



# Puerto Rico's Interim Strategic Highway Safety Plan

# 2013

*The SHSP is developed to reduce the number of traffic fatalities and serious injuries on Puerto Rico's roadways. Critical strategies should address the "Four Safety E's", enforcement, education and emergency services in addition to the more traditional engineering improvement. This interim document will focus in the development of strategies in four emphasis areas to reduce traffic fatalities and injuries in our Highway System.*

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# Puerto Rico's Interim Strategic Highway Safety Plan

## Puerto Rico's Interim Strategic Highway Safety Plan Steering Committee

Puerto Rico Department of Transportation and Public Works (PRDTPW)

Puerto Rico Highway and Transportation Authority (PRHTA)

Puerto Rico Traffic Safety Commission (PRTSC)

Federal Highway Administration (FHWA)

Federal Motor Carriers Safety Administration (FMCSA)

National Highway Traffic Safety Administration (NHTSA)

### MISSION:

Provide a safe, efficient and cost effective transportation system that meets the mobility needs and safety of all users.

### VISION:

All users of the transportation system move safely and effectively to their destinations.

### GOAL:

Achieve a reduction in serious crashes, injuries and fatalities on Puerto Rico roadways.

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Miguel A. Torres Díaz, PE  
Secretary,  
Puerto Rico Department of Transportation  
and Public Works

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Javier Ramos Hernández, PE  
Executive Director,  
Puerto Rico Highway and Transportation Authority

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José A. Delgado Ortiz  
Executive Director,  
Puerto Rico Traffic Safety Commission

## Introduction

The Puerto Rico Interim Strategic Highway Safety Plan defines a structure and process for managing the attributes of the road, the driver, and the vehicle to achieve the highest level of highway safety. This high level of safety can only be achieved by integrating the work of the various disciplines and agencies involved in Highway Safety in Puerto Rico. The four E's: Education, Enforcement, Engineering and Emergency Medical Services (EMS) addressed in this plan will work together to obtain the greatest results in the reduction of fatalities and serious injuries on our highway system. The safety stakeholders must commit resources to further develop, implement, and maintain this Plan beyond this interim phase and work together to create the final SHSP which will be comprehensive and integrated.

### What is a Strategic Highway Safety Plan (SHSP)?

An SHSP is a statewide-coordinated safety plan that provides a framework for reducing highway fatalities and serious injuries on all public roads. The SHSP is developed by the PRDTPW in a cooperative process with Local, State, Federal, and private sector safety stakeholders. The SHSP is a data-driven, comprehensive plan that establishes statewide goals, emphasis areas, and strategies.

### Benefits of an SHSP

The SHSP will:

- Establish common statewide safety goals and priorities,
- Strengthen existing partnerships,
- Support the value of safety coalitions,
- Facilitate shared data, knowledge, and resources,
- Quantify the existing and needed resources and activities to meet the State's safety goal,
- Avoid redundant activities,
- Leverage and focus limited existing resources such as funds, staff, and leadership attention, toward common objectives,
- Communicate the impact of investing additional resources for highway safety countermeasures, and
- Incorporate both behavioral and infrastructure strategies and countermeasures to have a greater impact on reducing highway fatalities and serious injuries on all public roads.

## Methodology

This Interim SHSP represents the first phase of an on-going process. It was developed by the Interim SHSP Steering Committee and is based on data and the priority highway safety needs of Puerto Rico. The Interim SHSP Steering Committee is currently made up of:

Member	Agency	Position
<b>Eng. Juan C. Rivera</b>	PR Highway and Transportation Authority	Supervisor, Safety Projects Division
<b>Eng. Alexis Nevárez</b>	PR Highway and Transportation Authority	Highway Safety and Traffic Engineer
<b>Eng. Zulma Marín</b>	PR Highway and Transportation Authority	Director, Federal Aid Office
<b>Eng. Mario Maldonado</b>	PR Traffic Safety Commission	Impact Team Coordinator
<b>Mrs. Betty Rivera</b>	PR Traffic Safety Commission	Impaired Driving Program Coordinator
<b>Eng. Daniel Camacho</b>	Federal Highway Administration	Highway Safety Engineer
<b>Mrs. Enid Martínez</b>	Federal Motor Carriers Safety Administration	State Director

The implementation of the Plan requires the cooperation and coordination of the safety agencies responsible for the development and implementation of the safety strategies of Education, Enforcement, Engineering and EMS. Initially, the strategies of Puerto Rico's existing highway safety plans were incorporated as a basis for implementing the SHSP. Implementation plans with measurable objectives will be a product of the agencies represented on the steering committee. To that end, priority will be given to funding proven and effective safety initiatives and projects supporting the Interim SHSP goal, which is to reduce the number of serious injuries and fatalities. This will result in lives saved and a higher quality of life throughout Puerto Rico.

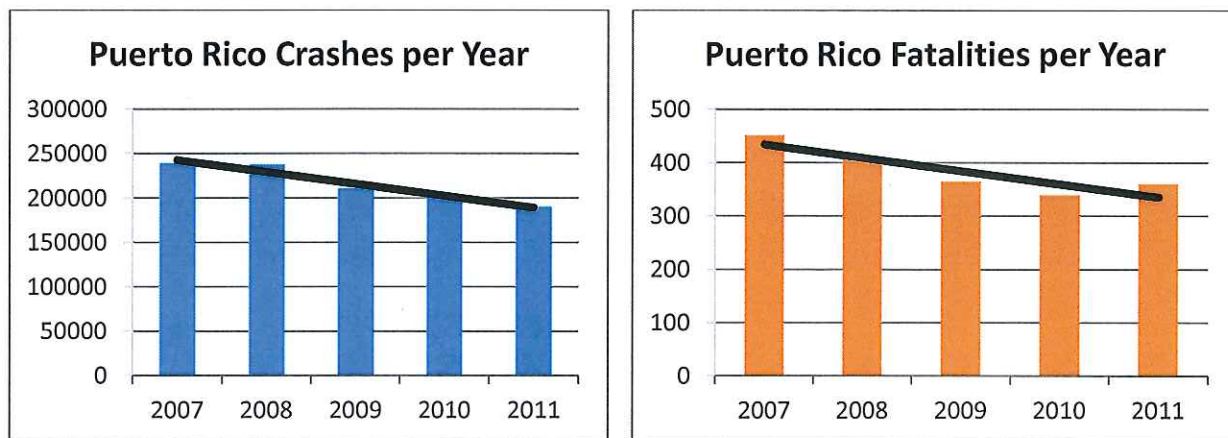
## Involvement of Partners

The Interim SHSP Steering Committee will host a safety summit in summer 2013 for the development of a more complete and final SHSP. Stakeholders throughout Puerto Rico will be invited to be safety partners in the challenge of reducing highway-related fatalities and serious injuries. The stakeholders include those involved in planning, designing, constructing, operating, and maintaining the roadway infrastructure (Engineering), modifying road user behavior and preventing injury (Education and Enforcement), and preventing and mitigating the impact of injury (Emergency Medical Service). Below is a preliminary list of primary stakeholders:

- Department of Transportation and Public Works
- Highway and Transportation Authority
- Traffic Safety Commission
- Federal Highway Administration
- Federal Motor Carriers Safety Administration
- National Highway Traffic Safety Administration
- State and Local Police Agencies
- Department of Justice
- Department of Health
- Local Technical Assistance Program
- Automobile Accident Compensation Administration
- Public Service Commission
- Universities

## Statistics

Almost every day a person loses their life in a Puerto Rico vehicular crash. Crashes occur on Puerto Rico's roads nearly five hundred times a day. In 2011, there were 361 people killed in 343 fatal crashes, for an average of 1.05 deaths per fatal crash. The corresponding traffic-related death rate is 1.96 deaths per million vehicle miles traveled (VMT), while nationally the average rate was 1.10 deaths. Puerto Rico has observed a significant reduction in the fatality rate between 2007 and 2011 from 2.35 to 1.96. However, Puerto Rico can do more to ensure this downward trend continues. Crash trends of strategic interest are summarized below with the latest 2011 results shown.



**Figures 1 & 2.** Puerto Rico motor crashes and fatalities per year.

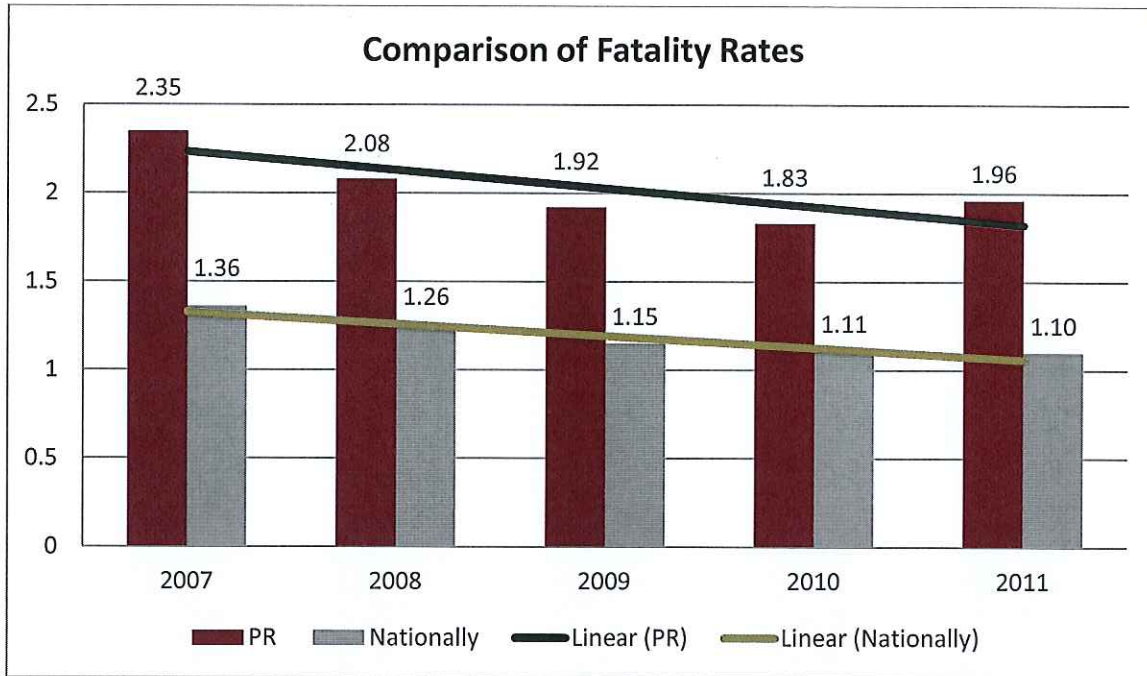
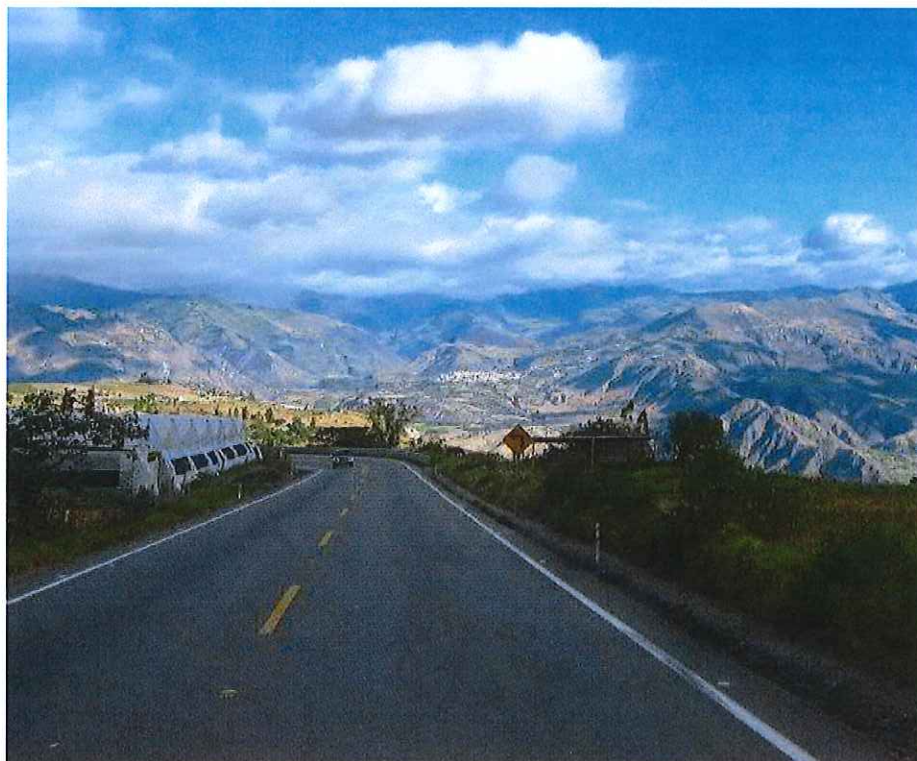


Figure 3. Comparison of fatality rate values.

**Table 1:** Puerto Rico crash trends.  
(FARS data from the PRTSC and  
National Highway Traffic Safety Administration – NHTSA)

Item	Category	2007	2008	2009	2010	2011
1	Number of Fatalities	452	406	365	340	361
2	Number of Serious Injuries	41,341	38,448	36,965	35,530	35,533
3	Fatalities per 100 Million VMT	2.35	2.08	1.92	1.83	1.96
4	Number of roadway departures related fatalities	160	126	129	132	129
5	Number of pedestrian fatalities	144	127	109	101	111
6	Number of speeding-related fatalities	228	162	156	135	138
7	Number of alcohol related fatalities	193	172	138	110	103



**Emphasis Areas**

**2013**



## Emphasis Areas

All crash types are important. However, Puerto Rico must identify the most significant contributors to the traffic safety problem and focus its limited resources in those areas that will have the most impact on traffic safety. The interim SHSP steering committee initiated a preliminary data analysis to identify the most significant contributors to Puerto Rico's traffic safety problem. This analysis revealed fatality and serious injury trends in the following four emphasis areas.

- Traffic Crash Records and Information Systems
- Roadway Departure
- Pedestrian and Cyclists
- Driver Behavior

This interim SHSP places priority on these four emphasis areas, establishes objectives for each emphasis area, and describes a framework of strategies that will reduce fatalities and serious injuries. The emphasis area objectives are an approximation of what could be accomplished short term if the strategies are implemented and may be updated as additional data becomes available. The strategies were selected from various existing traffic safety plans in Puerto Rico as well as strategies proven successful in other states or regions. In some cases a strategy may prove to be successful in more than one emphasis area. The strategies in the final SHSP will be the result of more detailed data analysis and stakeholder input.

## TRAFFIC CRASH RECORDS AND INFORMATION SYSTEMS

### Background

The DTPW developed a crash database for public roads in Puerto Rico in 1996. The Office of Accident Analysis (OAA) enters the data from the Police Accident Report (PAR) into this system. The OAA does not have the resources to keep up with the volume of PARs they receive. As a result, the most recent complete data available for all types of crashes only covers years 2002 - 2006. While these years are considered complete, the database still lacks information on commercial motor vehicles and exact location of the crashes. In an effort to make some of the most critical information available, the OAA has implemented a traffic crash records backlog update project which provides the critical data fields for injuries and fatal crashes. This project has made the critical data for years 2007-2009 available. While this data allows for general data analysis, it does not provide enough data for more sophisticated data analysis techniques.

Access to the most current complete data continues to be a problem for the wide range of stakeholders that could benefit from the availability of this data. Currently, the OAA database is used mostly for safety and traffic engineering, legislature, courts, and academic research. Some agencies use the Fatal Analysis Reporting System (FARS) data instead of the DTPW database because it is the most current data. The disadvantage is that FARS data is limited to fatal crash data only. FARS data is primarily used for strategic planning (mainly education and enforcement) and public information.

If Puerto Rico is to make the most effective use of its limited resources it must have the best data available for problem and solution identification. Puerto Rico must develop a crash database that is complete, current, integrated, and accessible by all safety stakeholders. The Traffic Records Coordinating Committee (TRCC) in Puerto Rico is poised to step up efforts and take a more active role in seeking improvements in the island wide system.

### Objective

Improve the existing crash database to manage highway and traffic safety programs by 2016 supporting the TRCC efforts.

### Strategies

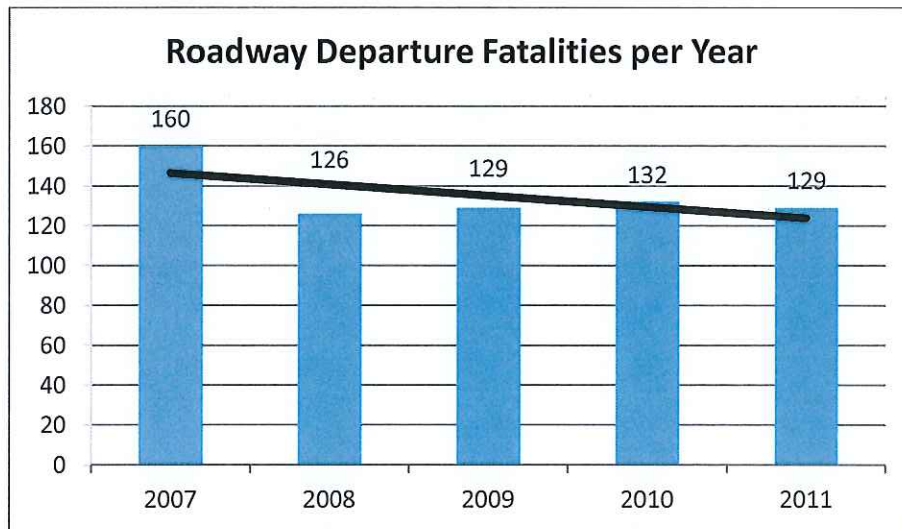
- 1- Reduce the backlog of motor vehicle crash data from 5 years to less than one year.
- 2- Support the implementations of the new PAR that updates all the crash data fields including the commercial motor vehicle data fields.
- 3- Train traffic law enforcement agencies on how to collect complete and accurate crash data that supports the new PAR.

- 4- Provide direct access to crash data reports and information to stakeholders.
- 5- Acquire a user-friendly data analysis software tool.
- 6- Continue the program of kilometer and hectometers markers installations in all State Roads so that crashes can be located for analysis purposes.

## ROADWAY DEPARTURE

### Background

Every year in Puerto Rico nearly 100 people lose their life due to roadway departure crashes. Roadway Departure crashes represents 30% of the total roadway fatalities annually in Puerto Rico. The limitations in the right of way (ROW) in the majority of roads increases the probability of ROR crashes with fixed objects, most commonly trees and utility poles. The rate of speed in which many of these crashes are occurring and the ability for EMS to quickly respond make the outcome of these crashes even more tragic.



**Figure 4:** Roadway Departure related fatalities per year.

### Objectives

Decrease total roadway departure fatalities 5% by 2016.

### Strategies

- 1- Upgrade guardrail systems, crash cushions and concrete barrier installations to NCHRP 350 standards.
- 2- Install, replace or enhance pavement marking, signing and delineation in compliance with the Manual of Uniform Traffic Control Devices for Highways and Streets (MUTCD).
- 3- Remove, relocate, or protect trees and utility poles located within the clear zone of high crash locations or roadways with common characteristics where these crashes occur.
- 4- Install rumble strips on high speed, rural, or high crash corridors.
- 5- "Educate transportation professionals on new and innovative roadway departure countermeasures"

- 6- Enhance targeted enforcement activities on high speed, rural, or high crash corridors.
- 7- Pilot innovative engineering countermeasures targeting roadway departure crashes.
- 8- Revise statewide roadside safety standard drawings and specifications to include new and innovative roadway departure countermeasures.
- 9- Provide the necessary tools to improve performance of EMS and first responders to crash incidents.

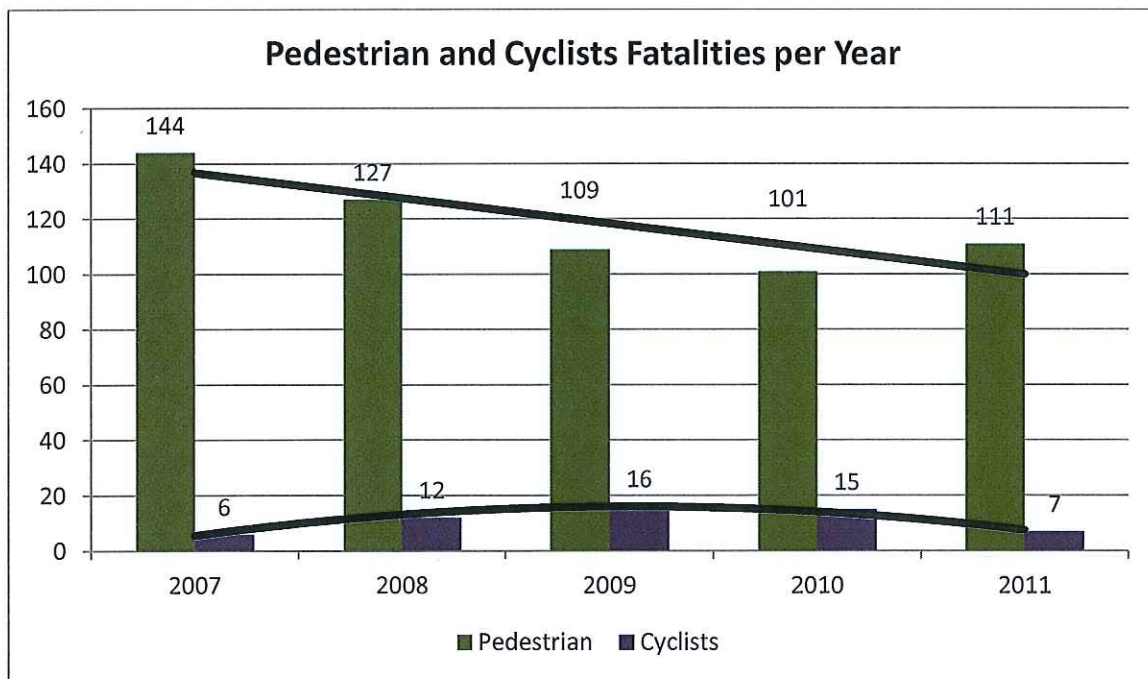
## Pedestrians and Cyclists

### Background

Pedestrian fatalities represent 30% of the total traffic fatalities in Puerto Rico. Between 2007 and 2011 pedestrian fatalities averaged over 100 fatalities each year. The leading factors involving pedestrian fatalities include inappropriate pedestrian behavior, aggressive drivers and inadequate pedestrian facilities.

Cyclist fatalities represent 4% of the total traffic fatalities in Puerto Rico. Between 2007 and 2011 cyclist fatalities averaged about 13 per year. While cyclist fatalities appear relatively low in comparison to other types of traffic fatalities, Puerto Rico has experienced an increase in the recreational and commercial use of this transportation mode and predicts a reversal in the downward fatality trend. Cyclist fatalities are largely behavioral and related to cyclist knowledge of traffic laws.

The following figures show the Puerto Rico FARS data in fatalities from pedestrian and cyclist crashes for the past several years:



**Figure 5:** Pedestrian & Cyclists fatalities per Year.

### Objectives

Decrease pedestrian and cyclist fatalities 5% by 2016.

### **Strategies**

- 1- Provide assistance to communities for developing and implementing local pedestrian safety improvement projects.
- 2- Educate all road users about Puerto Rico Vehicles and Traffic Law (Law #22) and recent amendments.
- 3- Enhance police department's enforcement of existing traffic regulations, particularly in high risk locations.
- 4- Provide training to police officers on the rights and duties of cyclists and pedestrians.
- 5- Evaluate provisions for incorporating ped/bike facilities on all new road construction or reconstruction, and rehabilitation projects.
- 6- Implement traffic calming measures in high-volume pedestrian areas.
- 7- Implement targeted "Share the Road" and Pedestrian Awareness campaign to provide information and enhance awareness to all road users.
- 8- Support the implementation of the complete streets concept in highway designs.

## Driver Behavior

### Background

Speeding, impaired driving, and distracted driving are the three primary driver behavior related fatality types in Puerto Rico. In 2011 approximately 47% of all fatalities involved one or more of these behaviors. Between 2007 and 2011 an average of 195 fatalities involve one or more of these behaviors each year. All of these behaviors are also observed as commercial driver behavior issues as well.

**Table 2:** Behavior related fatalities comparison (FARS).

Year	All Traffic Fatalities	Speeding Related	Impaired Driving Related
2007	452	228 (50%)	193 (43%)
2008	406	162 (40%)	172 (42%)
2009	365	156 (43%)	138 (38%)
2010	340	135 (40%)	110 (32%)
2011	361	138 (38%)	103 (29%)

Speeding related fatalities accounted for approximately 38% of the traffic fatalities in 2011. Some of the main causes are the law enforcement presence to discourage speeding and the equipment that law enforcement uses is inadequate. Many enforcement vehicles need maintenance and many of these vehicles lack the equipment needed for speed enforcement such as radars.

Impaired driving accounted for approximately 29% of the traffic fatalities in 2011. Although there is a declining trend in alcohol-related fatalities on Puerto Rico's roads, people continue to die. According to NHTSA, Puerto Rico remains one of the jurisdictions with the highest number of fatalities related to drunk drivers.

Distracted driving has been identified as a growing contributor to fatalities in the Island although there is currently little data to describe the extent of the problem. Distracted driving includes cell phone and navigation systems use, texting, eating, reading, and adjusting audio equipment. These activities take the driver's attention away from the road. According to Puerto Rico Legislature's commissioned study 70% of drivers in Puerto Rico use their cell phones while driving.

### Objective

Decrease driver behavior related fatalities 10% by 2016.



**Strategies**

- 1- Develop and implement driver behavior educational media campaigns focused on speeding, impaired and distracted driving.
- 2- Support the development of a program of surveys to help measure the effectiveness of the driver behavior strategies.
- 3- Support the acquisition of speed radar, equipment, and vehicle maintenance activities to law enforcement agencies to increase police enforcement.
- 4- Support sustained and high-visibility traffic law enforcement strategies and activities, tailored to high risk drivers and locations.
- 5- Support the development of educational and training programs for traffic law enforcement and first responder agencies on crash site and incident investigations including commercial motor vehicles to work with the scenes caused by driver behavior related crashes.
- 6- Pilot innovative and/or proven engineering countermeasures targeting driver behavior.
- 7- Support the enhancement of the judicial and prosecution training program on enforcement of traffic laws, crash and traffic incident investigation.