and fatalities data, the efforts to enhance traffic safety in Puerto Rico are achieving positive results in many areas. This, because for the first time in the history of Puerto Rico the number of traffic fatalities reduced to less than 300 in 2016 and have been in average near 300 for the last 5 years. The following infographics illustrates some of the statistical trends in the most recent years (2008-2018), focusing in the first cycle of the SHSP in Puerto Rico (2013-2018), including the Interim SHSP in 2013.

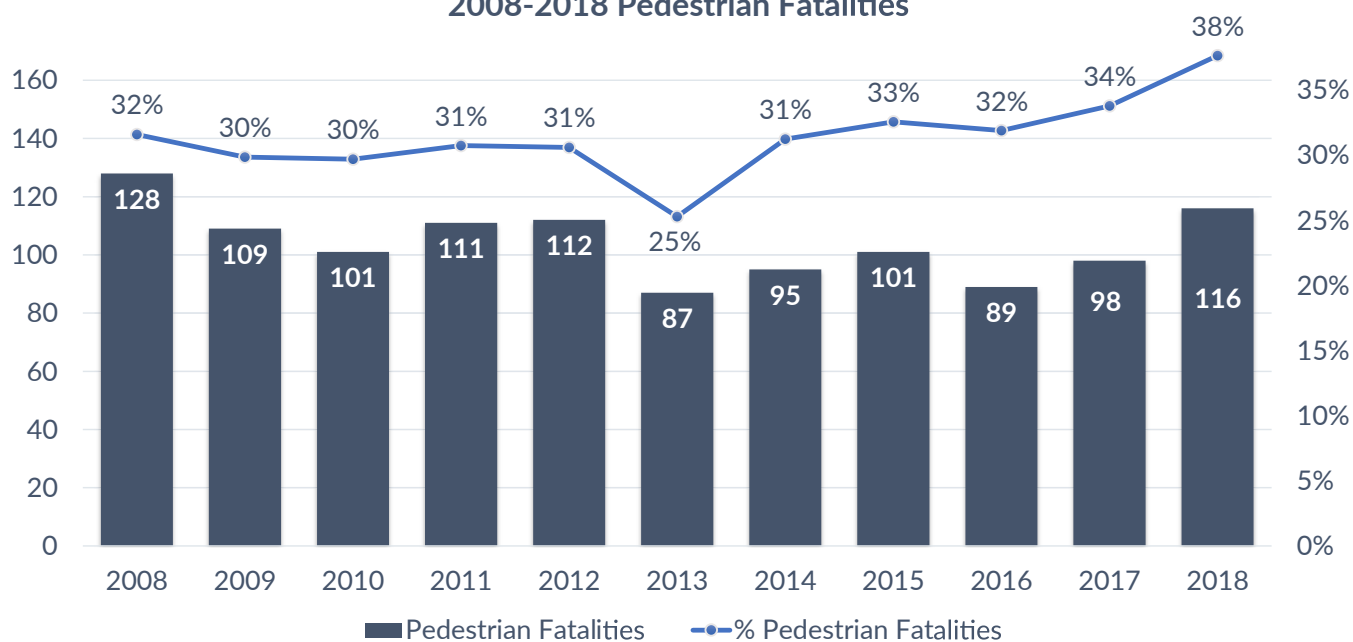


### 2008-2018 Total Number of Fatalities

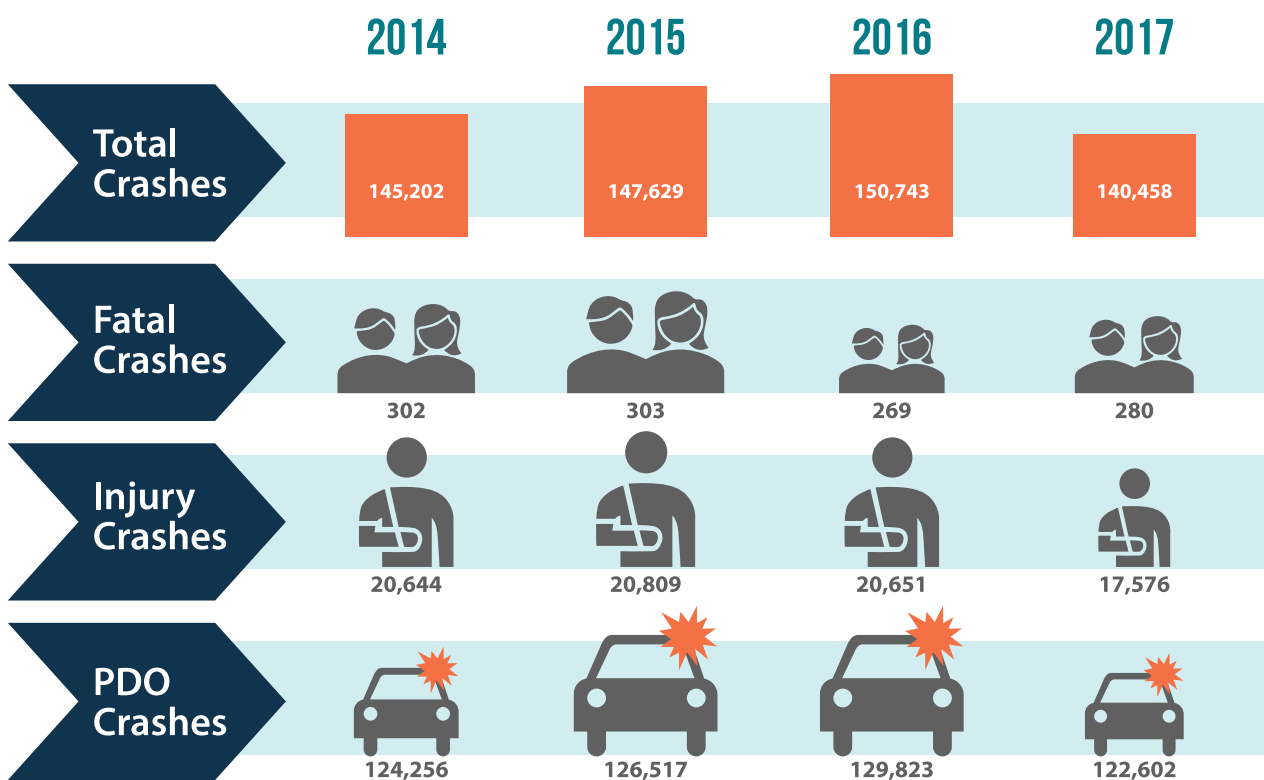


Source: FARS 2008-2018

### 2008-2018 Pedestrian Fatalities



Source: FARS 2008-2018

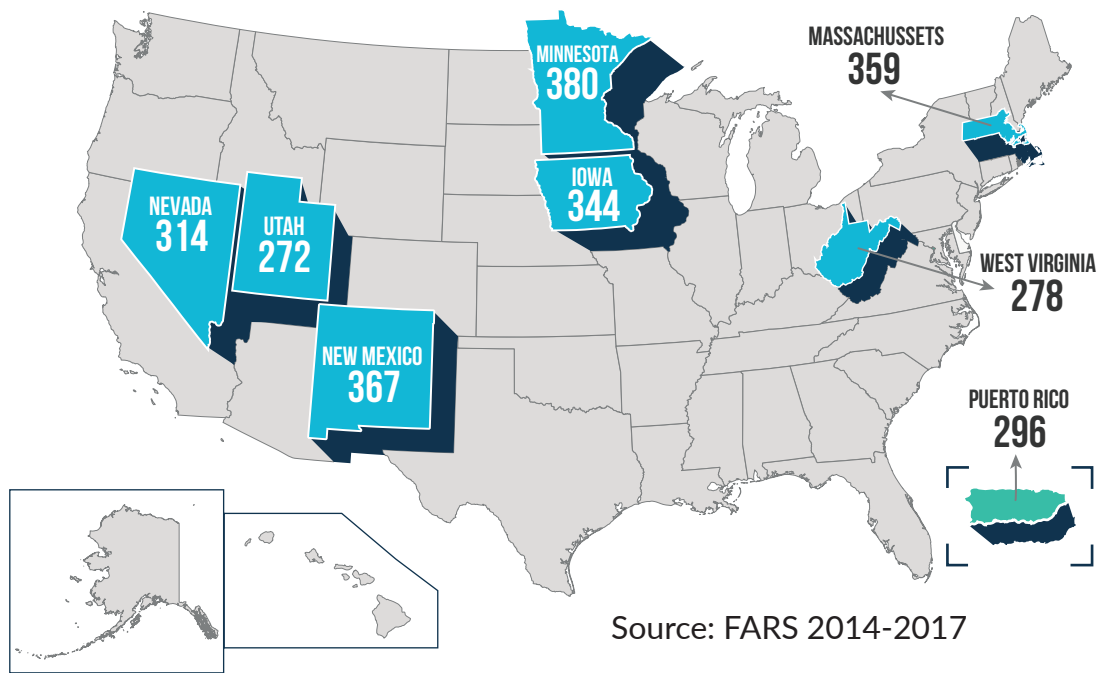


Source: CARE 2014-2017

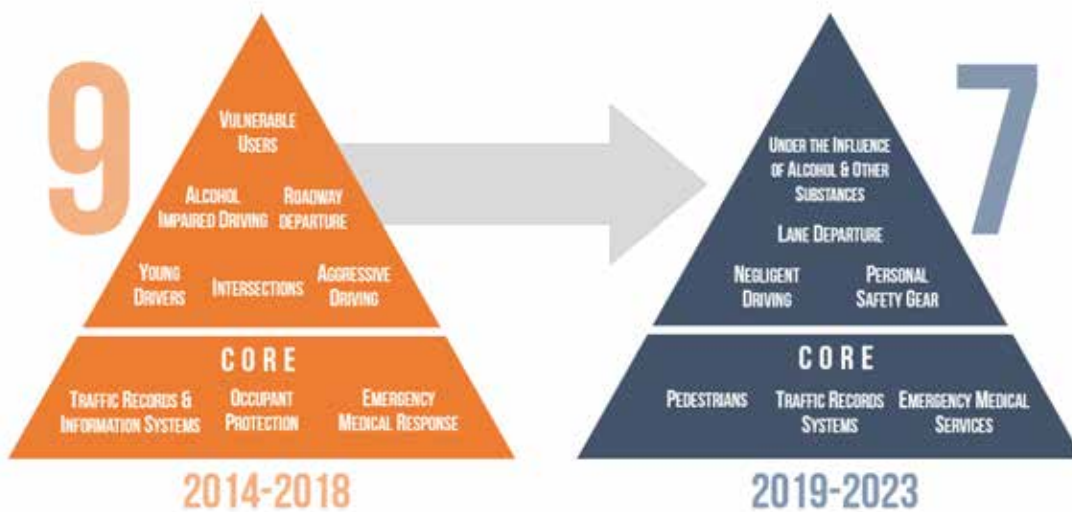
The Emphasis Area Study 2018 compared Puerto Rico with seven (7) States with similar average number of traffic fatalities between 2014 and 2017. This to evaluate other characteristics such as population, vehicles miles traveled (VMT), travel time to work, number of emphasis areas, and others to determine any similarities that could be used to establish strategies to improve highway safety in Puerto Rico.

## Average Number of traffic fatalities of compared U.S. States and Puerto Rico

From that evaluation, the most relevant conclusion was the influence of the number of Emphasis Areas in the reduction of fatalities and serious injuries. For that reason, the analysis behind the Emphasis Area Study 2018 was concentrated in defining the less amount of Emphasis Areas as possible and select those with more influence in traffic crashes. Several cross tabulations using the contributing causes, related events, and roadway conditions, among others, helped to define the seven (7) Emphasis Areas of this plan. The following figure presents an example used during this evaluation, where different selection criteria were determined based on each classification, including a comparison with States with similar average number of traffic fatalities between 2014 and 2017.



## EVOLUTION OF THE EMPHASIS AREAS



The number of EA was reduced from 9 to 7 to focus the efforts of this SHSP. Any effort in this 7 EAs will impact other areas as well, especially the Focus Groups included in this Plan



Knowing the location of crashes and fatalities is important to evaluate the sites that need further engineering studies or Road Safety Audits (RSA) by multidisciplinary teams to define safety improvement projects or any other safety countermeasures to be adopted in that specific site or other similar sites. In Puerto Rico, the ten (10) municipalities with the higher number of lives lost due to traffic crashes between 2014 and 2017 were: San Juan, Bayamón, Caguas, Ponce, Carolina, Aguadilla, Arecibo, Mayagüez, Toa Baja, and Dorado.



MUNICIPALITY	FATALITIES 2014-2016 (AVERAGE ANNUAL)	FATALITIES 2017 (ANNUAL)
San Juan	35	21
Bayamón	16	12
Caguas	12	23
Ponce	11	11
Carolina	10	14
Aguadilla	10	9
Arecibo	10	13
Mayagüez	9	4
Toa Baja	9	12
Dorado	4	10

According to the HCLR 2017, and a further review of the crash data in 2017, the top five (5) municipalities contributing to high crash locations are: San Juan, Barranquitas, Aguadilla, Carolina, Arecibo, and Naranjito. San Juan, Barranquitas, and Aguadilla are the municipalities with greater impact in the amount of roadway length associated to high crash locations.

RANK	MUNICIPALITY	KM	%
1	San Juan	26.4	13.4%
2	Barranquitas	14.5	7.4%
3	Aguadilla	13.9	7.0%
4	Carolina	10.3	5.2%
5	Arecibo	10.0	5.1%
5	Naranjito	10.0	5.1%

Source: HCLR 2017

## Overall Safety Goals

The long-term vision of Puerto Rico is to have no deaths or serious injuries due to traffic crashes on the country's highways. In order to fulfill that vision, the Puerto Rico SHSP establishes five (5) safety performance goals for 2023. These performance measures are aligned with the Highway Safety Improvement Program (HSIP) and the Highway Safety Plan (HSP).

A five-year moving average was used to determine the objective of each performance measure. This average allows having a long-term prediction with less fluctuations on the trend of fatalities and serious injuries due to traffic crashes.



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Fatalities		308	<275	
Fatalities (5-yrMA)		299	284	
Fatalities Rate(5-yrMA)	<b>2018 BASE</b>	2.01	1.86	
Serious Injuries		4,290	3,500	
Serious Injuries (5-yrMA)		3,964	3,871	
Serious Injuries Rate (5-yrMA)		26.65	25.39	
Non-motorized (F+SI)(5-yrMA)		493	394	
				<b>2023 GOAL</b>

Source: 2014-2018 FARS, ACAA, PRHTA

## Performance Measures and Objectives

PERFORMANCE MEASURE	2018	2023	% REDUCTION
Fatalities	308	<275	-10.7%
Fatalities (5-yr MA)	299	284	-5.0%
Fatality Rate (5-yr MA)	2.01	1.86	-7.5%
Serious Injuries	4,290	3,500	-18.4%
Serious Injuries (5-yr MA)	3,964	3,871	-2.3%
Serious Injuries Rate (5-yr MA)	26.65	25.39	-4.7%
Non-Motorized F+SI (5-yr MA)	493	394	-20.1%

EMPHASIS AREA	2018 5-yr MA	2023 5-yr MA	% REDUCTION
Pedestrians	100	92	-8.0%
Pedestrians Serious Injuries	311	277	-10.9%
Personal Safety Gear (seat belt and child restraint)	81	74	-8.6%
Personal Safety Gear (motorcyclists' helmet)	28	23	-17.9%
Under the influence of Alcohol and other substances (Projections using the 5-yr MA)	97*	90*	-7.2%
Negligent driving	98	78	-20.4%
Lane Departure	105	88	-16.2%

\* Based on FARS data from 2008 to 2017.

“  
**SHSP Benefits**  
 Avoids redundant activities  
 and leverages existing  
 resources, such as funding,  
 personnel, and leadership  
 ”







# EMPHASIS AREA

SAFETY ISSUES WITH GREATER IMPORTANCE FOR THE IMPLEMENTATION OF THIS PLAN. ALL SAFETY EFFORTS SHALL BE CONCENTRATED INTO THESE AREAS DURING THE TERM OF THE SHSP 2019-2023.

Under the Influence  
of Alcohol and Other  
Substances



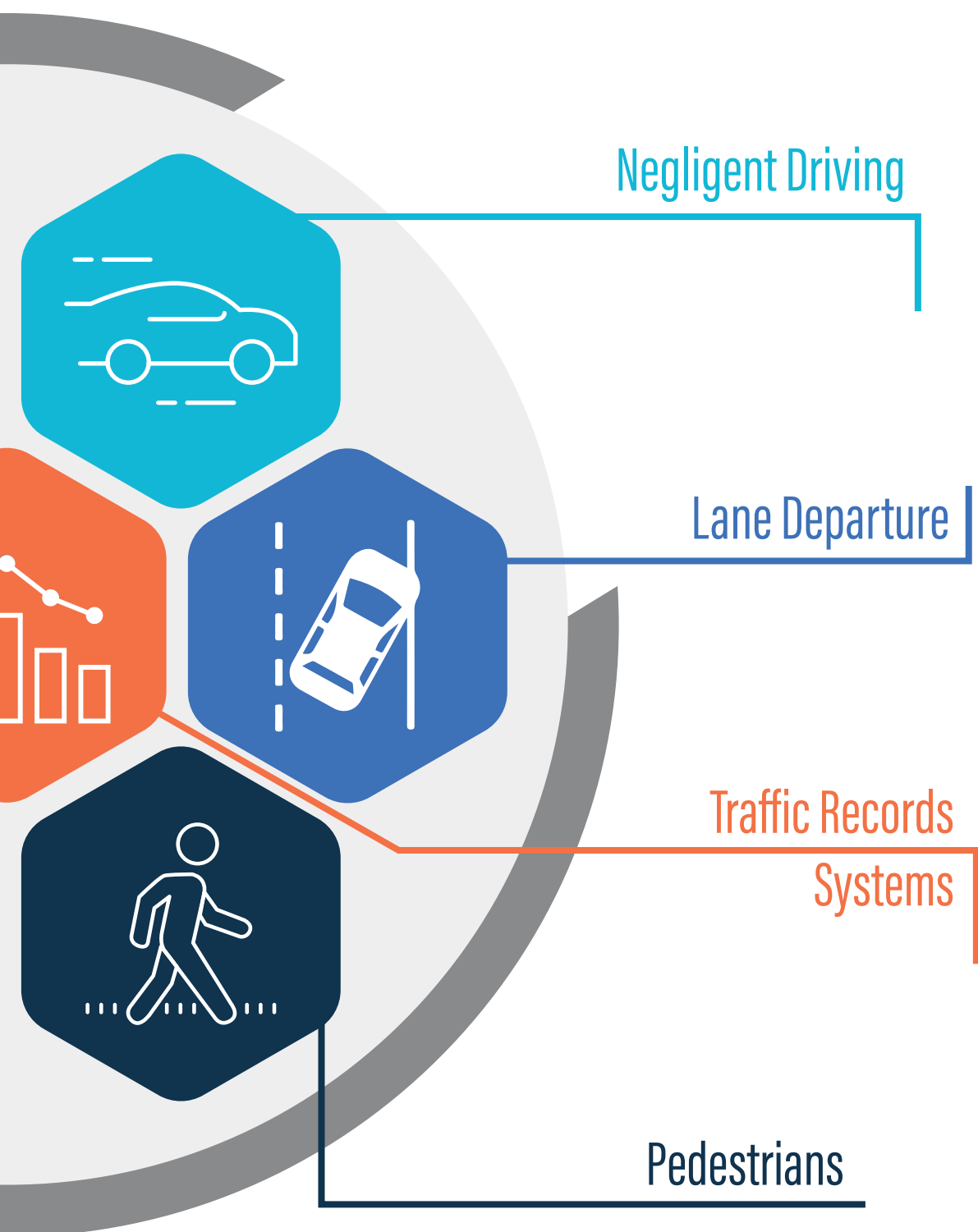
Personal Safety  
Gear



Emergency Medical  
Services



These Emphasis Areas were selected through a comprehensive study (Emphasis Area Study 2019) that considered the most pertinent data available for fatalities, crashes, traffic data, and others. One of the key elements evaluated, in addition to the data, was the number of EA. Puerto Rico needs to focus the effort towards reducing fatalities and serious injuries; having seven (7) Emphasis Areas will help us to concentrate the safety stakeholders' efforts during the next five (5) years. Another important criterion used to define these EAs was the analysis of the most critical factors influencing most of the fatal and serious injury crashes. This helped to identify which EAs would maximize the results of the SHSP 2019-2023 by focusing efforts on the areas that have the most influence on highway safety issues in Puerto Rico.



Negligent Driving

Lane Departure

Traffic Records  
Systems

Pedestrians



# PEDESTRIAN

*In Puerto Rico the percentage of pedestrian fatalities represented 34% of all traffic fatalities between 2014 and 2018.*

*The efforts to reduce this tragic trend in Puerto Rico need to be strengthened if we want to reduce the consistent percentage of pedestrian fatalities. Understanding this need and spread the message at all levels and sectors is the most important task for this SHSP's implementation cycle.*

Only 10% of the pedestrian fatalities were at intersections.

The profile on pedestrian fatalities is: 55 years old man walking along the roadway.

36% of pedestrian fatalities resulted positive in their BAC, with an average of 0.19%.

The police reported a pedestrian violation in 88% of pedestrian fatal + injury crashes.

SOURCE: 2012-2018  
PUERTO RICO FATALITIES, PRTSC

## STRATEGIC GOAL

Reduce the number of pedestrian's fatalities and serious injuries.

## PERFORMANCE MEASURE

5-year moving average of pedestrian fatalities and serious injuries.

## OBJECTIVE (PERFORMANCE GOAL)

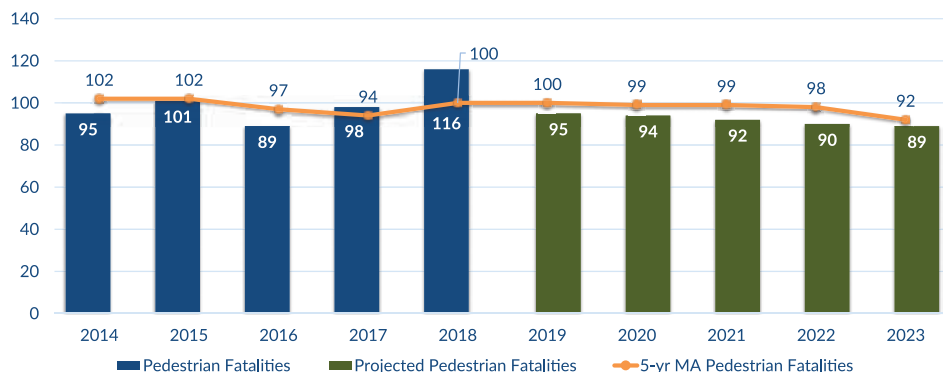
To reduce the 5-year moving average of pedestrian fatalities from 100 to 92 within the next 5 years.

To reduce the 5-year moving average of pedestrian serious injuries from 311 to 277 within the next 5 years

# STRATEGIES

- 1 ► Improve the highway infrastructure to accommodate people who are walking (e.g. add sidewalks, install lighting, elevated crossings, pedestrian -only phases at intersections, etc.).
- 2 ► Educate the public about the impact of pedestrians hit on public roads (i.e. statistics, locations).
- 3 ► Modify the identification system /driver's license to facilitate pedestrian enforcement.
- 4 ► Incorporate pedestrian safety into land use planning and other local design plans and guides (e.g., PRHTA Comprehensive Cycle and Pedestrian Plan, LRTP, etc.).
- 5 ► Strengthen educational programs at all levels.
- 6 ► Evaluate the needs for compliance with traffic laws and regulations of people who walk on public roads.
- 7 ► Aid communities and non-profit organizations for the development and implementation of local highway safety improvement projects.

2019-2023 Pedestrian Fatalities





# TRAFFIC RECORDS SYSTEMS

*The traffic records are the key chain when planning, implementing, and evaluating the performance of our highway safety. The availability of reliable and up-to-date traffic data can help decision makers from all sectors and levels to make the long- and short-term changes towards reducing the number of crashes and lives impacted by them. With integrated data from different systems the possibilities of making better decisions increase.*

Enhance data accessibility: Create a universal crash data storage accessible to other agencies and the public according to their individual needs.

More accurate crash location: The crash location data file must be capable of being linked to the same crash location information in other traffic records systems. This will enhance the analysis of site-specific safety issues.

Enhance data integration efforts: Communicate the importance of this emphasis area in reducing crashes by promoting the implementation of the TRCC strategic plans and the participation of each committee member.

The Traffic Records Coordinating Committee (TRCC) is responsible for improving the traffic records databases, the data analysis, and data availability in Puerto Rico. Their work is related to the six (6) traffic records systems (TRS):

- Crash
- Citation/Adjudication
- Injury Surveillance/EMS
- Driver License/History
- Vehicle Registration
- Roadway

## STRATEGIC GOAL

Create a data warehouse integrating traffic records systems and improve the accessibility, timeliness and uniformity of the crash system.

## PERFORMANCE MEASURE

Time to crash data availability.

## OBJECTIVE (PERFORMANCE GOAL)

Reduce the time for crash data availability from 358 days to 60 days.

“Having quality and coordinated traffic records is the foundation of the SHSP’s actions and strategies. The resources available for the safety stakeholders are enhanced due to a science-based decision making process.”

## STRATEGIES

- 1 ▶ Maximize the scope of the six (6) traffic data systems (integration, interface and storage).
- 2 ▶ Support the implementation of PPR-621.4.
- 3 ▶ Improve the processes to obtain notifications of the results of the Blood Alcohol Content (BAC).
- 4 ▶ Improve the capacities and processes to identify repeat drivers for cases of alcohol.
- 5 ▶ Improve the capacities and processes to identify repeat drivers due to negligence.
- 6 ▶ Promote the collection of traffic data (AADT).
- 7 ▶ Support activities to achieve the MIRE Action Plan.
- 8 ▶ Improve communication among the agencies that make up the TRCC committee.





# EMERGENCY MEDICAL SERVICES

The importance of a fast and efficient emergency medical services (EMS) system is critical to save lives of traffic crash victims. Having an improved EMS system in Puerto Rico is one of our highest priorities. According to the data provided by the PREMS, the average annual response time between 2014 and 2016 was 15:45 minutes; measured from the deployment of a Puerto Rico's EMS ambulance to the its arrival to the crash scene.

The location of the ambulance stations and the number of ambulances (type III or equivalent) affect the response time to crash scenes.

Since 2017, the PRHTA established the first group of incident management assistance patrols called SEGURO, which is managed by their Traffic Management Center (TMC).

The Traffic Incident Management (TIM) team has representatives from all the first responders related to the emergency medical services in Puerto Rico.

TIM patrols are one of the least expensive and most effective Intelligent Transportation Systems (ITS) strategies addressing incident-induced congestion.

## STRATEGIC GOAL

Improve EMS response capabilities.

## PERFORMANCE MEASURE

Number of ambulances (Type III or equivalent) in Puerto Rico.

## OBJECTIVE (PERFORMANCE GOAL)

Increase the number of ambulances (Type III or equivalent according to FMCSA's standards) in Puerto Rico from 442 to 450 in the next 5 years.

## SHSP Benefits

An EMS system engaged with the SHSP process is essential to reduce fatalities and serious injuries due to traffic crashes in public roads.

*When EMS coordinate plans and strategies with the SHSP, their own agenda advances because of the visibility gained through the SHSP safety stakeholders and the support they provide to the EMS strategies. EMS officials must know that the SHSP establishes the priorities in terms of highway safety including EMS improvements.*

# STRATEGIES

- 1 ▶ Educate drivers about emergency vehicles' priority.
- 2 ▶ Continue improving the coordination of emergency medical services personnel with other support and rescue agencies (TIM).
- 3 ▶ Promote Intelligent Transportation Systems (ITS) to identify the crash locations and facilitate emergency response.
- 4 ▶ Improve the accessibility of the State ambulance stations.
- 5 ▶ Continue the educational programs and trainings to enforcement and emergency response personnel for crashes and incident management.
- 6 ▶ Promote a law amendment to prohibit the use of strobe lights in regular vehicles (not first responders).



# PERSONAL SAFETY GEAR

*In Puerto Rico, the traffic and vehicles law mandate the use of seat belts, car seats, and protective motorcyclist's helmets. However, 38% of the people who died between 2014 and 2016 were not using any of these personal protective gears. This area need to stop the recent increase in the number of people observed not using the personal safety devices and to reduce the fatalities and serious injuries associated to this dangerous practice.*

58% of vehicles' occupants who died in a traffic crash were not using any personal safety gear.

65% of the motorcyclists who died in a traffic crash were not wearing a safety helmet.

According to the 2018 Observational Studies performed by the PRTSC and Metropistas, the number of occupants not using personal protective gear is increasing

SOURCE: 2012-2018 PUERTO RICO FATALITIES, PRTSC

## STRATEGIC GOAL

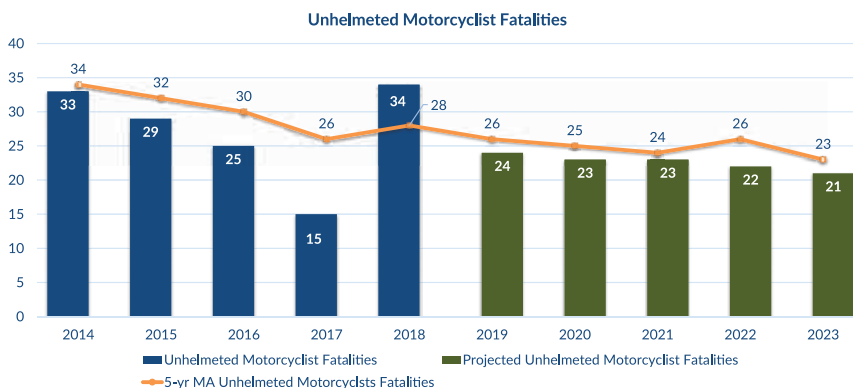
Reduce the number of fatalities and serious injuries of occupants and motorcyclists not using safety gears (seat belt, child restraint, and helmets).

## PERFORMANCE MEASURE

- 5-year moving average of unrestrained occupant fatalities.
- 5-year moving average of unhelmeted motorcyclist fatalities.

## OBJECTIVE (PERFORMANCE GOAL)

- To reduce the 5-years moving average of unrestrained occupant fatalities from 81 to 74 within the next 5 years.
- To reduce the 5-years moving average of unhelmeted motorcyclist fatalities from 28 to 23 within the next 5 years.



## STRATEGIES

- ▶ Reinforce education about the importance of the correct use of personal safety gear (i.e. seat belts, motorcycle helmets, etc.).
- ▶ Continue the law enforcement regarding the required use of personal safety gear for different road users.
- ▶ Modify the identification system/driver's license to facilitate law enforcement.
- ▶ Continue the implementation of "Child Restraint System Inspection Station (s)".
- ▶ Conduct enhanced observational studies on the use of personal safety gears.
- ▶ Promote new signage or the use of portable messages signs promoting the use of protective gear on public roads.
- ▶ Promote having emergency equipment in every vehicle (e.g., cones, vests, triangles, lamps).



# UNDER THE INFLUENCE OF ALCOHOL AND OTHER SUBSTANCES

Alcohol impaired driver fatalities accounted for 33% of total traffic fatalities between 2014 and 2016. This number does not include the drivers intoxicated or impaired due to other substances such as illegal drugs or prescribed medicines. The collection of these data is also important to determine the real impact of other substances in traffic crashes.

*Alcohol Impaired Driver: Any person driving a motor vehicle with a concentration of alcohol in the blood greater than that established in the Vehicles and Traffic Law (Law 22, 2000).*

LIMITS FOR PUERTO RICO	BAC LIMIT	0.00%	0.02%	0.02%	0.08%
	DRIVERS' TYPE				
	AGES	16-17 YRS	18-20 YRS	18 YRS +	21 YRS +

42% of car drivers and 49% of motorcyclists who died in a traffic crashes were driving under the influence of alcohol.

The average BAC for death drivers and motorcyclists was 0.19% and 0.14%, respectively, representing more than 2 and 7 times what was allowed for them.

56% of drivers under the influence of alcohol were speeding at the moment of the crash.

69% of the car drivers and motorcyclists who died and exceeded the BAC allowed by law were not using their personal safety gear.

## STRATEGIC GOAL

Reduce alcohol-impaired driver fatalities.

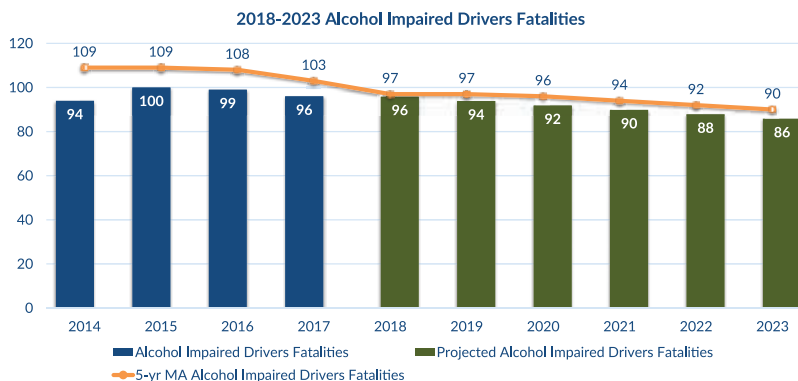
## PERFORMANCE MEASURE

5-year moving average of alcohol-impaired driving fatalities.

## OBJECTIVE (PERFORMANCE GOAL)

To reduce the 5-yr moving average of alcohol-impaired driving fatalities from 97 to 90 within the next 5 years.

SOURCE: 2012-2018  
PUERTO RICO FATALITIES, PR TSC



## STRATEGIES

1 ▶ Continue the law enforcement related to drivers under the influence of alcohol and other controlled substances (DUI).

2 ▶ Orient staff selling alcohol beverages (i.e. liquor stores, bars) about their responsibilities when drunk customers cause a fatal or serious injury crash.

3 ▶ Continue prevention and educational efforts on the impact of driving under the influence of alcohol and other controlled substances.

4 ▶ Evaluate recidivism and identify ways to improve the effectiveness of drunk driver rehabilitation programs.

5 ▶ Improve notifications of the BAC blood tests in living and/or dead crash victims.





# NEGLIGENT DRIVING

*Negligent driving is the failure to exercise the expected care of a responsible driver. It considers different driving behaviors associated with the lack of judgement when driving a motor vehicle in Puerto Rico. Speeding is the behavior included in the crash and fatalities databases; thus, it is mainly used for the analysis of negligent driving. Between 2014 and 2016, speeding represented 37% of drivers' fatalities.*

The behaviors for this Emphasis Area include:

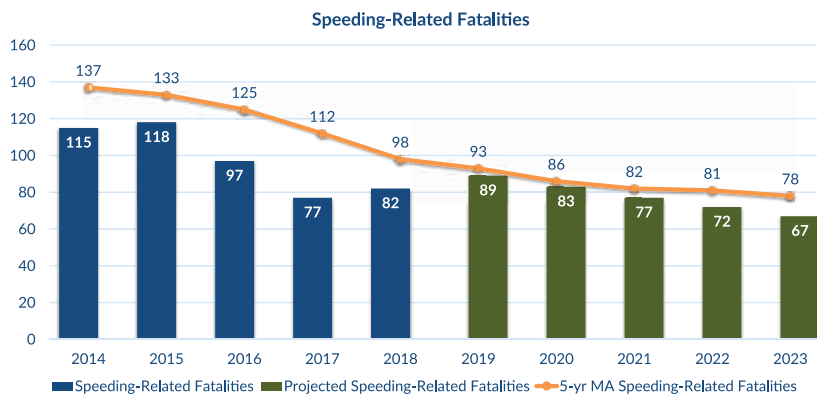
- Failure to yield
- Disregard traffic control
- Exceeded speed limit
- Improper turn
- Following too closely
- Improper lane change
- Improper reverse
- Improper passing
- Failure to signal
- Driving too slowly
- Overloaded
- Inappropriate trailer hitch
- Wrong way
- Vehicle pushing another vehicle
- Person pushing vehicle
- Failure to obey signal
- Over-extended load
- Street racing

Drivers exceeding the speed limits caused 35% of all traffic fatalities.

The top 3 contributing circumstances for fatal crashes are: exceed speed limit (57%), wrong way (15%), and following too closely (7%).

The top 3 contributing circumstances for injury crashes are: following too closely (49%), failure to yield (9%), and disregard traffic control (9%).

SOURCE: 2012-2018 PUERTO RICO FATALITIES, PRTSC CARE 2014-2017



## STRATEGIES

- ▶ Educate about the impact of negligent driving actions in the number of traffic crashes.
- ▶ Coordinate preventive police patrolling in highway segments prone to negligent driving.
- ▶ Include engineering countermeasures (i.e. traffic calming, work zones, school zones) that discourage speeding and other negligent driving actions.
- ▶ Promote the use of Intelligent Transportation Systems (ITS) to support negligent driving enforcement.
- ▶ Strengthen the driver's license points system and the tools to support it.
- ▶ Include highway safety as one of the Metropolitan Planning Organization (MPO) meetings' topics.

### STRATEGIC GOAL

Reduce speeding-related fatalities.

### PERFORMANCE MEASURE

5-year moving average of speeding-related fatalities.

### OBJECTIVE (PERFORMANCE GOAL)

To reduce the 5-year moving average of speeding-related fatalities from 98 to 78 within the next 5 years.



# LANE DEPARTURE

In Puerto Rico, the number of fatalities associated with lane departure represented 38% of the total number of fatalities caused by traffic crashes between 2014 and 2016.

A driver can leave their corresponding lane for a variety of reasons, including but not limited to the following:

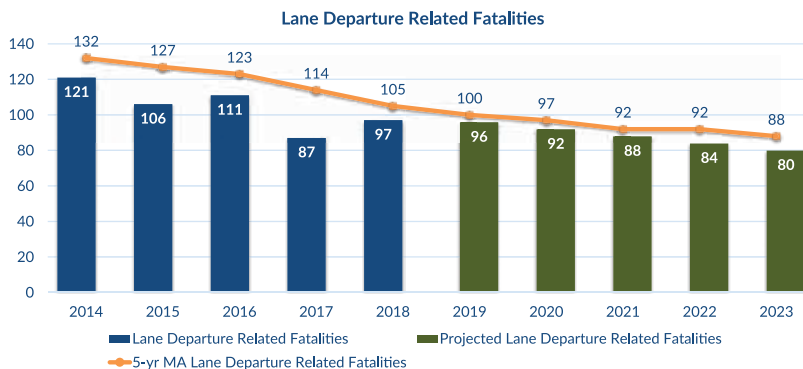
- Irregular lane surface
- Pothole
- Driver lost control
- Mechanical defect
- Roadway defect
- Climate/weather
- Driver condition
- Overturn
- Motorcycle overturned
- Parked vehicle
- Motorcycle with fixed object
- Animal
- Barrier
- Safety drums
- Utility pole
- Tree
- Fire hydrant
- Mailbox
- Traffic sign
- Backslope
- Building
- Fence
- Other fixed objects
- Construction equipment
- Fell of cliff

64% of all deaths related to lane departure also are related to exceeding the established speed limits, equivalent to 24% of all deaths.

56% of all deaths related to lane departure did not wear the seatbelt or helmet.

Circumstances that contributed to the fatal crashes (F) and injuries (I):  
 Driver lost control: 37.26% F and 50.45% I  
 Exceeded speed limit: 52.85% F and 13.65% I  
 Driver condition: 14.10% I

SOURCE: 2012-2018  
 PUERTO RICO FATALITIES, PRTSC  
 CARE 2014-2017



## STRATEGIC GOAL

Reduce fatalities related to lane-departure crashes.

## PERFORMANCE MEASURE

5-year moving average of traffic fatalities from lane-departure crashes.

## OBJECTIVE (PERFORMANCE GOAL)

To reduce the 5-year moving average of traffic fatalities related to lane-departure crashes from 105 to 88 within the next 5 years.

# STRATEGIES

1

Implement engineering countermeasures to improve lane delineation and pavement condition.

2

Educate about the most common causes for lane departure and the risks associated.

3

Implement engineering countermeasures to remove and/or protect fixed objects in the roadside clear zone.

4

Continue analyzing the data to identify high-risk locations.

5

Evaluate the need to amend the law to avoid street sales on shoulders or roadside clear zones.

6

Evaluate the effectiveness of the PRDTPW's motor vehicle inspection process.

# FOCUS GROUPS

These groups include classifications that were not defined as Emphasis Areas because they are not creating the highest safety issues in Puerto Rico, according to data available, or they are not supported by data associated to crashes or fatalities. These focus groups are going to be part of the discussions of the Emphasis Area Teams. This because they have an impact in highway safety and they need to be monitored continuously.





## MOTORCYCLIST

Motorcyclists are one of the most vulnerable road users and they represent about 13% of total traffic fatalities. The percent of motorcyclists' deaths had been up to 28% in the past (2007-2011) and the importance of continuing educating and enforcing negligent driving behaviors shall continue, especially through the personal safety gear and negligent driving emphasis areas.

## DISTRACTIONS BY CELL PHONE

Distracting driving has been proved to be equal or more harmful than DUI. The amount of people driving using the cellphone is increasing very fast, as evidence while traveling any road in Puerto Rico. Even that the traffic crash report doesn't include this field and even having it, it difficult to attribute the crash cause to the use of these devices, the 4Es efforts shall consider this reality and make the necessary efforts to change this behavior in Puerto Rico.



## COMMERCIAL VEHICLES

The number of commercial vehicle crashes shall be monitored and discussed as part of the Emphasis Area teams. According to the latest data from the TPSB, in 2014 twenty (20) fatal and injury crashes occurred while in 2017 this number was twenty-nine (29). In 2015 was the pick number of fatal and injury crashes of commercial vehicles with thirty-seven (37). Between 2014 and 2018, twenty-one (21) people died in a commercial vehicle crash, representing 1.2% of the total number of fatalities in these years.

## ELDERLY POPULATION

Considering the recommendations included in the Federal Highway Administration's publication entitled "Road Design Manual for Major Drivers and Pedestrians" (FHWA-RD -01-103), this Plan includes specific strategies for drivers and pedestrians over 65 years of age. This because Puerto Rico had an increased number of pedestrian and drivers fatalities and serious injuries in two (2) consecutive years (2016 and 2017). The strategies are included in the Update Process section.



## CYCLIST

This group represents near 12% of all traffic fatalities and every day more people ride bicycles in Puerto Rico. Cyclists' safety must be observed closely as part of this plan and within most of the Emphasis Areas. The implementation efforts of the Complete Streets Guide and the Bicycle and Pedestrian Integrated Plan shall be a priority to enhance cyclists' safety. In addition, every educational program should include cyclists rights and responsibilities as part of it.



## WORKZONE



The Puerto Rico Work Zone Safety and Mobility Policy is been updated in 2019. Since 2007, this policy is pushing the highway industry to enhance the importance of safe construction practices from the perspective of the road users passing near a construction site.

## UNAUTHORIZED DRIVERS

This have accounted for 19% of fatal crashes between 2014 and 2016, and 13% in 2017. It becomes necessary to educate about the importance of obtaining a driving permit in Puerto Rico and the consequences of driving unauthorized.



## HIGH RISK RURAL ROADS (HRRR)



If the fatality rate on Puerto Rico's rural roads increases over 2 years, Puerto Rico will be required to separate specific funds to improve safety on high-risk rural roads. The distribution of FHWA's funds for Puerto Rico does not include a specific HRRR item now. However, in 2017, the PRHTA prepared an Appendix for the Puerto Rico SHSP 2014-2018 including a definition and a methodology for HRRR. This Plan includes an updated definition and methodology for identifying HRRR in Puerto Rico.

## HRRR (High Risk Rural Roads)

The Puerto Rico Highway and Transportation Authority (PRHTA) evaluated the need to identify high risk rural roads within the State highway system as part of the Highway Safety Improvement Program (HSIP) and according to the High-Risk Rural Roads Special Rule (23 U.S.C. 148(g)). FHWA definition of rural roads include rural major, rural minor collector, and rural local roads, based on the Census urban-rural classification. Puerto Rico also uses the latest Census data to determine the urban and rural areas along the Island. Consequently, the highway segments located within the Census rural areas are considered rural roads. In addition, the Puerto Rico Highway Performance Monitoring System (HPMS) database has the federal roadway functional classification of the rural segments identified.

The Puerto Rico selected the following definition for a “high risk rural road”, from the alternatives available in the Special Rule (23 U.S.C. 148): “roadway functionally classified as a rural major or minor collector or a rural local road with significant safety risks.”

The Puerto Rico SHSP 2019-2023 defines rural roads with “significant safety risk” as: “rural major, rural minor collector, or rural local roadway segments - spots (500 mts) or corridors ( $\geq 3$ km) - included in rural areas, as per the latest Census data, and classified within the high crash locations using the criteria and methodology established by the Puerto Rico Highway and Transportation Authority (PRHTA) for determining high crash locations within each roadway functional classification .”

1

### DATA

Traffic Records (crashes, fatalities, traffic flow, roadway functional classification)

2

### HIGH CRASH LOCATIONS

Roadway Functional Classification + CCF + FI = List of Segments

3

### SIGNIFICANT SAFETY RISK LOCATION

List of significant safety risk locations (segments) in a map

4

### RURAL CLASSIFICATION

Integrate the latest urban-rural classification census.

5

### HRRR

List of SSR locations within rural areas (rural major, rural minor collector or rural local road)



As July 2019, the PRHTA identifies the high crash locations within Puerto Rico's statewide roadway network by computing the Crash Cost Factor (CCF) and the Frequency Index (FI) by roadway functional classification based on the number of fatal, injury, and PDO crashes (by segments) and the crash costs (HSM 2010). In addition, the PRHTA establishes CCF and FI combined criteria to determine the list of locations (spots, intersections, and corridors) to be considered "high crash locations". The list of roadway segments within the high crash locations and the rural areas (Census) compose the list of High-Risk Rural Roads (HRRR).

The list of HRRR will be generated after identifying the roadway segments within rural areas and rural federal roadway functional classifications (rural major, rural minor collector, and rural local roads). PRHTA will report this list according to their federal roadway functional classification through the Puerto Rico HPMS database (accessed through the GIS layer).

The PRHTA will define safety assessments, Road Safety Audits (RSA), safety improvement projects design, or any other engineering evaluation to develop specific projects or actions intended to improve safety along the HRRR identified. This process will require to identify and program PRHTA funds.





# CHALLENGES AND OPPORTUNITIES

It is important to recognize the limitations, challenges and opportunities that this new plan will face. This in order to provide the safety stakeholders with a vision of how to channel their efforts to work in compliance with the EAs strategies mentioned above to achieve the established goals.

## Database limitations

- **KABCO Severity Scale**
  - Currently, Puerto Rico does not have historic data of crashes classified by the KABCO injury classification system. However, the Puerto Rico Police, supported by the TRCC, is implementing the new traffic crash report (PPR-621.4) which includes this injury classification.
  - Currently the serious injuries reported are people transported in ambulance from the crash scene. This data is provided by ACAA.
- **Manual data entry**
  - The current traffic crash report (PPR-93) is fulfilled manually by the police officers (state and municipal agents).
  - The Accidents Analysis Office (AAO) enter these reports manually into the PRDTPW crash database.
- **Data availability**
  - The period after a natural year ends and the corresponding crash database becomes available fluctuates between seven months to more than one year. This delays the crash analysis process.
- **BAC data**
  - The fatality database has limited blood alcohol content (BAC) data, including the cases where drivers had negative results.
  - In Puerto Rico, it is mandatory to test all the people involved in a fatal or serious injury crash for BAC, thus the fatality database shall include these results for all crashes.
- **Distracted Driving**
  - Since January 2013, is illegal to use cell phones while driving a motor vehicle in Puerto Rico.
  - There is no data that correlates crashes with the use of cell phones while driving.
- **Commercial vehicles**
  - The current database only identifies crashes related to heavy vehicles and does not distinguish between commercial vehicles.
  - The lack of commercial vehicle crash data limits the analysis and recommendations to address this type of crash.
- **Occupant protection**
  - The occupant protection variable defined in CARE database only includes driver's seat belt use.
  - There is very limited data about car seat use and, when available, is does not include if it was properly installed or meet children needs.
- **Fatalities database**
  - For the analysis of negligent drivers, the only variable that can be used with the fatality database is speed.
  - The NHTSA make data imputations for the DUI fatalities data. Thus, the number of DUI fatalities reported locally differs from the official NHTSA FARS numbers.
- **Work Zone Crashes**
  - Currently there is no database for the crashes that occurred in work zones.

## Challenges

- Promote the identity of the SHSP as a manager for safety stakeholders on highway safety issues and not as a competition.
- Share and/or disclose the statistics related to traffic crashes by the SHSP and other organizations and entities.
- The fragility of the highway infrastructure.
- Continuity in the commitment of the people and agencies that have decisive power.
- There is no power that obliges the agencies to comply with the SHSP, even though it is a federal requirement.
- The third sector could be an entity that manages funds for highway safety.

## Opportunities

- Identify how to insert the theme of highway safety in the different means of communication and social networks, not only during campaign times.
- Mass dissemination process of the educational and informative newsletter prepared by the SHSP.
- Expand the alliance. Include public and private universities and professional associations, among others.
- Establish a process for the analysis of the data to be shared and disseminated through the Puerto Rico Traffic Safety Commission (PRTSC).
- Continue working to eliminate the redundancy of efforts among the safety stakeholders of highway safety.
- Define a process to have an effective communication with personnel of municipalities and other agencies.
- Expand the collection of data for infractions to the use of protective equipment that are mandatory according to the law 22.
- Enhance the Strategic Communications Platform Initiative.



## Implementation

The SHSP implementation is based on the FHWA' SHSP Implementation Process Model (IPM): Essential Eight – Fundamental Elements and Effective Steps for SHSP Implementation. In addition, because this is the second implementation cycle for Puerto Rico, the model considers the challenges, opportunities, and lessons learned during the first SHSP cycle (2014-2018).

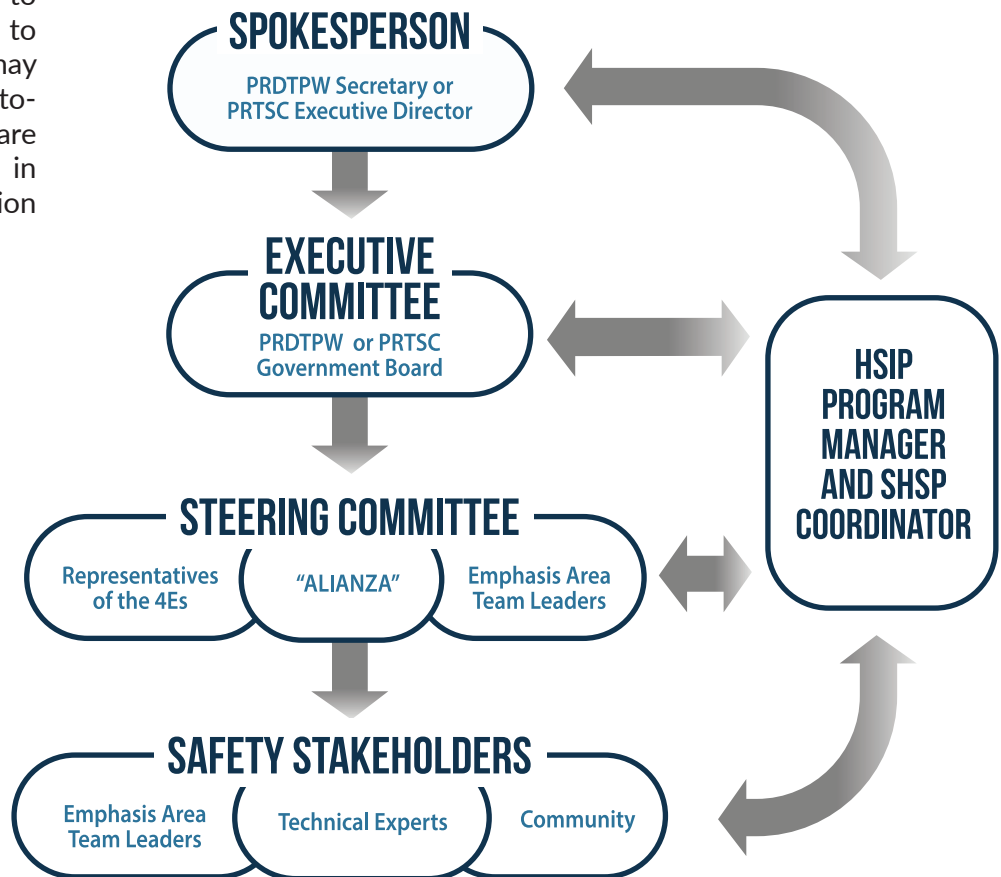
## Organizational Structure

The new organizational structure changed the top-level composition to facilitate the communications among decision makers. This organizational structure approach promotes a more practical communication among decision makers since the executive committee is the same of the PRTSC Government Board. This board has regular meetings and the SHSP is a fixed subject in their meetings' agenda.

One of the key elements is to continuously provide opportunities for the stakeholders to meet, talk, and discuss actions and thoughts associated to specific safety improvement strategies included in this plan. Are three fundamental leadership roles important for SHSP implementation and his success:

### Role # 1 – Executive Committee

These leaders have access to resources and the ability to implement change, they may not be involved in the day-to-day management, but they are able to “move mountains” in terms of resources allocation and policy support.



## **Role # 2 – Spokesperson and Steering committee/Working Groups**

These leaders inspire others to follow their direction. They are often referred to as “Champions”. This committee has the main responsibility to follow the progress of the implementation phase and provide recommendations to the Executive Committee in terms of making modifications to achieve the proposed objectives.

Emphasis Areas Coordinators – Primary roles and responsibilities include, but not limited to, the following tasks:

- Facilitating discussion among working teams,
- Documenting the measurable objectives and performance of each EA,
- Determine the necessary data for each performance measure, and
- Identify the resources and actions to implement each strategy and the process to monitor their implementation.

## **Role # 3 – HSIP Manager and SHSP Coordinator**

These leaders are often known as program managers, and their activities keep implementation process on track.

## **Collaboration**

As repeatedly stated throughout this report, in order to be successful, it will require communication, coordination, and cooperation between agencies and entities. It takes all the 4Es working together with the “fifth E”, EVERYONE, to achieve the goal. Agencies and non-governmental entities need to work collaboratively to maximize the effectiveness of their efforts. Additional Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA) between agencies may be needed to identify responsibilities and facilities sharing of funding or other resources where practical and/or establish agreements. In addition, an objective for this SHSP cycle is to add new entities to ALIANZA (private and non-profit organizations) to increase the number of safety stakeholder and provide the third sector with more tools.

The purpose of working together will often be to avoid/reduce duplication of efforts, so that help to maximize the efforts and the use of the limited available funding and resources. The only way to achieve this is to establish a program environment in which all stakeholders are fully engaged and willing to communicate, coordinate, and cooperate.

## **Decade of Action**

Puerto Rico continues its union with the Decade of Action 2011-2020 in the efforts to reduce the number of injured people and deaths worldwide as a result of traffic crashes, by adopting the best highway safety practices. The best highway safety practices will be an important aspect during the implementation of the Puerto Rico SHSP, as well as afterwards.

## **ALIANZA**

As mentioned in the section on History Facts, this alliance is made up of several third sector organizations interested in highway safety. An objective for this SHSP cycle is to add new entities to ALIANZA (private and non-profit organizations) to increase the number of safety stakeholder and provide the third sector with more tools.



## Private Sector

The private sector is mainly composed by the highway industry (designers, contractor, suppliers), insurance companies, and the academia. These entities are continuously educated and informed about the need to enhance their safety programs or knowledge to meet the most up-to-date best practices in highway safety (i.e. innovative designs, incident management, defensive driving, etc.). In addition, these entities support the education and public information strategies through their perspectives and possibilities.

## SHSP Action Plan

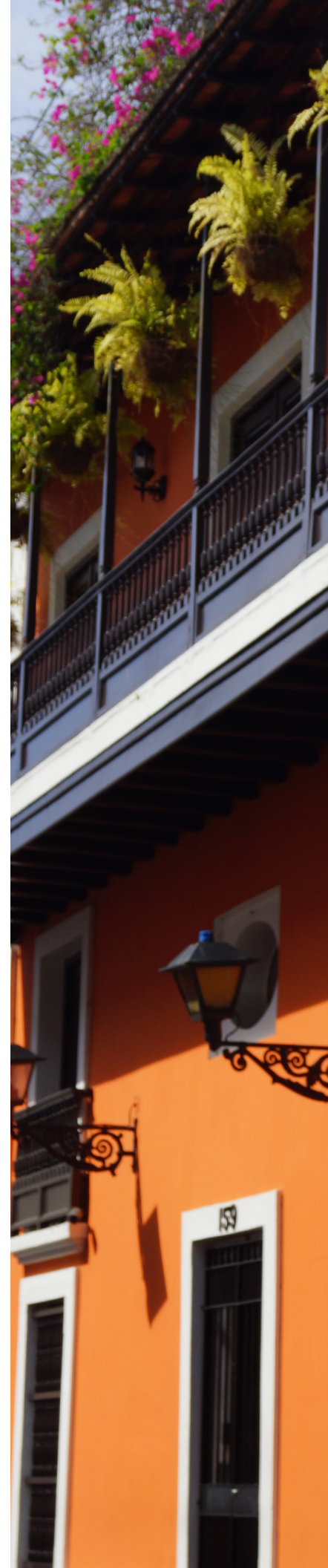
The action plan, which will be developed by each of the Emphasis Area teams, will include specific countermeasures, measurable actions or tactics, identification of the responsible party (or parties) for the implementation of those actions, objectives based on results, and a projected schedule. The needs and priorities of the different agencies will be evaluated for the actions through meetings. In addition, in the EA study, a general profile of crashes and traffic fatalities was identified for each EA, which will help to establish the actions.

The progress of all actions for each established strategy will be discussed in each EA meeting. Any modification to the strategy or action plan can be evaluated and discussed. The Steering Committee has the main responsibility to follow the progress of this, taking the necessary actions and decisions to implement the strategies as soon as possible. The progress made towards the fulfillment of the action points and measurable objectives will be monitored and tracked.

Some of the specific actions that will be included in the next annual Action Plans are:

- 1 Promote the use of municipal polices through the MPO.
- 2 Promote drivers to have emergency equipment in their vehicles.
- 3 Provide an example sign that indicates the right to make calls or request assistance from alcohol vendors.
- 4 Create an automatic driver education system each time Law 22 is amended.

EMPHASIS AREA	DESIGNATED TEAM
Traffic Records Systems	TRCC
Emergency Medical Services	TIM
Pedestrians, Personal Safety Gear, Lane Departure, Negligent Driving, Under the Influence of Alcohol and Other Substances	Emphasis Area Teams





## Marketing/Branding

SHSP marketing begins with establishing a recognizable brand. The goal is to engage the public and all possible agencies and entities in the implementation of SHSP and to recognize the importance of this.



**“WORKING TOGETHER...  
...TO SAVE MORE LIVES”**

## Communications

Effective communication within agencies and entities responsible for the SHSP implementation and all safety stakeholders is essential. All safety stakeholders need to be maintained motivated and know “what’s in it for them” to continue with their interest, participation, and contribution. This will be achieved through meetings, safety summits, Puerto Rico SHSP website ([www.carreterasegurapr.com](http://www.carreterasegurapr.com)), “Plan Estratégico de Seguridad Vial de Puerto Rico” Facebook fan page, e-mails, phone calls, presentations, conference, brochures, newsletters, radio interventions, informative videos, surveys, communication platform, etc.

## Integration with Other Transportation and Safety Plans

The Puerto Rico SHSP is consider the local “umbrella” safety plan. According to the experience and in agreement with the federal regulations, other local programs and plans should align with the SHSP. This SHSP provides specific safety performance goals that all stakeholders should know and understand to align their plans and efforts towards supporting it. In addition, the strategies and actions of these stakeholders shall be considered into the transportation planning and programming activities to reduce fatalities and serious injuries along the entire ground transportation network. Some of the integrated or under development transportation plans are summarized in the next page.





**Long Range Transportation Plan 2045** – In December 2018, the Puerto Rico Metropolitan Organization Policy Board Committees presented and approved this plan considering Islandwide, San Juan TMA, Aguadilla TMA, considers policies and strategies to help promote economic development, create more livable communities, and advance environmental sustainability. LRTPs identify transportation goals, needs, and performance measures over a 20 to 25 year and provide policy and strategy recommendations for those.

**Highway Safety Plan** – HSPs address behavioral safety areas (e.g., occupant protection, impaired driving, police traffic services, emergency medical services, motorcycle safety, traffic record improvements, and other program areas). The integration helps the successful coordination of highway safety projects and the use of assigned resources.

**Statewide and Metropolitan Transportation Improvement Program** – These programs are resources constrained and identify projects and funding that reflect society’s mobility, operational, and safety needs. The integration with the SHSP will help to identify opportunities to incorporate safety projects and/or stand-alone projects, and to coordinate the amendment of the Statewide Transportation Improvement Program (STIP), as required, to include those projects.

**Commercial Vehicle Safety Plan** – CVSPs address some of the behavioral safety elements in the SHSP and working together can reduce crashes involving commercial motor vehicles.

**Highway Safety Improvement Program (HSIP)** – The PRHTA Highway Safety Improvement Program planning is in continuous coordination with the Puerto Rico SHSP. The high crash locations, Before and After Studies, highway safety improvement projects justifications, and other safety tools associated to the HSIP are generated and supported through the SHSP safety best practices. The PRHTA HSIP defines the priorities of the systemic and spot highway safety improvement projects.

**Public Transportation Agency Safety Plan (PTASP)** – In Puerto Rico, the Integrated Transit Authority (ATI, in Spanish) together with the Maritime Transportation Authority (ATM, in Spanish), and the Metropolitan Bus Authority (AMA) are responsible for the coordination of the public transportation in Puerto Rico. They are coordinating the mission, vision, and safety targets of the Public Transportation Safety Plans with this SHSP.





## Monitoring, Evaluation, and Feedback

The SHSP will schedule a monitoring process and assign responsibilities for update the information every three (3) month. The evaluation of the results of the monitoring process will help to know if the collected data are appropriate. In addition, participants will evaluate the meetings to determine if the concerns and important points were addressed and clarified. Feedback is a way of knowing that safety stakeholders are being informed.

## Annual Performance

“Is the systematic collection of information about the activities, characteristics, and outcomes of a program to make judgements about it, improve its effectiveness, and/or inform decisions about future programming.” – SHSP Evaluation Process Model (EPM) from FHWA

Every plan must be evaluated to determine its performance and functionality. This evaluation, apart from the monitoring mentioned in the implementation section, must be annually and in greater depth. In this, the processes and performances of the work and efforts made will be evaluated to determine the areas to be improved and the tasks that should continue to be executed to benefit the highway safety of the country. The evaluation will be developed through EA Action Plan, Annual Report, and SWOT (Strengths, Weakness, Opportunities, and Threats). In addition, the team will use the recommended actions offered in the SHSP EPM as outlined below.

- 1** Examine the positions of persons serving on SHSP committees (e.g., steering and executive committees), as well as emphasis area and local/ regional/district teams to determine their contribution to the SHSP process and access to leadership and resources.
- 2** Review the schedule of SHSP leadership and committee meetings to determine if they meet as frequently as planned or needed.
- 3** Review the SHSP organizational structure to determine the level of support provided to partners in local and regional coalitions.
- 4** Review the role and function of SHSP committees, teams, and/or groups. Compare these current roles and functions with the expectations set at the beginning of the SHSP process.
- 5** Determine if mechanisms are in place that facilitate an active, efficient collaborative process, such as MOUs.
- 6** Determine if the SHSP vision, mission, and goals are clearly and continually communicated to all partners and stakeholders
- 7** Review the HSP, CVSP, HSIP, LRTP, and S/TIPs, among other, to determine the degree to which they align with the SHSP.
- 8** Identify missing data which may prevent assessment of performance measures.
- 9** Compare output and outcome performance measures with baseline data and for each SHSP EAs.



# WEB PAGE

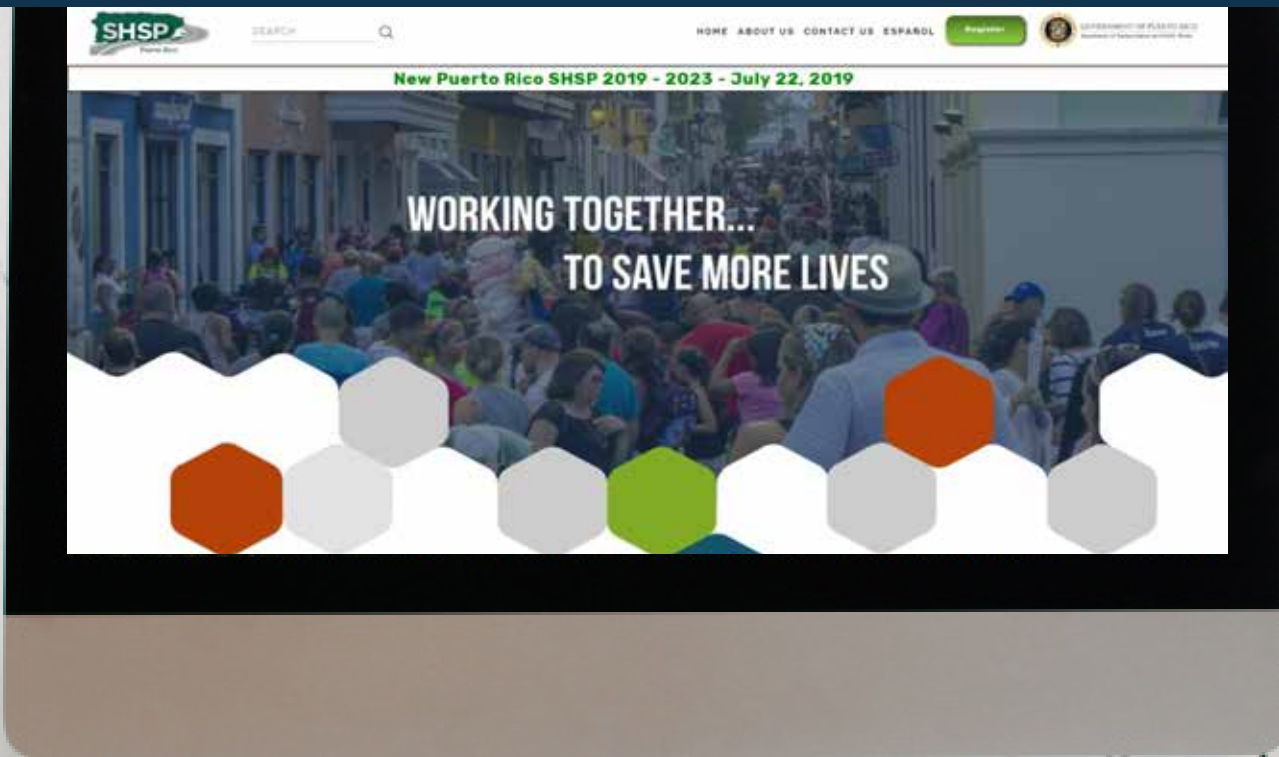
## Visit Us: [CarreteraSeguraPR.com](http://CarreteraSeguraPR.com)

The new SHSP web page considers the latest trends in web page designs for a government and educational site without losing its character and sensibility. One of the most important elements kept is providing accessibility to people with disabilities by attaining a Level AAA of the W3C Web Content Accessibility Guidelines 2.0 (logo at web site's lower right corner). Another important element kept was the access to safety stakeholders' web pages and to the statistics of fatalities (day-by-day and annual comparisons).

The updated concept includes modern art graphics, pictures showing people sharing in iconic or easy to identify of Puerto Rico, and a simpler web site format. This format promotes users to focus on their interests by:

- 1 Establishing a header menu with only three (3) content items, a 'Contact Us' item, and a Registry bottom for people interested in receiving more information.
- 2 Organizing specific areas of interest (vision/mission area, fatalities' statistics, and others).
- 3 Incorporating subject matter icons for users with specific interest such as each of the Emphasis Areas, a Library, Polls, and others.





The subject matter icons serve as another menu but accessible by clicking the icons. Web visitors can discover specific information or additional search options depending on their selections. One of the most powerful tools is the Library where users could search documents, presentations, newsletters, and other references by names, key words or dates.

Finally, the old web site was included until December 2019 as a transition for the safety stakeholders. This web site is available at the central footer of the SHSP web site.



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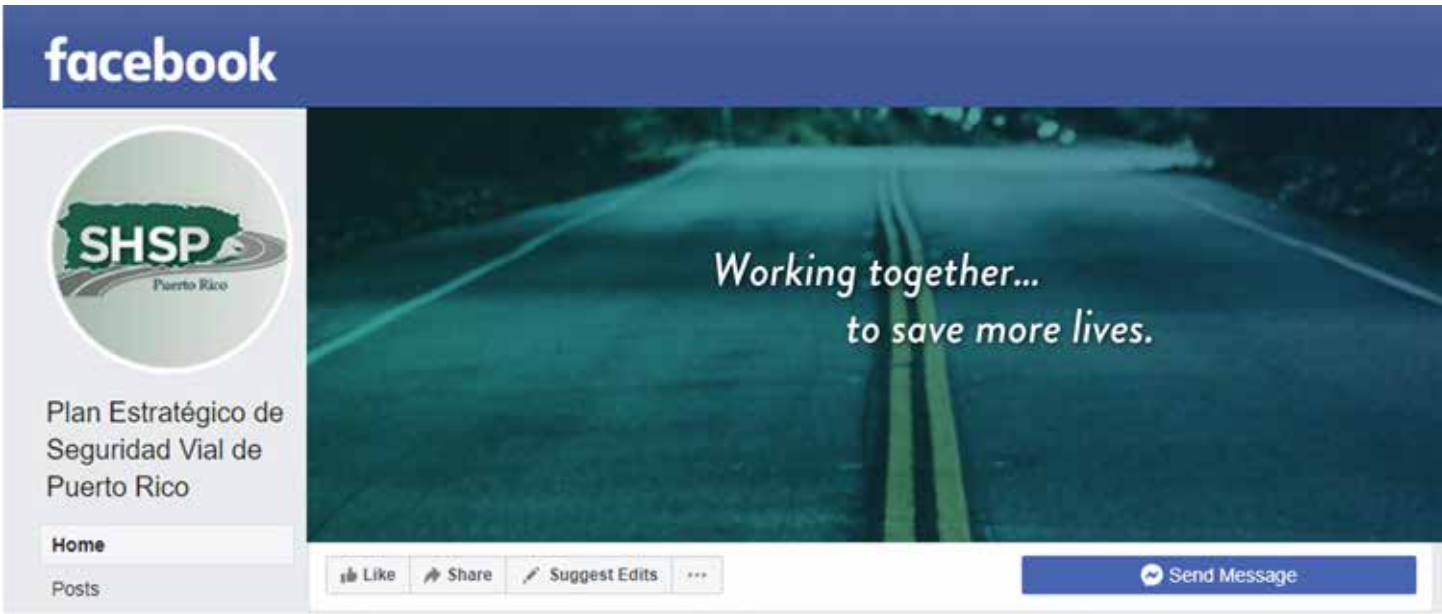
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**PLAN ESTRATÉGICO DE SEGURIDAD VIAL DE PUERTO RICO**

**POINTS OF CONTACT**

AGENCY / ENTITY	OFFICE / DIVISION	PHONE NUMBER	EXTENSION
ACAA	<a href="http://www.acaa.gobierno.pr/">http://www.acaa.gobierno.pr/</a> Division of Education and Prevention	787-759-8989	2610, 2616
PRHTA	<a href="https://act.dtop.pr.gov/">https://act.dtop.pr.gov/</a> Traffic Engineering and Operations Area Strategic Planning Office Traffic Data Gathering and Analysis Office Traffic Management Center (TMC)	787-721-8787  787-724-3170	2829 1666 1559
PRTSC	<a href="https://seguridadeneltransito.com/">https://seguridadeneltransito.com/</a> Planning Division	787-721-4142	2208
Puerto Rico Police	<a href="https://policia.pr.gov/">https://policia.pr.gov/</a> Traffic Division	787-793-1234	
AARP Puerto Rico	<a href="https://states.aarp.org/puerto-rico/">https://states.aarp.org/puerto-rico/</a>	787-296-3001	
MAPFRE Puerto Rico	<a href="https://www.mapfre.pr/seguros-pr/sobre-nosotros/fundacion/">https://www.mapfre.pr/seguros-pr/sobre-nosotros/fundacion/</a> Fundación MAPFRE	787-250-6500	6672
Transportation and Others Public Services Bureau	<a href="http://www.agencias.pr.gov/agencias/CSP/Pages/CSP.aspx">http://www.agencias.pr.gov/agencias/CSP/Pages/CSP.aspx</a> Citizen Services Office	787-756-1919	2113



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