

Highway Safety Survey Report



Young Drivers • Older Drivers •
Pedestrians • Bicyclists • Motorcyclists •
Heavy Trucks • Aggressive Driving •
Impaired Driving • Drivers Alert • Seat Belt
& Car Seats • Distracted Driving •
Intersections • Work zones • Roadway
Departure • Head-On and Across-Median
Crashes • Roadway Signage • Law
Enforcement • Gathering, Analysis and
Sharing of Crash Information

Working Together Toward Highway Safety...
To Save More Lives

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Executive Summary

The highway safety survey had the objective of compiling highway safety stakeholders' information and opinions of the PR situation related to highway safety. It was sent to stakeholders associated with highway safety initiatives, such as: university professors, safety engineers, governmental employees, non-profit organizations' leaders, police inspectors/agents, health specialists, firefighters, and others. The survey was a web-based instrument that included twelve (12) questions. All of the answers were entered electronically and directly recorded into the survey database.

From the 70 participants that answered the safety survey (75% participation), 45 (64%) work for a state agency, 7 (10%) for the private sector, 6 (8.5%) for a non-profit organization, 6 (8.5%) at universities, 4 (6%) for a municipality, and 2 (3%) for a federal agency. Their distribution by the "4Es" was as follows:

- Education: 43%
- Engineering: 34%
- Enforcement: 16%
- Emergency Medical Response: 7%

The highway survey results indicated that 34% of the responders did not know how much funding from their organization has been focused on highway safety initiatives, 23% indicated that no funds are assigned to highway safety and 43% indicated that their organization has funding for initiatives associated with reducing the frequency of fatal and serious injury crashes on the highways of Puerto Rico. Approximately, 53% of the Education area representatives indicated that their organization dedicates more than 75% of their time and funding to highway safety initiatives, followed by 40% of the EMS representatives, 29.2% and 18.2% of the Engineering and Enforcement areas respectively.

The partial list of emphasis areas based on the stakeholders' survey results, is as follows:

1. Impaired drivers
2. Distracted Drivers
3. Aggressive Drivers
4. Vulnerable Road Users
5. Law Enforcement
6. Young Drivers

Survey responders identified the possible causes of fatal and F+I crashes or area to improve highway safety as: (1) Driver Behavior, (2) Enforcement, (3) Pedestrian/Bicyclist, (4) Highway/Intersection Safety Deficiencies, (5) Crash Data, and (6) Emergency Response.

Several organizations have initiated and implemented countermeasures to improve highway safety in Puerto Rico. Some examples of these actions are: educational campaigns, installation of roadside safety devices (impact attenuators, barriers, etc.), highway police blockages, and Local Technical Assistant Programs (LTAP) among others.

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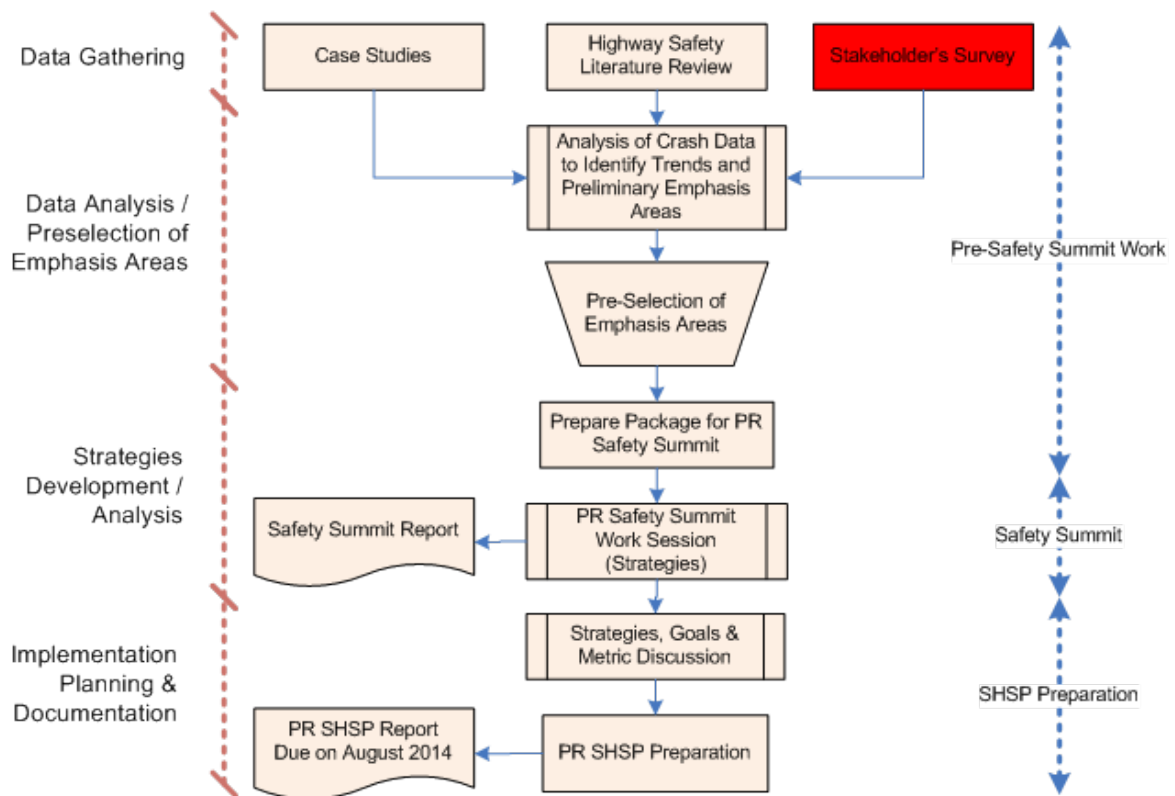
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LIST OF ACRONYMS/ABBREVIATIONS

AAO	Accident Analysis Office
AARP	Association of American Retired Persons
ACAA	Automobile Accident Compensation Administration (by its acronym in Spanish - Administración de Compensaciones por Accidentes de Automobiles)
ASEM	Administration of Medical Services of Puerto Rico (by its acronym in Spanish - Administración de Servicios Médicos de Puerto Rico)
ASCOS	Asociación de Suscripción Conjunta del Seguro de Responsabilidad Obligatorio
CIAPR	Board of Professional Engineers and Land Surveyors in Puerto Rico (by its acronym in Spanish - Colegio de Ingenieros y Agrimensores de Puerto Rico)
EMR	Emergency Medical Response
F+I	Fatal and Injury
FIESTA	Facilitadores Instructores en Seguridad en el Transito y Alcohol
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
ITE	Institute of Transportation Engineers
LTAP	Local Technical Assistant Program
NHTSA	National Highway Traffic Safety Administration
PR	Puerto Rico
PRDTPW	Puerto Rico Department of Transportation and Public Works
PRHTA	Puerto Rico Highway and Transportation Authority
PRTSC	Puerto Rico Traffic Safety Commission
SHSP	Strategic Highway Safety Plan
TRCC	Traffic Records Coordinating Committee
UMET	Universidad Metropolitana
UPR	Universidad de Puerto Rico

1. Introduction

As part of the Puerto Rico Strategic Highway Safety Plan (PR SHSP) a stakeholders' survey was administered from March 12, 2014 through April 2, 2014. The PR SHSP flowchart shown below illustrates how the stakeholders' survey interfaces with the crash data analysis with respect to the emphasis areas selection. The safety survey had the objective of compiling highway safety stakeholders' information and opinions on the PR situation related to highway safety. The survey was a web-based survey sent by e-mail using a hyperlink that connected electronically to the survey questions. All of the answers were entered electronically and directly recorded into the survey database. There was an option for completing the survey by handwritten response, but the option was not exercised by any of the stakeholders. This report presents a detailed analysis of the stakeholders' safety survey results, including all the questions/answers and the selection of the emphasis areas.



PR SHSP Flowchart

2. Safety Survey Overview and Participation

The safety survey was sent to stakeholders associated with highway safety initiatives, such as: university professors, safety engineers, governmental employees, non-profit organizations' leaders, police inspectors/agents, health specialists, firefighters, and others. The survey included twelve (12) questions, covering the following eight areas:

1. Stakeholder job information
2. Organization information
3. Funding related to highway safety initiatives
4. Emphasis Areas to improve highway safety in PR
5. Strategies to reduce fatal and serious injuries in PR
6. Causes of fatal and serious injuries in PR
7. Initiatives taken by organizations
8. Interest in participating in brainstorming sessions to discuss strategies to reduce F+I crashes in PR.

A total of ninety four (94) stakeholders were invited to participate in the survey. Ultimately, seventy (70) stakeholders answered partially or completed it, representing approximately 75% participation.

3. Survey Results

3.1. Stakeholder job information

The first question of the safety survey was to obtain the name or the organization represented by the participant, the area or division, and their job description. The following organizations were represented in the survey: PRDTPW, FHWA, PRHTA, PRTSC, PR Police, AARP, CIAPR, ACAA, ASEM, ASCSO, Carolina Triathlon Club, Medical Emergencies Corp, UPR (Cayey, Medical Sciences, Mayaguez), UMET, USDOT/FMCSA, Instituto de Ciencias Forenses de Puerto Rico, Junta de Gobierno del Servicio 9-1-1, Mayaguez Police, Planning (Junta), FIESTA, Fundacion Agenda Ciudadana, Fundacion MAPFRE, Innovation Marketing Firm, Metropistas, San Germán Municipality, Oficina del Procurador de las Personas con Impedimentos, CST -Trujillo Alto Community Programm, Tiva TV, Triple S Property, Triple-S Health, and ITE. **Table 1** includes Question 1 results by organization name, area or division where the participant works, and their job position description. The two agencies most represented, as expected, were the PRHTA and the PRTSC, with 17 and 15 employees responding respectively.

Table 1. Stakeholders' Organization Information

Organization name	Area/Division	Job Position
PRHTA	Highways Area	Brigade Chief's Supervisor
	Design Area	Area Director
		Design Project Manager
	Traffic Engineering and Operations Area	Area Director
		Engineer
		Engineer
		Traffic and Safety Engineer
		Office Chief
		Engineer
		Director
		Supervisor
	Engineer I	
	Federal Aid Office	Interim Director
	Strategic Planning Area	Director
	Programming and Special Studies	Geographic Systems Office Director
Interim Chief		
Planning Supervisor / Bicyclist and Pedestrians Program Director		
PRTSC	Executive Director Office	Executive Director
		Special Assistant
	Administration	Monitor
		Administration Auxiliary Director
		Monitor 1
	Community Program - Naranjito	Administrative Auxiliary
Planning Area	Planning Director	

Organization name	Area/Division	Job Position
PRTSC	Planning Area	Alcohol Program Director (Drunk Drivers)
		Highway Safety Inspector
		Coordinator
		Traffic Safety Coordinator
		Crash Data Analyst
		Secretary
	Traffic Coordinator I	
	Treasury	Treasury Affairs Director
AARP	Puerto Rico Division	State Director
ACAA	Executive Office	Executive Director
ASEM	Trauma	Director
ASCISO	Communications and Public Relations	Communications and Public Relations Consultant
Carolina Triathlon Club	Cyclist	Team Member
CIAPR	Civil Engineers Institute	President
Medical Emergencies Corp	Administration	Secretary
		Administration Director
PRDTPW	Accident Analysis Office	Executive Officer II
		Special Assistant
	Public Works Directory	Executive Director
Federal Highway Administration (FHWA)	Puerto Rico Division	Highway Engineer - Safety & Operations
UPR - CAYEY	Dean of Students	Interim Director Psychology Services and Counselor Center
UPR - CIENCIAS MEDICAS	Public Health School	Associate Professor

Organization name	Area/Division	Job Position
UMET	Associate Vice-rectory of Quality Life	Professional Counselor
UPR - Mayaguez	Medical Services Department	Executive Director
UPR - Mayagüez	Puerto Rico Transportation Technology Transfer Center	Director, Investigator Highway Safety Consultant
UPR - Mayaguez	Civil Engineering	Auxiliary Professor
USDOT/Federal Motor Carrier Safety Administration	Puerto Rico Division	State Director
Instituto de Ciencias Forenses de Puerto Rico	Budget and Treasury	Administrative Secretary III
Junta de Gobierno del Servicio 9-1-1	Safety Agency	Executive Director
POLICIA DE PUERTO RICO	Traffic Affair Coordinator	Inspector
Mayaguez Municipal Police	Commissioner Office	Interim Commissioner
Planning Board	Presidency	President
FIESTA II	Traffic Safety Commission	Project Coordinator
Fundación Agenda Ciudadana	Puerto Rico	General Manager
FUNDACION MAPFRE	Highway Safety	Formation Coordinator
Innovation Marketing Firm	Communications	Publicist
Metropistas	Traffic and Toll Plazas	Traffic and Toll Manager
San Germán Municipality	Traffic Safety Community Program	Coordinator
Office of the Procurator of People with Disabilities	Puerto Rico	Procurator
Community Program -Trujillo Alto	Traffic Safety Commission	Auxiliary Administrative III
Tiva TV	Production	GM
Triple S Property	Marketing	VP
Triple-S Health	Publicity and Public Relations	Vice-president
ITE	Transportation Engineering	President

3.2. Characteristics of Survey Participants

The information gathered on the characteristics of the population surveyed, Question #2, indicated that most of them have experience related to the reduction of crashes in Puerto Rico. The following table shows the distribution of the sectors represented in the survey results:

Table 2. Distribution of Sector Represented in the Safety Survey

Sector	Qty.	Percent
State Agency	45	64%
Private Sector	7	10%
Non-Profit Org.	6	9%
University	6	9%
Municipality	4	6%
Federal Agency	2	3%
Total	70	100%

3.3. Participants Distribution by "4Es"

The "4Es" of highway safety refers to the four essential professional disciplines needed to participate in highway safety initiatives with the goal of reducing fatalities and serious injuries due to traffic crashes. The "4Es" are comprised of Engineering, Enforcement, Education, and Emergency Medical Response and it is essential that representatives from each of these four elements work closely together in a cooperative and collaborative fashion on an ongoing basis in order to achieve their mutual goal. The results of the Puerto Rico's safety survey included participation from respondents representing all of the "4Es" with the following distribution by percentage:

- Education: 43%
- Engineering: 34%
- Enforcement: 16%
- Emergency Medical Response: 7%

The group representing *Education* included university professors, Traffic Safety Commission personnel, insurance companies, and other non-profit organizations focused on supporting highway safety education programs in both schools and universities. *Engineering* stakeholders included personnel from the PRHTA, DTPW, PRTSC, Board of Professional Engineers and Land Surveyors in PR (CIAPR), Institute of Transportation Engineers (ITE), etc. The stakeholders in the *Enforcement* area include police officers, public prosecutors, Public Service Commission, and other non-profit organizations focused on driving initiatives to change public policies related to highway safety. *Emergency Medical Response* personnel included emergency management professionals, 9-1-1 personnel, Department of Health, and Firefighters Corp, and other non-government entities.

3.4. Funds Assigned to Highway Safety Initiatives

The survey included data on the estimated amount of funding that is being invested by different organizations to reduce the number of fatalities and serious injuries related to crashes on Puerto Rico's highway system (Question 4). The following table summarizes the information obtained from the PR SHSP survey related to approximate budgets allocated through the Engineering, Education, Emergency Medical Response, and Enforcement agencies in order to reduce fatal crashes on the Island.

Table 3. Estimated Amount of Funds Invested in PR classified by "4Es"

"4Es" Classification	None	Less than \$100,000	\$101,000 to \$2,000,000	\$2,000,001 to \$10,000,000	More than \$10,000,000	Unknown
Education	5	4	5	4	3	9
Engineering	3	0	2	1	9	9
Enforcement	5	0	1	0	0	5
EMS	3	0	1	0	0	1
Total	16	4	9	5	12	24
Percent	23%	6%	13%	7%	17%	34%

The survey results indicate that 34% of the responders did not know how much funding from their organization has been focused on highway safety initiatives. Another 23% believed that no funds are being assigned for highway safety programs by their organizations. Only 43% of those responding indicated that their organization have funding for initiatives associated with reducing the frequency of fatal and serious injury crashes on the highways of Puerto Rico. From the answers given, approximately 17% indicated that their agency’s annual allocation is greater than \$10 millions, 13% from \$101,000 to \$2,000,000, 7% from \$2,000,001 to \$10,000,000, and 6% indicated their organization funding is less than \$100,000. It is assumed that funding level reflects the amount of money allocated per year.

3.5. Sources of Funding Allocated to Highway Safety Initiatives

The organizations that are allocating funds designated for highway safety improvements in Puerto Rico were asked, in Question 5, to indicate the sources of the funds that they are using. **Table 4** summarizes the results related to Question 5.

Table 4. Information related to funding by different organizations

Organization Type	Program Title/Description (Organization)	Amount (\$)
Municipal	Trujillo Alto Municipality (TSC)	\$80,000
	San German (TSC)	\$60,000
State	State Planning and Research (SPR) Program (UPR-M)	\$410,000
	Special Funds (DTOP)	\$2,000,000
	Compra de Patrullas para la Policia de PR (9-1-1)	> \$1,000,000
	State Funds (PRHTA)	\$5 to \$7 million
	Other income/ACAA -for administrative expenses (TSC)	\$1,075,000
	Funds gathered from insurance costs (ACAA)	\$2,000,000
	PR Public Service Commission (USDOT/FMCSA)	\$387,400 (20% Match and MOE)
	Medical Services Dept. RUM-UPR (UPR-M)	\$10,000
Federal	Federal Program MP30, MP40 y MP50 (PRHTA)	\$35,000,000
	Technology Partnership Programs (TPP) 23USC 504(b) (UPR-M)	\$150,000
	NHTSA: 402, 405B-F, 154/164HE (TSC)	\$19,000,000
	Comisión para la Seguridad en el Transito (Trujillo Alto)	\$41,000
	ITS Project (PRHTA)	\$2,000,000
	Funds 405c (TSC)	\$500,000
	Highway Improvements, Education y Law Enforcement (TSC)	\$7,000,000
	NHTSA- several programs (TSC)	\$23,000,000
	Education y Law Enforcement (TSC)	\$6,712,890
	Traffic Safety Commission	\$8,500,000
	Traffic Safety Instructional Program (UMET)	\$31,335
	Motor Carrier Safety Assistance Program (MCSAP) (USDOT/FMCSA)	\$1.2M (80% federal allocation)
	FIESTA Project (UPR-M, TSC)	\$65,000
Other	Metropistas	More than \$10,000,000
	FIESTA II Project	\$110,172
	CRUSADA Committee (UPR-M)	\$1,000
	Highway Safety Educational Campaigns (ASCSCO)	\$200,000

The results shown above can't be considered to be separate funds, as it is most likely the case that various survey participants mentioned different parts of the same funding source. Those responses that were clearly redundant with regard to the program titles or descriptions were eliminated.

3.6. Level of Effort on Highway Safety

Question 6 of the survey asked that the participants estimate the level of effort, in terms of time and funding, made by their respective organizations in addressing highway safety issues. Participants were asked to estimate the level of effort, known or perceived by them, within the following ranges:

- None
- Less than 25%
- Between 26% and 50%
- Between 51% and 75%
- More than 75%
- Unknown

The following table summarizes the results of the responses given for Question 6 (Level of Effort on Highway Safety), distributed within the "4E" classifications. As shown in **Table 5**, 38.6% of the participants believe that their organization invests more than 75% of their efforts toward highway safety initiatives.

Table 5. Level of Effort on Highway Safety distributed by "4Es"

"4Es"	Level of Effort (Qty./% of Total)											
	None		Less than 25%		26% - 50%		51% - 75%		More than 75%		Unknown	
Edu.	2	2.9%	2	2.9%	4	5.7%	3	4.3%	16	22.9%	3	4.3%
Eng.	-	0%	6	8.6%	4	5.7%	3	4.3%	7	10.0%	4	5.7%
Enf.	3	4.3%	4	5.7%	-	0.0%	-	0.0%	2	2.9%	2	2.9%
EMS	3	4.3%	-	0.0%	-	0.0%	-	0.0%	2	2.9%	-	0.0%
Total	8	11.4%	12	17.1%	8	11.4%	6	8.6%	27	38.6%	9	12.9%

Table 6 results indicate that 53.3% of the Education area representatives know that their organization dedicates more than 75% of their time and funding to highway safety initiatives, followed by 40% of EMS representatives, and 29.2% and 18.2% for the Engineering and Enforcement areas respectively. It is noted that 60% of the EMS responders indicated that no efforts are being made by their organizations in this regard.

Table 6. Level of Effort Normalized by Participants' Population by each "E"

"4Es"	Level of Effort (Qty/%Total by "E")													
	None		Less than 25%		26% - 50%		51% - 75%		More than 75%		Unknown		Total	
Edu.	2	6.7%	2	6.7%	4	13.3%	3	10.0%	16	53.3%	3	10.0%	30	100%
Eng.	-	0	6	25.0%	4	16.7%	3	12.5%	7	29.2%	4	16.7%	24	100%
Enf.	3	27.3%	4	36.4%	-	0	-	0	2	18.2%	2	18.2%	11	100%
EMS	3	60%	-	0	-	0	-	0	2	40.0%	-	10.0%	5	100%

3.7. Emphasis Areas

One of the most relevant questions asked in the survey was focused on obtaining stakeholders' opinions as to which emphasis areas should be chosen for the purpose of reducing F+I crashes in PR. Question Number 7, specifically asked:

"Based on your knowledge of the causes for fatal and serious injury crashes in Puerto Rico, select from the list below the top 5 Emphasis Areas Puerto Rico should be focusing on."

The survey respondents had the opportunity to select the emphasis areas from a list that was divided into four classifications: Road User, Behavior, Engineering, and Other. Table 7 provides this information in a tabular format. Note that several stakeholders selected more than five emphasis areas.

Table 7. Emphasis Areas Listed in the Survey

Road User	Behavior	Engineering	Other
<ul style="list-style-type: none"> • Young Drivers • Older Drivers • Pedestrians • Bicyclist • Motorcyclists • Heavy Trucks 	<ul style="list-style-type: none"> • Aggressive Driving • Impaired Driving • Fatigue • Seat Belt and Car Seat • Distracted Driving 	<ul style="list-style-type: none"> • Minimizing consequences of leaving the road • Intersections • Work Zones • Head-on and Across-median Crashes • Roadway Signage 	<ul style="list-style-type: none"> • Enhancing emergency medical capabilities • Enforcement • Gathering, analysis, and sharing of crash information • If other, please specify

Each of the emphasis areas selected by the stakeholders received one vote and all votes were added and organized to determine the ranking of the emphasis areas. Table 8 provides the results. A detailed report on the emphasis areas selected for the PR SHSP according to the crash analysis and survey results is included in the 2014 PR SHSP.

Table 8. Ranking of the Emphasis Areas based on the Safety Surveys

Rank	Emphasis Areas (Stakeholders)	Percent
1	Impaired Driving (alcohol and/or drugs)	11.4%
2	Distracted Drivers (calls, texting, food, etc.)	10.6%
3	Aggressive Driving	9.1%
4	Pedestrians	8.6%
5	Law Enforcement	7.7%
6	Young Drivers	7.4%
7	Roadway Signage	7.2%
8	Bicyclists	6.9%
9	Gathering, Analysis and Sharing of Crash information	4.9%
10	Motorcyclists	3.7%
11	Minimizing Consequences of Leaving the Road	3.2%
12	Work Zones	3.2%
13	Emergency Medical Response	3.0%
14	Intersections	2.7%
15	Heavy Trucks	2.7%
16	Older Drivers	2.2%

Rank	Emphasis Areas (Stakeholders)	Percent
17	Seat Belt and Car Seat	2.2%
18	Drivers Alertness (fatigue, drowsy, etc.)	2.0%
19	Head-on and Across-median Crashes	0.7%
20	Others	0.5%

3.8. Strategies

One of the most relevant aspects of the information obtained from the safety survey is the list of potential emphasis area strategies recommended by the participants. To acquire that information, Question 8 was stated as follows:

"For the five (5) Emphasis Areas previously identified to improve highway safety in Puerto Rico. What suggestions/strategies do you recommend to reduce Fatal & Serious Injuries related to these Emphasis Areas?"

One of the limitations of this question was the need to define "strategies", because several recommendations could be more accurately categorized as tactics and projects rather than strategies. However, for this report, all of the recommendations associated with Question 8 have been classified as "strategies" (see **Table 9**) and subdivided within the various "4E" classifications. The list will be used, together with the Interim SHSP and HSP strategies, to prepare a "bucket list" of strategies for the 2014 PR SHSP Safety Summit.

Table 9. Strategies Presented on Stakeholders Surveys distributed by 4Es

Engineering	Enforcement	Education	Emergency Medical Response
1. Roadside safety improvements <ul style="list-style-type: none"> a. barriers b. rumble strips c. impact attenuators d. end treatments e. others *NCHRP 350, MASH, RDG	1. Improve crash data gathering and management <ul style="list-style-type: none"> a. implement the revised and electronic version of PPR-93 	1. Educational campaign for sharing the road <ul style="list-style-type: none"> a. rights b. responsibilities *Complete Streets	1. Assign more funds to municipalities
2. Continuous highway maintenance <ul style="list-style-type: none"> a. pavement markings b. signs * MUTCD	2. Integrate Crash data into DAVID+ system <ul style="list-style-type: none"> a. evaluate drivers' driving history <ul style="list-style-type: none"> i. renovation ii. insurance companies 	2. Provide continuous education to design and construction engineers related to highway safety, including driver behavior.	2. Provide the best technology in medical equipment and communication.
3. Perform reconstruction projects for urban and rural areas *ADA	3. Approve stronger laws to punish impaired drivers.	3. Educational campaign of aggressive driving effects.	3. Increase the assigned budget.
4. PRHTA to be delegated the authority and resources to manage the crash database and crash data analysis.	4. Provide technology to traffic agents and/or patrols <ul style="list-style-type: none"> a. integrated with DAVID+ and other databases *Increase crime scenes and crash investigation tools.	4. Improve communication strategies <ul style="list-style-type: none"> a. include crash trends/statistics b. driving behavior consequences 	4. Decrease response time to get to the crash scene.

Engineering	Enforcement	Education	Emergency Medical Response
5. Recovery of the Clear Zone <ul style="list-style-type: none"> a. Work with utility companies to develop a hazard elimination program for evaluating and relocating hazardous utility installations. b. Implementing Roadside Design Guide 	5. Approve stronger laws to punish aggressive drivers.	5. Use crash simulator or other creative tools for educational campaigns on drunk drivers, speeding and other aggressive behavior.	5. Amend laws <ul style="list-style-type: none"> a. authorize remote medical evaluation and diagnostic (cameras w/Wi-Fi)
6. Improve pedestrian facilities, including blocking access to dangerous movements/crossing and illumination in hot spots .	6. Reinforce highway patrols in hot spots of pedestrian crashes and fatalities.	6. Perform educational campaigns on special events and other activities.	
7. Improve and maintain an efficient and coordinated crash database to identify hot spots/corridors and develop highway safety projects.	7. Law enforcement campaign for "Rescue the Clear Zone".	7. Develop educational programs for future drivers (12 to 15 years old) to enhance safety awareness <ul style="list-style-type: none"> a. bad consequences of drivers behaviors b. crash trends c. law requirements 	
8. Consider vulnerable users (pedestrian, bicyclists, motorcyclists) in highway designs.	8. Increase traffic fees for speeding and drunk driving	8. Train public and private school teachers on highway safety and crash prevention. <ul style="list-style-type: none"> a. provide tools b. provide materials c. coordination w/NPO *FIESTA, Ford Foundation, El Nuevo Día Educador, MAPFRE, MADD/FLAS.	

Engineering	Enforcement	Education	Emergency Medical Response
9. Implement automatic speed monitoring systems.	9. Police trainings	9. Development/ Amendment of Safety Pledge.	
10. Create a crash data sharing system that brings access to local agencies for crash analysis in order to develop communication and crash mitigation strategies.	10. Double up on enforcement campaigns for texting while driving.	10. Develop educational campaign for motorists on signage, navigating roundabouts, DDI, etc.	
11. Improve pavement condition.	11. Parking enforcement campaigns in the urban areas to ensure sidewalks are reserved for pedestrians.	11. Educational campaigns on traffic safety for vulnerable users	
12. Develop bicycle lanes and corridors.	12. Increase the budget of Puerto Rico Police.	12. Program year long educational campaigns on the dangers of distracted driving	
13. Develop a project to correctly identify each road on the PR highway system (rural and urban roads).	13. Emphasis on distracted drivers using cell phones for texting while driving.	13. Educational campaign for bicyclist including rights and responsibilities.	
14. Update Traffic Data.	14. "Complete Streets" Law (Law 201, 2010)	14. Provide traffic police officers a annual training on crash trends.	

Engineering	Enforcement	Education	Emergency Medical Response
15. Incorporate pedestrian safety improvements into highway projects near residential and recreational areas.	15. Bring more resources and funds to the Police Traffic Division-Highway Patrol a. personnel b. equipment c. vehicles d. technology	15. Educational campaigns for heavy vehicles' drivers.	
16. Perform routine Road Safety Audits on hot spot locations/corridors.	16. Create a Traffic Superintendent a. respond to the Governor b. Emphasis on highway safety c. Enforcement of Law 22	16. Change the focus of educational campaigns to incorporate traditional road users' behavior a. non-stop/yield at STOP/YIELD signs b. parking at intersections c. crossing out of marked pedestrian crossing d. walking in the same direction of traffic e. riding bicycles without retro-reflective clothing at night f. others.	
17. Designate recurring funding for highway maintenance	17. More training for police officers and public prosecutors a. manage drunk drivers b. crash investigations c. technology d. others	17. Educational campaigns for events with high volume of motorcycles *Coamo Marathon *Oktoberfest Casa Bavaria, Morovis	

Engineering	Enforcement	Education	Emergency Medical Response
18. Improve Work Zone safety designs and implementation. a. Traffic monitoring and Traveler Information	18. Control all bad driving behaviors a. speeding b. trespassing	18. Use media campaigns and social networks for highway safety campaigns.	
19. Develop the necessary tools and process for crash data gathering, management and sharing for performing reliable crash analyses.	19. Enforce law 22 in relation to driver license requirements after been convicted of bad driving behavior.	19. Provide the latest crash investigation training for the PR Police.	

The previous table includes a filtered list of the strategies presented by the stakeholders. The filter involved removing repeated strategies and grouping related strategies only. To perform this process, some strategies had to be rephrased.

3.9. Contributing Causes

Participants had the opportunity to rank the most likely contributing causes of fatal and serious injuries crashes, or area to improve highway safety, in Question 9, according to their point of view, from 1 to 6 where 1 refers to the most important or relevant cause. Table 10 summarizes the results. For the analysis of the survey results on contributing factors, a combination of the three options selected was used to achieve a better understanding of the priorities selected. The final ranking of the possible causes of F+I crashes selected by stakeholders is:

1. Driver behavior
2. Enforcement
3. Pedestrian/Bicyclist
4. Highway/Intersection Safety Deficiencies
5. Crash Data
6. Emergency Response

Table 10. Summary of Contributing Factor for Fatal and F+I crashes selected by Stakeholders

Contributing Factor	Ranking					
	1	2	3	4	5	6
Driver Behavior	41	8	10	0	1	1
Highway/Intersection Safety Deficiencies	4	6	19	23	6	3
Enforcement	9	27	8	14	3	0
Emergency Medical Response	0	1	2	8	28	22
Crash Data	2	2	5	4	19	29
Pedestrians/Bicyclist	5	17	17	12	4	6

Table 11. Ranking of the First Three Contributing Factors for F+I crashes based on Stakeholders' Opinion

Contributing Factor	Final Ranking	Σ (rank 1-3)	Percent (%)
Driver Behavior	1	59	32
Enforcement	2	44	24
Pedestrians/Bicyclist	3	39	21
Highway/Intersection Safety Deficiencies	4	29	16
Crash Data	5	9	5
Emergency Medical Response	6	3	2

3.10. Actions Taken by Stakeholders' Organizations

Another essential aspect collected by the safety stakeholders survey is the list of actions or projects being implemented or previously performed by stakeholders' organizations. Question 10 had that objective, expressed in this way:

"What initiatives your organization is currently carrying out to improve highway safety? Explain."

The list of the actions taken by organizations and classifications by the "4Es" is shown on Table 12.

Table 12. Actions Taken by Organizations classified by "4Es"

Organization	Actions Taken	4E's Classification			
		Eng.	Enf.	Edu.	EMS
Highway and Transportation Authority	<ol style="list-style-type: none"> 1. Strategic Highway Safety Plan 2. Support the process of integrating data from DTPW database into CARE database. 3. Roadside safety improvements projects <ol style="list-style-type: none"> a. Completed: \$40M/3yr investment b. In process: \$40M (design, construction) c. Installing traffic signs, pavement markings, barriers, impact attenuators, rumble strips, d. Geometric improvements at intersections 4. ITS (Intelligent Transportation Systems) Projects <ol style="list-style-type: none"> a. Installation of traffic monitoring systems (cameras, detectors, and communication systems) b. Improve traffic signals 5. Work Zone Awareness Week 6. Crash Analysis 7. Assist the AAO in the data management process 8. Coordination of highway safety events 9. Work zone trainings according to federal and local regulations 10. Pedestrian and Bicyclist Plan (LTAP 2040 and Regional Plans) 11. Complete Streets Guidelines (Law 201-2010) 12. Legislation revision among traffic laws. 13. Continuous process of civilian education. 	X	X	X	X

Organization	Actions Taken	4E's Classification			
		Eng.	Enf.	Edu.	EMS
Traffic Safety Commission	<ol style="list-style-type: none"> 1. Educational Campaigns <ol style="list-style-type: none"> a. Car seats, seatbelt, pedestrians, bicyclists, motorcyclist, alcohol, distracted drivers 2. Coordination with PR Police <ol style="list-style-type: none"> a. Law enforcement campaigns b. Provide funds for extra hours 3. Buy tools and equipments for crash data gathering and processing systems 4. Proposal 2013-2014, Backlog 2 Project (Updated Input Traffic Crash Data)- Recruiting human resources in the AAO for 2013-2012-2011-2010 crash data entry in the PRDTPW. 5. Proposal 2013-2014, CARE 2 Project (Implementation of CARE System to PR Crash Data) 6. Working with the PR SHSP <ol style="list-style-type: none"> a. MOU signing 7. Coordination with DTPW to use Hazard Elimination funds 8. Coordination between agencies to gather a unique database for the Highway Safety Plan. 9. Coordinated Police blockades to enforce Law 22 (PR Traffic Law). 10. Proposal submitted to NHTSA to buy reflective vests for the elderly population in different centers in the Island. Provide them education on the importance of using the vests while walking. 11. Perform seminars, meetings, and work groups with other law enforcing agencies of the Commonwealth of PR. 	X	X	X	
San Germán Municipality	<ol style="list-style-type: none"> 1. Citizen's orientations using media, talks, and others. 			X	

Organization	Actions Taken	4E's Classification			
		Eng.	Enf.	Edu.	EMS
Planning Board	<ol style="list-style-type: none"> Working with the "Reglamento Conjunto" (Grouped Rule) in order to improve highway safety in urban areas Interested to work with PRHTA to modify highway design criteria in order to adopt new urban realities and pedestrians 	X			
Tiva TV	<ol style="list-style-type: none"> Educational TV programs with emphasis on the use of alcohol and drugs while driving TV programs focused on improving safety by taking good care of vehicles (maintenance) 			X	
Federal Highway Administration (FHWA)	<ol style="list-style-type: none"> Provides leadership and guidance to all State DOT's and other partners in the development and implementation of national focus and strategies for reducing highway related fatalities and injuries through the implementation of the Highway Safety Improvement Program. Federal funding: much of the assistance comes in the form of research, design guidelines, training, and overall technical support through each of the HQ, Field Offices, and Resource Centers around the U.S. 	X		X	
Trujillo Alto Municipality (TSC-Community Program)	<ol style="list-style-type: none"> Educational campaigns Law enforcement Training personnel Alliance to work with drunk drivers Orientations to commercial owners to avoid the expedition of alcohol to young people Children car seat inspection center <ol style="list-style-type: none"> Certified inspector 		X	X	
AARP	<ol style="list-style-type: none"> Education on Complete Streets. 			X	
Puerto Rico Police	<ol style="list-style-type: none"> Improving the Training Section Working with the implementation process of PPR-93 in digital format Requesting vehicles 		X	X	
Carolina Triathlon Club	<ol style="list-style-type: none"> Educational campaign on bicyclist 's responsibilities and good practices <ol style="list-style-type: none"> Facebook Orientations Publication of Bicyclist Manual 			X	

Organization	Actions Taken	4E's Classification			
		Eng.	Enf.	Edu.	EMS
Metropistas	<ol style="list-style-type: none"> Highway safety improvements Incident management technology 	X			
9-1-1 Service of the Government Board	<ol style="list-style-type: none"> Participation in the TRCC. 				X
ITE	<ol style="list-style-type: none"> Educate project developers on Highway Safety guidelines, codes, and latest regulations Participate in ITE continuous education program 	X		X	
Board of Professional Engineers and Land Surveyors (CIAPR)	<ol style="list-style-type: none"> Promoting the "Década de Acción para la Seguridad Vial 2011-2020" 			X	
UPR- Medical Sciences Campus	<ol style="list-style-type: none"> Establishing CARE tool for crash analysis 	X			
FIESTA II (UPR-Rio Piedras)	<ol style="list-style-type: none"> Educate using peer group system to discourage drinking and driving Organize dynamic and creative activities in UPR-Rio Piedras and nearby communities 			X	
FIESTA VIII (UPR-Cayey)	<ol style="list-style-type: none"> Educate using peer groups of college students to discourage drinking and driving 			X	
Automobile Accident Compensation Administration (ACAA)	<ol style="list-style-type: none"> Educational campaigns for crash prevention and highway safety <ol style="list-style-type: none"> Public and private schools (elementary thru high school) Trainings to drivers in the drivers' licenses revocation process (at CESCO offices) Young people from 16 to 21 years old in bars, sports events, concerts, festivals, and others 			X	
Metropolitan University (UMET)	<ol style="list-style-type: none"> Perform activities to discourage drinking and driving 			X	
Justice Department	<ol style="list-style-type: none"> Train prosecutors Improvement of the data gathering process and statistics 	X	X	X	

Organization	Actions Taken	4E's Classification			
		Eng.	Enf.	Edu.	EMS
UPR - Mayagüez (Transportation T. T. Center, Civil Eng. Department)	<ol style="list-style-type: none"> 1. "Década de Acción para la Seguridad Vial 2011-2020" <ol style="list-style-type: none"> a. Create alliances with non-profit organizations to work together on educational campaigns for highway safety 2. Dictate professional education <ol style="list-style-type: none"> a. Road Safety Audit (RSA) b. MUTCD-Part 6-Temporary Traffic Control (TTC) c. "AASHTO Roadside Design Guide", "Highway Safety Manual" (HSM) d. "Road Safety 365" in PR and Virgin Islands 3. Dictate graduate courses on highway safety 4. Include highway safety as part of undergraduate courses for Transportation Engineering (Highway Engineering, Curves Design) 5. Publish research papers on highway safety (from thesis and projects) <ol style="list-style-type: none"> a. TRB, LACCEI, IRF, ITE, Dimensión CIAPR, Cruces, Congreso Iberoamericano de Seguridad Vial, others. 6. Publish articles in El Puente (Spanish and English) for 27 years 7. Participate in TRB Transportation Safety Culture committees 8. Use the experience of Dr. Benjamin Colucci Rios as legal crash analysis expert for the past 30 yrs 9. Develop the Safety Pledge (published on the web). 	X		X	

Organization	Actions Taken	4E's Classification			
		Eng.	Enf.	Edu.	EMS
USDOT/Federal Motor Carrier Safety Administration and Public Service Commission	<ol style="list-style-type: none"> 1. Hazardous Materials Transportation Safety Program (CSP) 2. Educate and enforce Federal rules adopted by PR, Federal Motor Carrier Safety Regulations and Federal Hazardous Materials Regulations. 3. "Traffic enforcement" for all commercial vehicles 4. Investigate charges/reports 5. Investigate hazardous materials incidents and crashes 6. Visit/inspect transporter facilities 7. Training on laws and rules related to commercial and heavy vehicles and highway safety 8. Process all the interventions and investigations electronically and simultaneously send them to the national database called "Safetynet" 		X	X	
Department of Transportation and Public Works	<ol style="list-style-type: none"> 1. Gather Federal funds for highway safety improvement projects 2. Orientations 3. Kilometer markers, highway improvements 	X		X	
Asociación de Suscripción Conjunta del Seguro de Responsabilidad Obligatorio	<ol style="list-style-type: none"> 1. Develop educational campaigns for special occasions (Summer, Christmas) using various communications media outlets. 			X	

4. General Conclusions

The safety survey had the objective of collecting stakeholders' feedback to the PR situation related to highway safety. The results were used for the emphasis areas selection process, together with the crash analysis and the Interim SHSP. In addition, the safety survey was the first participation platform for the stakeholders, inviting them to have active participation in the PR SHSP development process. Representatives from the "4Es" of highway safety and several organization types provide the necessary information to validate the crash analysis performed and the emphasis areas selection. Another benefits from the safety surveys included the list of strategies to improve highway safety in PR, the estimated amount of money being invested in the reduction of fatalities due traffic crashes in the Island, and the list of stakeholders interested in collaborating with the PR SHSP.

Appendix A: Survey



Seguridad Vial en Puerto Rico

Page 1 - **Sobre Usted** - *About You*

* 1. **Sobre usted**
(Tell us about you)

Nombre de la Agencia/Organización
(Name of your organization) _____

Área/División
(Area/Division) _____

Puesto
(Job Position) _____

* 2. **Seleccione el tipo de organización que mejor describa la entidad para la cual labora.**
(Select the organization type best suited for your organization)

- Organización sin Fines de Lucro *(Non-Profit Org)*
 - Agencia Estatal *(State Agency)*
 - Agencia Federal *(Federal Agency)*
 - Compañía Privada *(Private Sector)*
 - Legislatura Estatal *(State Legislature)*
 - Universidad *(Academia)*
 - Municipio *(Municipality)*
 - Otro: Por favor, especifique *(If other, please specify)*
- _____

* 3. **Seleccione el campo que mejor describe su puesto de trabajo.**
(Select the main services/role that best describe your organization.)

- Aplicación/Cumplimiento de Leyes *(Enforcement)*
 - Emergencias Médicas *(Emergency Medical Services)*
 - Ingeniería *(Engineering)*
 - Educación *(Educational)*
 - Otro: Por favor, especifique *(If other, please specify)*
- _____

- * 4. **¿Cuántos fondos su organización presupuesta anualmente para iniciativas de mejoras en la seguridad vial?**
(Amount of funding your organization allocates annually for highway safety related initiatives?)

- Ninguno (None)
- Menos de \$100,000 (Less than \$100,000)
- \$100,001 - \$2,000,000
- \$2,000,001 - \$10,000,000
- Más de \$10,000,000 (More than \$10,000,000)
- Desconozco (Unknown)

5. **Si seleccionó Ninguno ó Desconozco en la pregunta anterior, continúe con la próxima pregunta.**
De lo contrario, provea la fuente de los fondos presupuestados para iniciativas de seguridad vial.
(If you selected None or Unknown in previous question, skip this question and move to the next question. Otherwise, specify the source of funding allocated for safety related initiatives. Specify all applicable.)

	Programa / Descripción (Program Title / Description)	Cantidad (Amount) (\$)
Municipal (Municipal)	-	-
Estatad (State)	-	-
Federal (Federal)	-	-
Otro (Other)	-	-

- * 6. **Nivel de esfuerzo/recurso que, basado en los roles y responsabilidades de su organización, le dedica a la implementación de estrategias para la reducción de choques de tránsito.**
(Level of effort/energy that your organization pledges to Highway Safety based on your organization's roles and responsibilities.)

- Ninguno (None)
- Menor de 25% (Less than 25%)
- 26% - 50%
- 51% - 75%
- Mayor de 75% (More than 75%)
- Desconozco(Unknown)

Page 3 - Áreas de Énfasis - *Emphasis Areas*

- * 7. **Basado en su conocimiento de las causas de choques de tránsito fatales o con heridos en Puerto Rico, seleccione de la lista a continuación las 5 Áreas de Énfasis que Usted entiende deben ser la prioridad para Puerto Rico. Based on your knowledge of the causes for fatal and serious injury crashes in Puerto Rico, select from the list below the top 5 Emphasis Areas Puerto Rico should be focusing on.**

Usuarios (Users):

- Conductores Jóvenes (Young Drivers)
- Conductores de la Tercera Edad (Older Drivers)
- Peatones (Pedestrians)
- Ciclistas (Bicyclists)
- Motociclistas (Motorcyclists)
- Vehículos Pesados "Camiones" (Heavy Trucks)

Comportamiento (Behaviour):

- Conducir Agresivamente (Aggressive Driving)
- Conducir Incapacitado por Alcohol y/o Drogas (Impaired Driving [Alcohol and/or Drugs])
- Conductor afectado por cansancio, fatiga o sueño (Drivers Alert [fatigue, drowsy])
- Uso del Cinturón de Seguridad y Asiento Protector para Niños (Seat Belt and Car Seat)
- Conductor Distraído [teléfono, textear, comida, etc.] (Distracted Drivers [calls, texting, food, etc.])

Ingeniería (Engineering):

- Minimizar Consecuencias de Salirse de la Carretera (Minimizing Consequences of Leaving the Road)
- Intersecciones (Intersections)
- Zonas de Construcción en Carreteras (Work Zones)
- Choques de frente en carreteras no divididas (Head-On and Across-Median Crashes)
- Señalización en Carreteras (rotulación, marcado, semáforos y delineadores (Roadway Signage)

Otros (Other):

- Respuesta de Emergencias Médicas [i.e., Ambulancias, 911, etc.]
(Enhancing Emergency Medical Capabilities [i.e., ambulances, 911, etc.])
- Aplicación/Cumplimiento de Leyes
(Enforcement)
- Recopilación, Análisis e Intercambio de Datos de choques de tránsito, conductores, etc.
(Gathering, Analysis and Sharing of Crash information)
- Otro: Por favor, especifique
(If other, please specify)

-
- * 8. **Para las 5 Áreas de Énfasis previamente identificadas, provea que sugerencias/estrategias recomienda para reducir la incidencia de choques de tránsito heridos y muertes en nuestras vías de rodaje. For the 5 Emphasis Areas previously identified to improve highway safety in Puerto Rico. What suggestions or strategies do you recommend to reduce Fatal & Serious Injuries related to this Emphasis Areas?**

Page 4 - *Iniciativas - Initiatives*

- * 9. **Organice en orden de importancia los factores que contribuyen en los choques de tránsito con heridos y muertes en Puerto Rico (1 al 6, donde 1 se refiere a la más importante)**
***Please, rank the following CAUSES of fatal and serious accident in Puerto Rico.
(1 to 6, where 1 refers to most important or relevant)***

Rank the following items using numbers from 1 to 6.

- Comportamiento del Conductor(Driver Behaviour) _____
- Deficiencias de Seguridad en Carreteras/Intersecciones(Highway/Intersection Safety Deficiencies) _____
- Aplicación/Cumplimiento de Leyes(Enforcement) _____
- Respuesta de Emergencias Médicas(Emergency Medical Response) _____
- Datos de Choques de Tránsito(Crash Data) _____
- Usuarios Vulnerables [Peatones, Ciclistas](At-Risk Users [Pedestrians, Bicyclists]) _____

- * 10. **¿Qué iniciativas se encuentra ejecutando su organización para mejorar la seguridad vial? Explique brevemente.**
(What initiatives your organization is currently carrying out to improve highway safety? Explain)

Page 5 - Apoyo Futuro - Future Support

- * 11. **Desea ser parte de equipos de trabajo para discutir estrategias y/o iniciativas para reducir choques de tránsito en Puerto Rico?**
(Are you interested in participating in brainstorming sessions to discuss strategies to reduce fatal and serious accidents in Puerto Rico?)

Yes No

12. **Si está interesado, agradecemos nos provea su información de contacto a continuación:**
(If interested, please include your contact information below:)

Nombre(Name)

Teléfono(Phone)

Correo Electrónico(Email)
