October
2023

Puerto Rico Vulnerable Road User Safety Assessment

PUERTO RICO HIGHWAYS & TRANSPORTATION AUTHORITY

METRIC ENGINEERING of Puerto Rico, PSC

SHSP

STRATEGIC HIGHWAY SAFETY PLAN

PUERTO RICO
HIGHWAYS & TRANSPORTATION AUTHORITY

Executive Director Message

Dear Roadway User:

Pedestrian, bicyclist, and other non-motorist, which are Vulnerable Road Users (VRU), account for a growing share of all United States traffic fatalities. Unfortunately for Puerto Rico there's been a historical problem where 1 out of 3 fatalities due to traffic crashes have been pedestrians and 3.5% have been bicyclists. Halting the growing number of non-motorists killed or injured by motor vehicles requires a collaborative and comprehensive, data-oriented approach to road user safety. Therefore, as part of the Highway Safety Improvement Program, Puerto Rico completed a VRU Safety Assessment.

The VRU Safety Assessment required a data-driven process considering fatal and serious injury crash data, infrastructure data, and social and demographic data. This process identified high-risk features such as roadway functional classification (principal arterial and minor arterials), speed (35 mph or higher) and multilane road, as well as high-risk municipalities for VRUs. The assessment included consultation through meetings with local governments that represent these high-risk areas, metropolitan planning organizations (MPOs), and safety stakeholder's partners representing all E's (Education, Engineering, Enforcement and Emergency Medical Services) of highway safety to discuss the data findings and develop a program of projects or strategies with the purpose of reducing safety risks to VRUs.

The outcomes of the assessment suggest that VRU data-driven safety analyses needs to be incorporated in Puerto Rico transportation investment decisions, from planning and programming, environmental analysis, and project design, to construction, maintenance, and operations. VRU safety must be included in technical workshops

for decision makers, government officials, enforcement, and law prosecutors as well as technical planning and engineering staff. In addition, VRU safety educational campaigns shall be amplified and strengthened throughout public and private entities, as well as non-profit organizations. These results also would be incorporated into relevant SHSP emphasis areas, strategies, and actions, as appropriate, and implemented through State planning procedures.

Puerto Rico achieved a historic reduction of less than 300 traffic crash fatalities in 2016 (279), 2017 (290), 2019 (289), 2020 (242), and 2022 (271). This is why we believe in data-driven safety plans and the VULNERABLE ROAD USERS are our 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.

In the interest of safety, I implore you to consider the well-being of all individuals, whether you're walking, cycling, motorcycling, driving a vehicle, riding as a passenger, or even engaging in equestrian activities. Responsibility falls upon us all. In the realm of highway safety, every detail holds significance. Let us maintain our focus on the road ahead, setting aside distractions such as texting and social media. Instead, let's focus all our senses on the road. It is our commitment to prevent any family from experiencing the heartbreak of losing a loved one due to a tragic traffic crash. Let us cherish and safeguard the gift of life!

Sincerely,

Dr. Edwin E. González Montalvo, PE
Executive Director
Puerto Rico Highways and Transportation Authority

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Executive Summary

Pedestrian, bicyclist, and other non-motorist road users account for a growing share of all United States traffic fatalities. Unfortunately for Puerto Rico there's been a historical problem with fatal crashes involving vulnerable road users, specifically pedestrians. As established in the 2019 to 2023 Strategic Highway Safety Plan (SHSP), in Puerto Rico 3 out of 10 fatalities due to traffic crashes have been pedestrians, representing approximately 31% per year. Halting the growing number of non-motorists killed or injured by motor vehicles requires a collaborative and comprehensive, data-oriented approach to road user safety. Therefore, as part of the Highway Safety Improvement Program all states are required to complete a Vulnerable Road User (VRU) Safety Assessment by November 15, 2023 (23 U.S.C. 148(l)). (23 U.S.C. 148(a)(16)). A vulnerable road user is defined as a non-motorist with a fatality analysis reporting system (FARS) person attribute code for pedestrian, bicyclist, other cyclist, and person on personal conveyance or an injured person that is, or is equivalent to, a pedestrian or pedalcyclist as defined in the ANSI D16.1-2007. (See 23 U.S.C. 148(a)(15) and 23 CFR 490.205). A vulnerable road user may include people walking, biking, or rolling. Please note that a vulnerable road user includes a highway worker on foot in a work zone, given they are considered a pedestrian but does not include a motorcyclist.

The Puerto Rico Highway and Transportation Authority (PRHTA) developed a Vulnerable Road User Safety Assessment as described in 23 U.S.C. 148(I). VRU Safety Assessment required a data-driven process considering fatal and serious injury crash data, infrastructure data and social and demographic data to identify high-risk roadway features as well as high-risk areas for VRUs. The assessment included consultation through meetings with local governments that represent these high-risk areas, metropolitan planning organizations (MPOs), and safety stakeholder's partners representing all E's (Education, Engineering, Enforcement and Emergency Medical Services) to discuss the data findings and develop a program of projects or strategies with the purpose of reducing safety risks to vulnerable road users.

VRU Safety Assessment quantitative analysis included crash data from 2019 to 2022. Although the assessment required five (5) years of data, in 2018 PR police crash report change to include crash severity index. Consequently, 2018 and earlier data was not available with the same severity scale. The quantitative analysis concluded that 54.8% of fatal and serious injury crashes occur in roads classified as principal and minor arterial. These roads represent only 8% of all kilometers in the roadway network. Therefore, high-risk features systematically included roadway functional classification (principal arterial and minor arterials), speed (35 mph or higher) and multilane road. Furthermore, the 2020 US Census data showed that Puerto Rico has a 22% of disabled population and 23.5% of 65 years and older population. These percentages are higher than the U.S. national average of 13% and 17.3%, respectively concluding that these two variables are overrepresented for PR. In addition, the report and Appendix E include high-risk municipalities and roadways identified by the analysis and consultation. The outcomes of the analysis statewide as well as by areas should be considered when planning and programming projects and/or strategies. These results also would be incorporated into relevant SHSP emphasis areas, strategies, and actions, as appropriate, and implemented through State planning procedures.

A summary of the recommendations that were obtained through the consultation meetings were that VRU safety should be fully considered in educational campaigns, and to continue providing technical workshops for decision makers, government officials, enforcement, and law prosecutors as well as technical planning and engineering staff. Also, it was recommended to reach out to educational partners that teach young children all the way to elderly adults for support and partnership in spreading safety knowledge and awareness. VRU safety also needs to be incorporated in PR transportation investment decisions, from planning and programming, environmental analysis, project design, and construction, to maintenance and operations. Another recommendation that was mentioned was to include and improve the transit system in the infrastructure decision as well, so transportation investments are coordinated. In the Program of Projects or Strategies section of this document can be found all the recommendations included for Puerto Rico. In general, PR should use data-driven safety analyses to ensure that safety is a key input in any decision made in the project development process for all project types and fully consider and improve the safety of all road users, especially vulnerable road users, from project development all the way to construction.

Overview of Vulnerable Road User Safety Performance

Pedestrian, bicyclist, and other non-motorist road users account for a growing share of all United States traffic fatalities Halting the growing number of non-motorists killed or injured by motor vehicles requires a collaborative and comprehensive, data-oriented approach to road user safety.

Historical Trends

The long-term vision of Puerto Rico is to have no deaths or serious injuries due to traffic crashes on the island's highways. In order to fulfill that vision, the Puerto Rico 2019-2023 SHSP established 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 safety 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. These performance measures include:

- Number of fatalities
- Number of serious injuries using KABCO (K-Fatal, A-incapacitating injury, B-non-incapacitating injury, C-possible injury, and O-no injury) severity scale and adjusted backcasting 2019 to 2022 data for 2018 and earlier year.
- Fatality rate (based on hundred million vehicle miles traveled or HMVMT)
- Serious injuries rate (based on hundred million vehicle miles traveled or HMVMT)
- Non-motorized fatalities and serious injuries (Non-Motorized F+SI)

Each performance measure values were obtained using the Fatality Analysis Reporting System (FARS) data by year and are presented in the following figures.

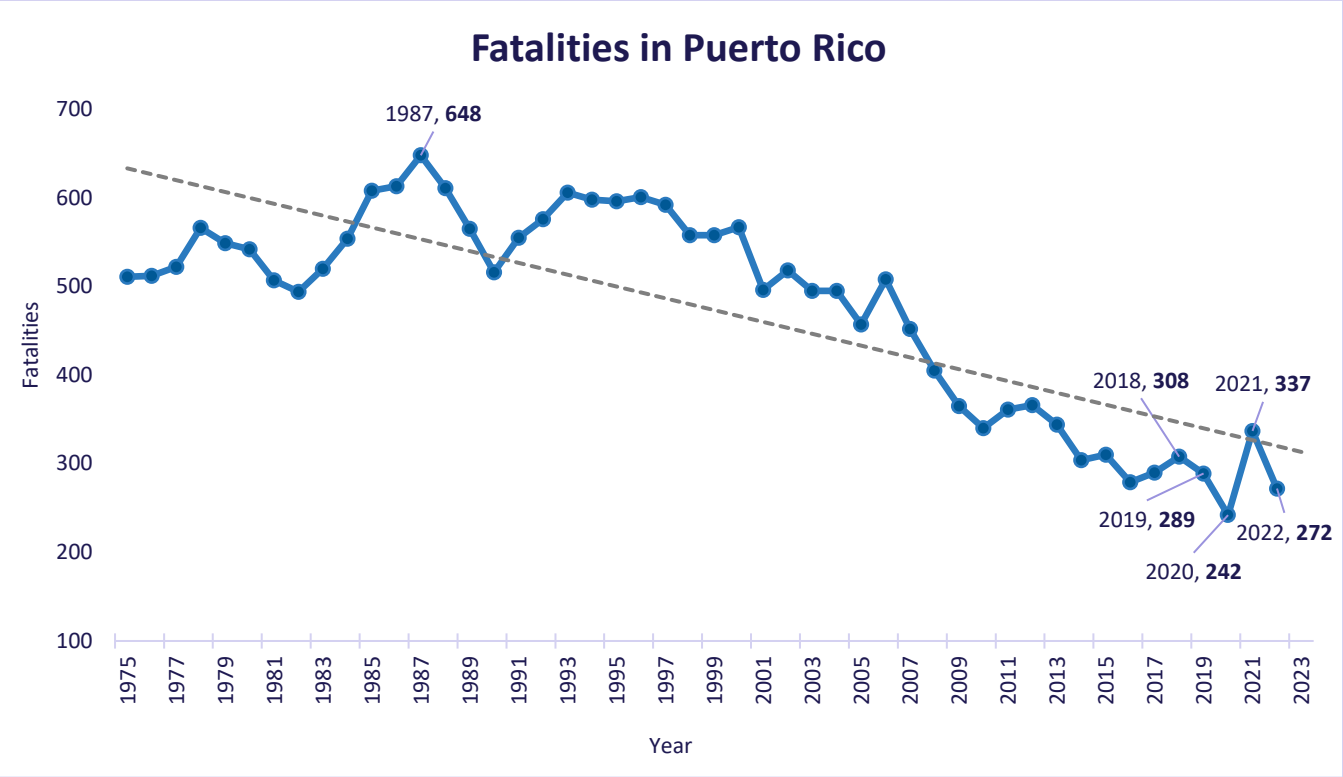


Figure 1 Number of Fatalities by Year in Puerto Rico *Source: FARS*

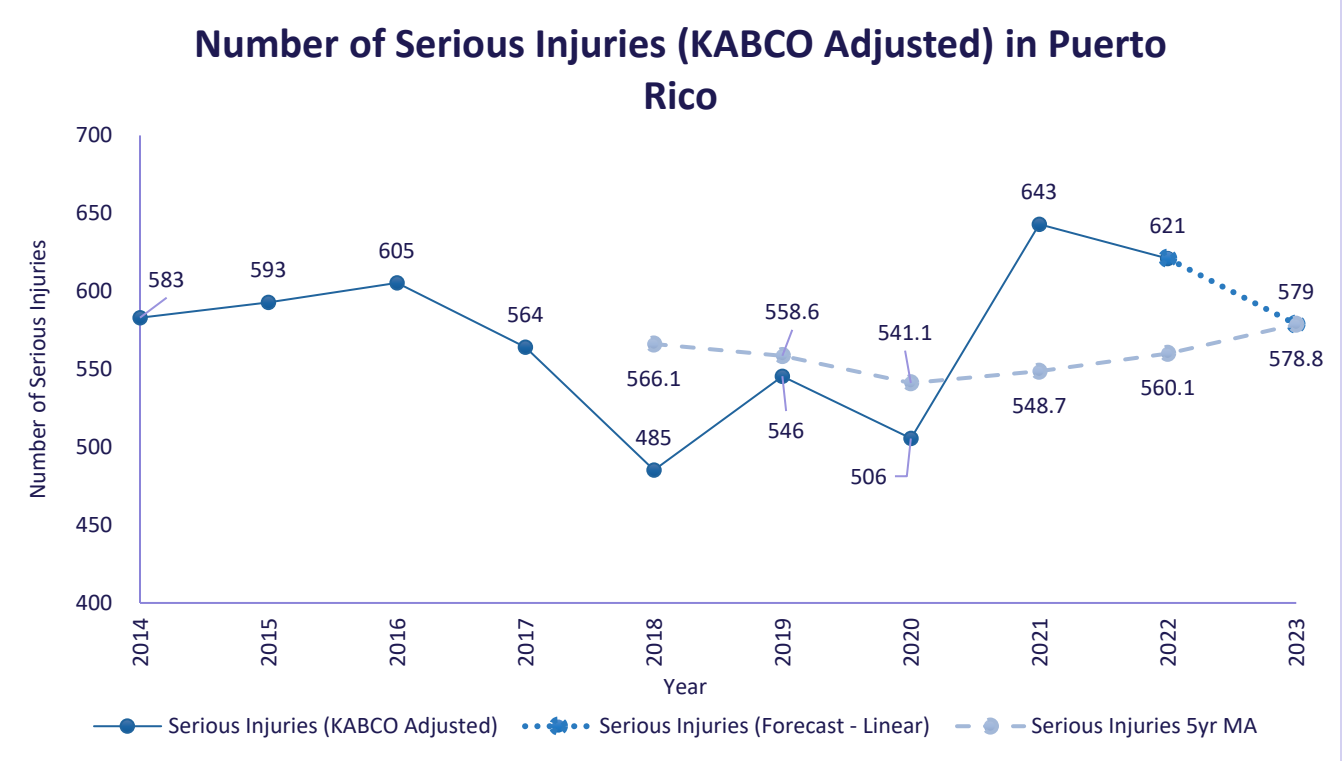


Figure 2 Number of Serious Injuries by Year in Puerto Rico *Source: FARS*

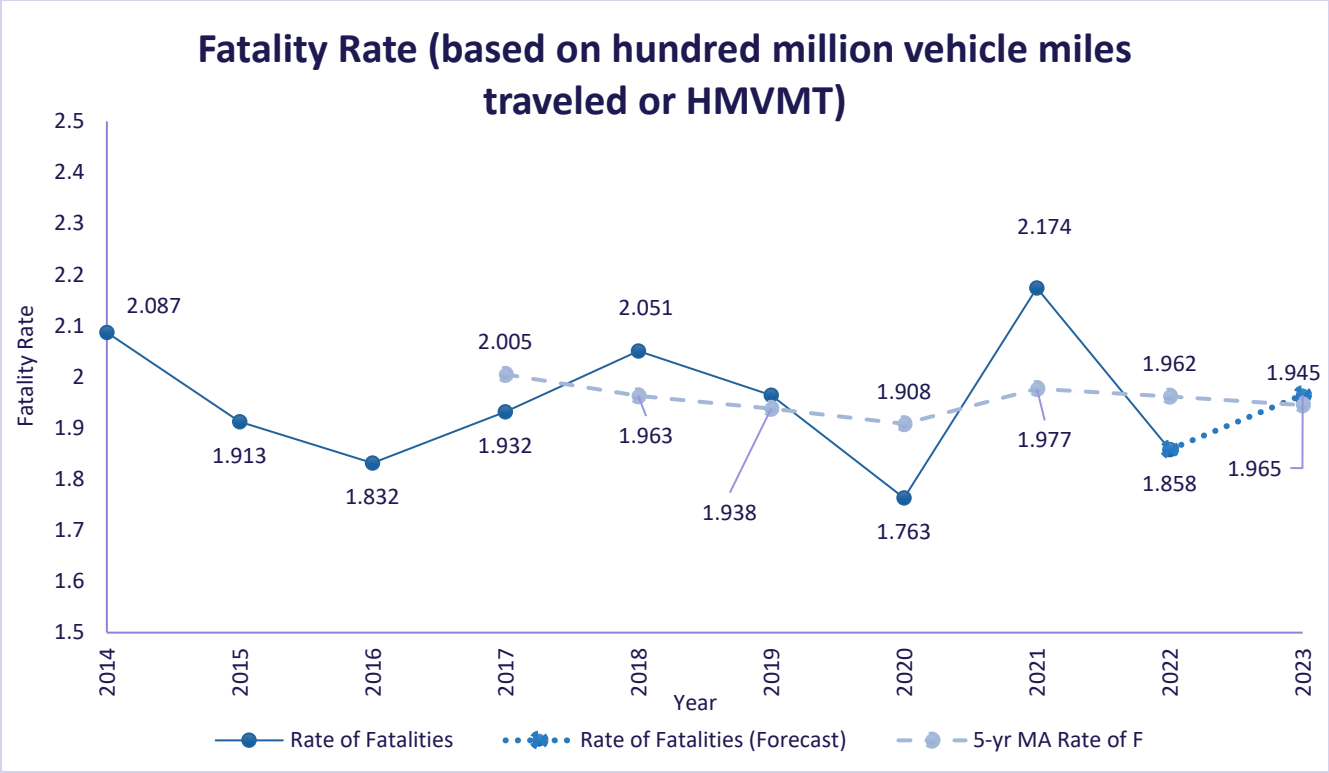


Figure 3 Fatality Rate (based on HMVMT) by Year *Source: FARS*

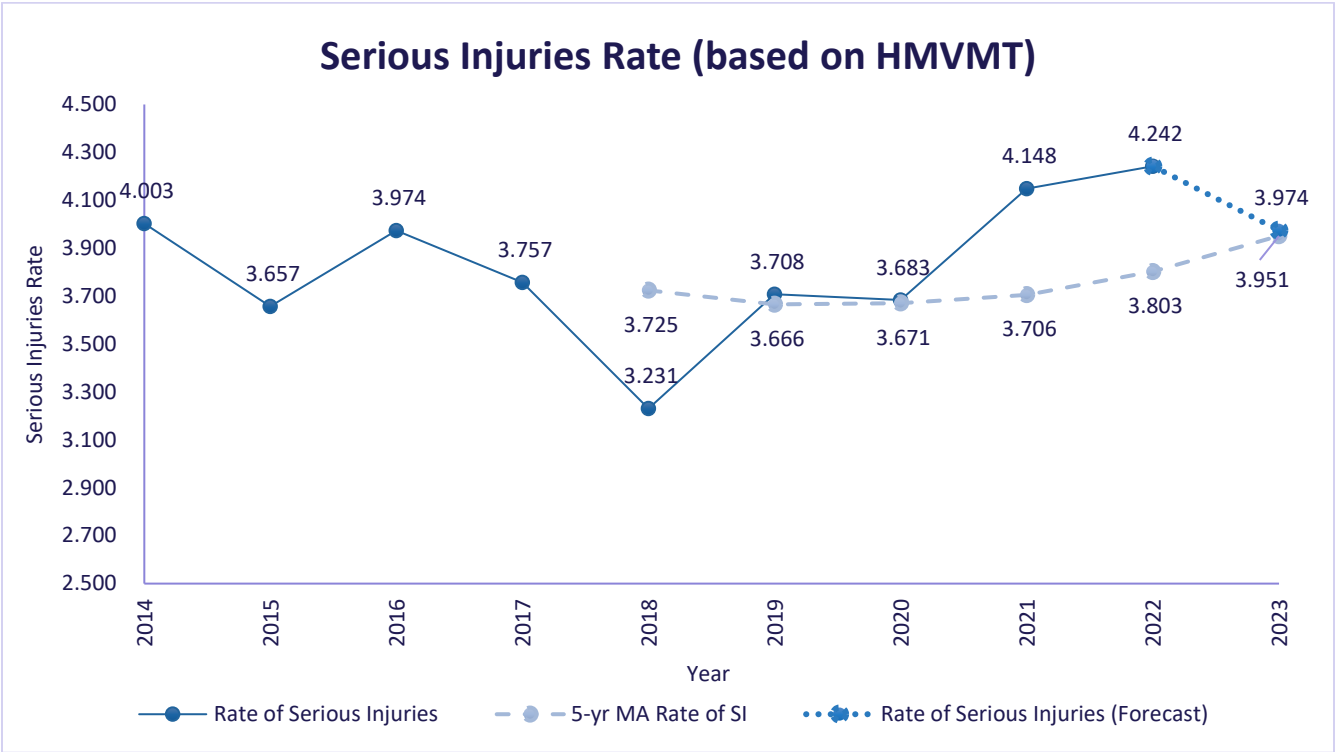


Figure 4 Serious Injuries Rate (based on HMVMT) by Year *Source: FARS*

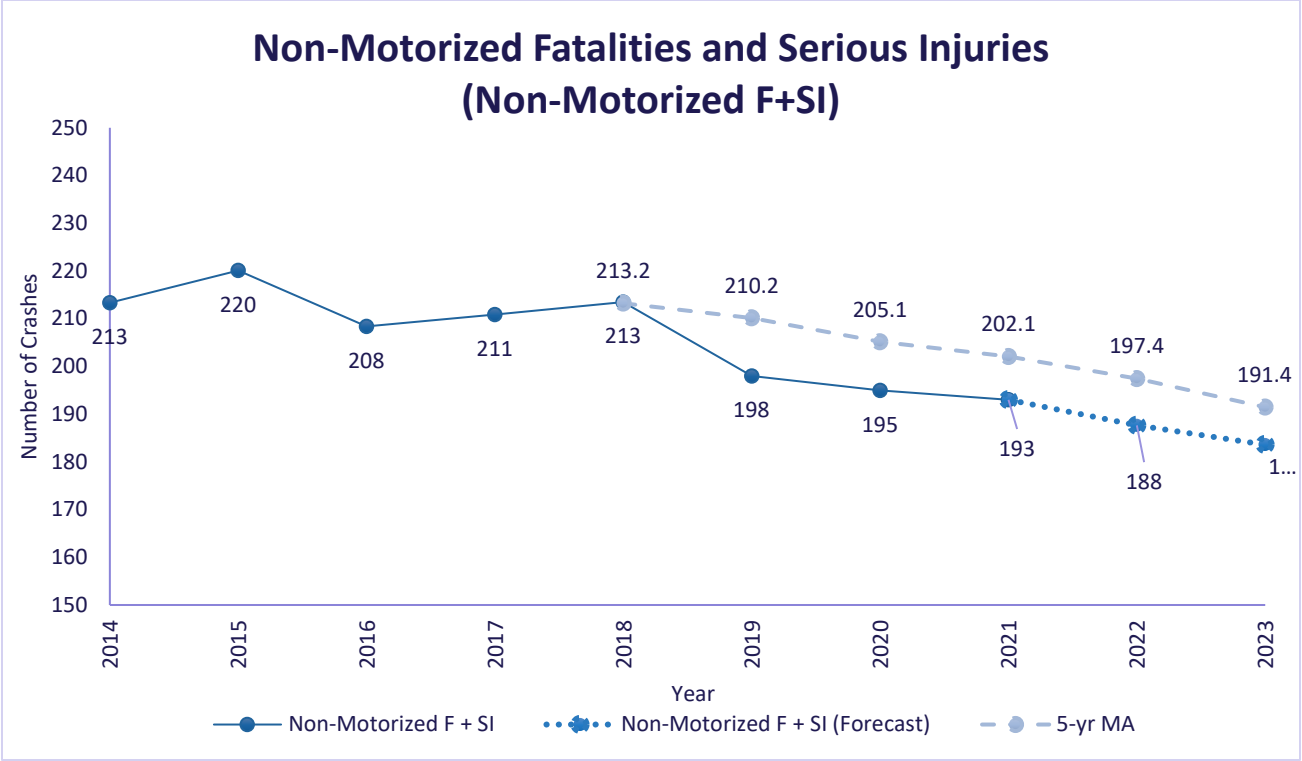


Figure 5 Non-motorized Fatalities and Serious Injuries (Non-Motorized F+SI) by Year *Source: FARS*

Figure 6 Safety Performance Measures Target Value vs. Actual Value *Source: FARS*

VRU Safety Performance vs Overall Safety Performance

Puerto Rico has presented a historical problem with fatal crashes involving VRU, specifically pedestrians. Figure 7 presents the fatalities by user by year. The large majority of all the crashes of Puerto involving VRU are pedestrian type crashes. As identified in the SHSP, 1 out of 3 fatalities in Puerto Rico is due to traffic crashes involving pedestrians, representing approximately 31% per year, as shown in Figure 8. Figure 9 shows bicyclist fatalities percent and the comparison with the nation percent. It can be observed that historically bicyclist fatalities percent are in an average of three (3) to four (4) percentage of all fatalities.

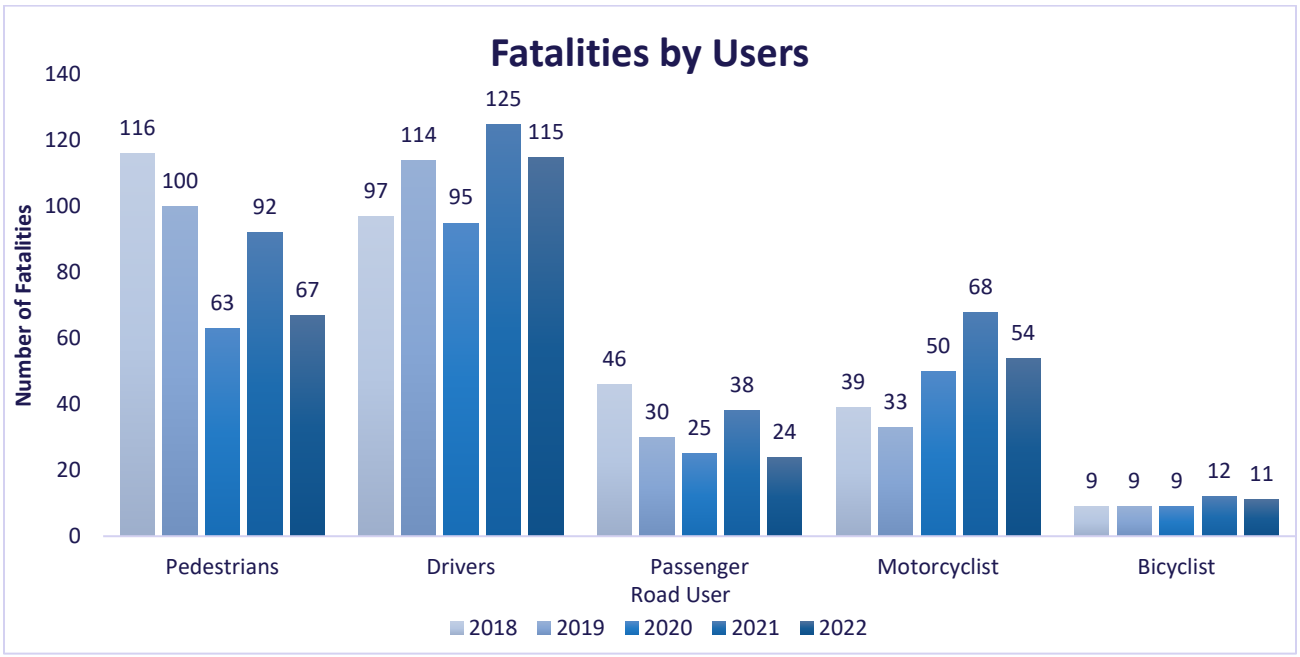


Figure 7 Fatalities by User by Year *Source: FARS*

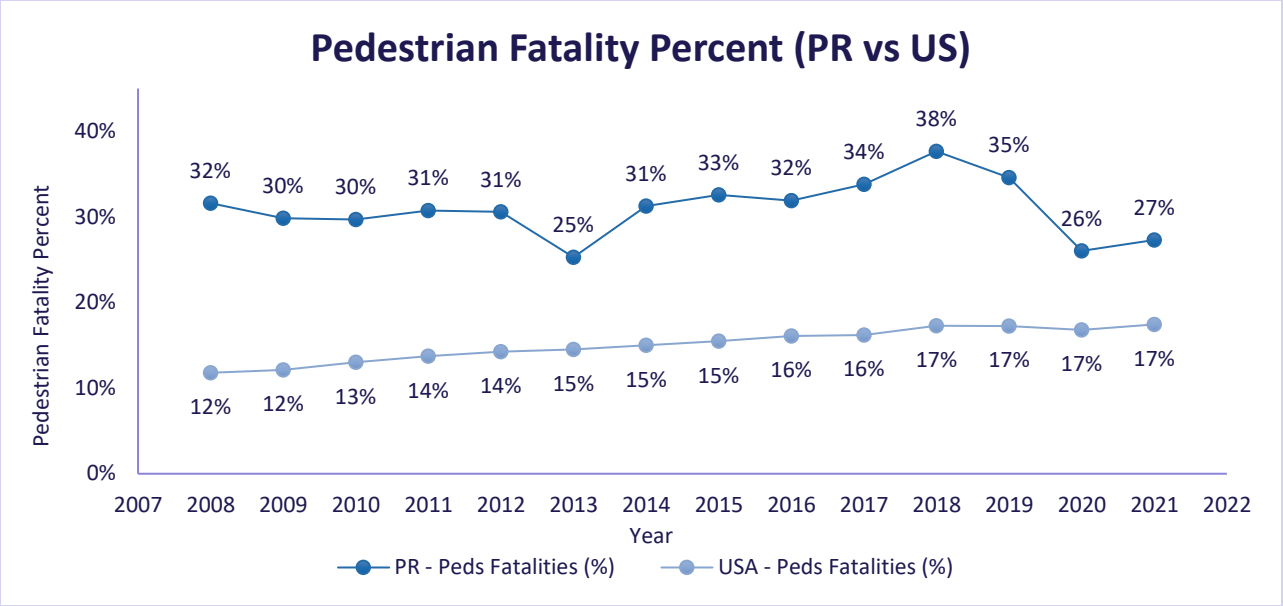


Figure 8 Pedestrian Fatalities Percent - Puerto Rico vs. United States *Source: FARS*

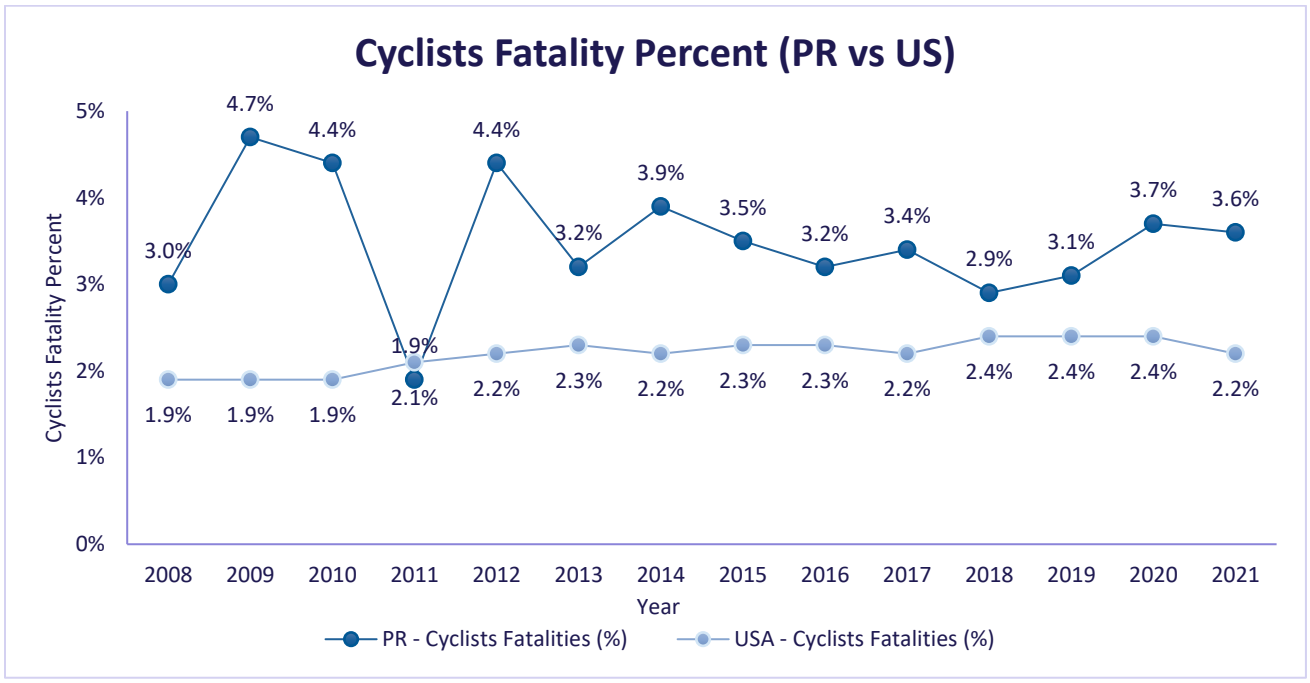


Figure 9 Cyclists Fatalities Percent - Puerto Rico vs. United States *Source: FARS*

Figure 10, shows the pedestrian fatality rate (PFR) in Puerto Rico versus United States. PFR is computed by pedestrian fatality crash total by million vehicle miles traveled, that is the total annual miles of vehicle travel divided by the total population in a state or in an urbanized area. It could be observed that on average, from 2013 to 2020, PR's PFR is 230% higher than United States. Furthermore, Figure 11, shows the cyclist fatality rate in Puerto Rico versus United States. This rate similar to PFR, is computed by cyclist fatality crash total by million

vehicle miles traveled, that is the total annual miles of vehicle travel divided by the total population in a state or in an urbanized area. It could be observed that on average, cyclist fatality rate is also higher than United States. In addition, Figure 12 shows how Puerto Rico compares with several States that have been consistently identified as a Pedestrian Focus State (Federal Highway Administration (FHWA) Office of Safety Programs, 2021), such as Arizona, California, Florida, Louisiana, New México, and South Carolina, presenting that PR rates are higher than any other pedestrian focus states.

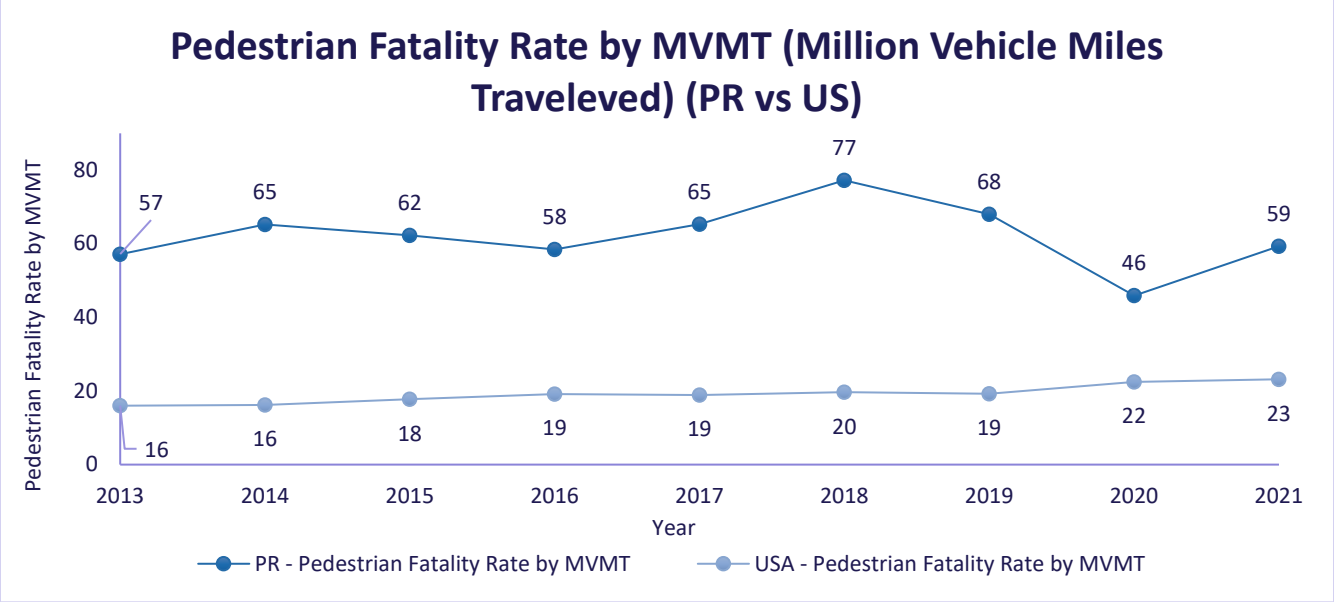


Figure 10 Pedestrian Fatality Rate by MVMT (Million Vehicle Miles Traveled) - PR vs. USA *Source: FARS*

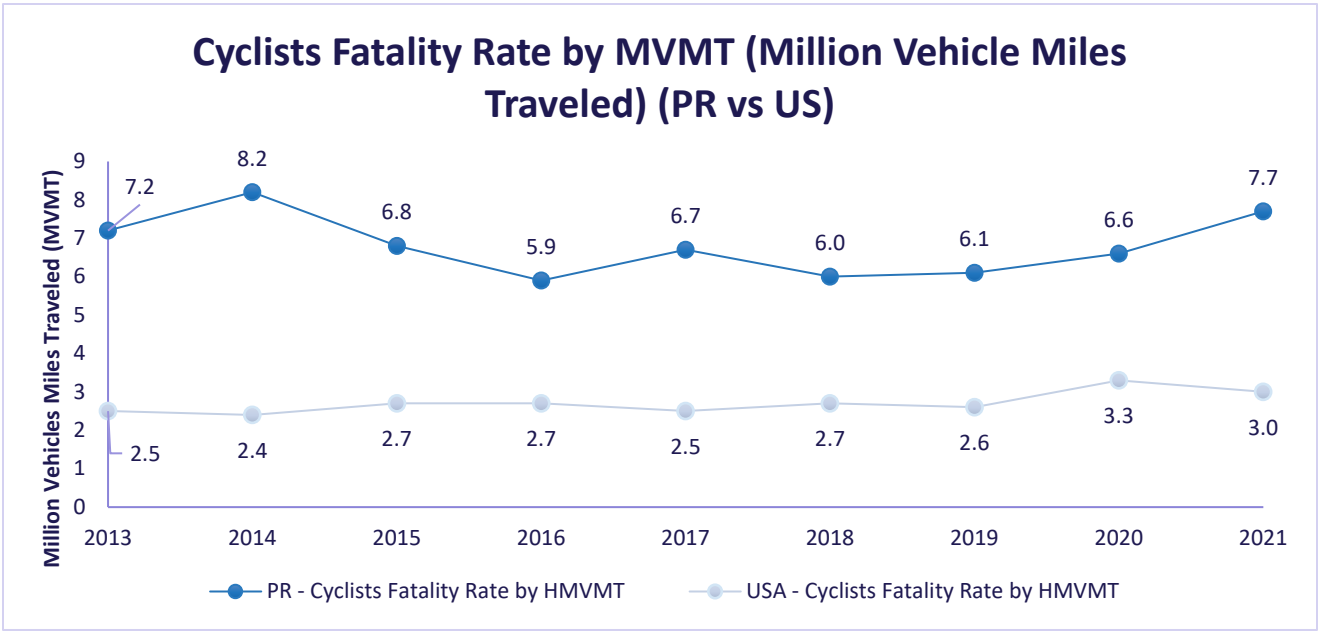


Figure 11 Cyclist Fatality Rate by MVMT (Million Vehicle Miles Traveled) - PR vs. USA *Source: FARS*

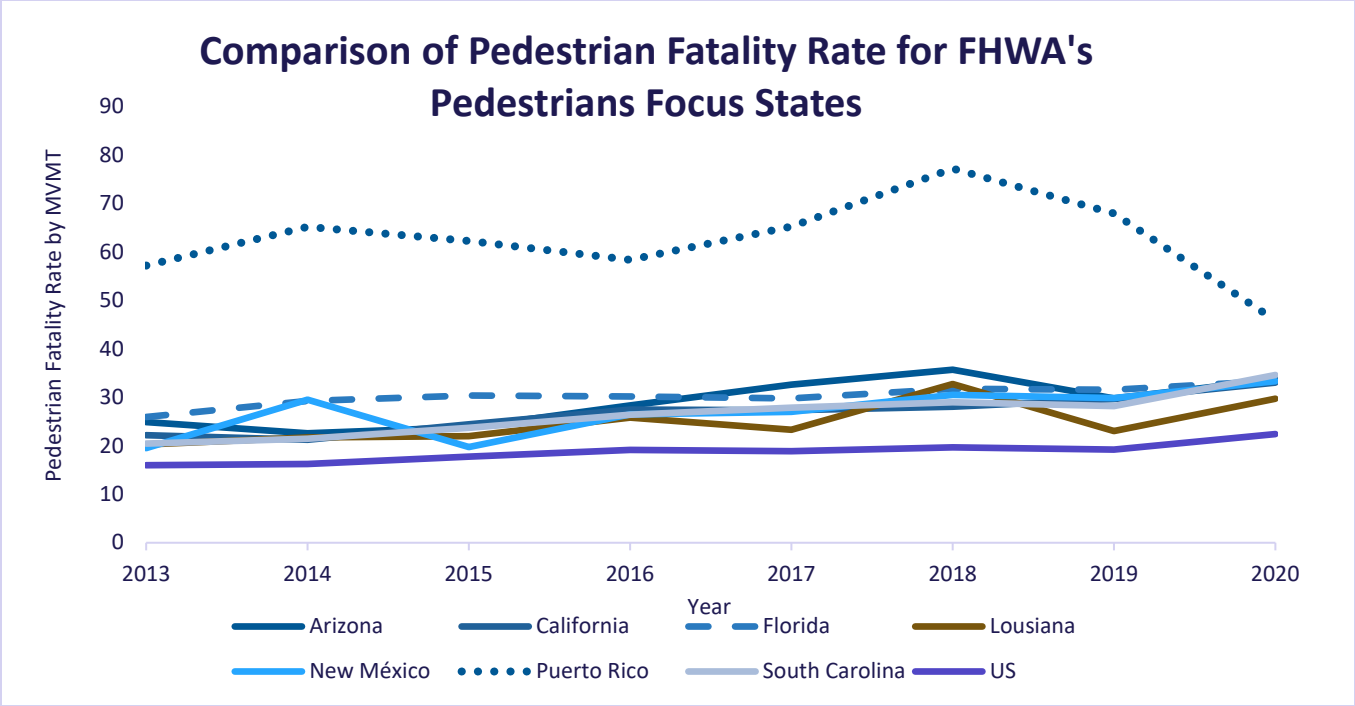


Figure 12 Pedestrian Fatality Rate Comparison between FHWA's Pedestrians Focus States *Source: FARS*

Current Progress to Meet Safety Performance Targets

Figure 13 2019-2023 Puerto Rico Strategic Highway Safety Plan (SHSP).

The Puerto Rico Highway and Transportation Authority (PRHTA) in close coordination with the Puerto Rico Traffic Safety Commission (PRTSC), the Puerto Rico Police (PRP) and many other public and federal agencies, non-governmental organizations, and private entities developed the Puerto Rico Strategic Highway Safety Plan 2019-2023 (SHSP 2019-2023). This plan is the latest and second 5-year cycle for Puerto Rico and published in the SHSP website www.carreteraseguraprt.com.

Figure 13 present the cover of the plan and Figure 14 a snapshot of the SHSP website.

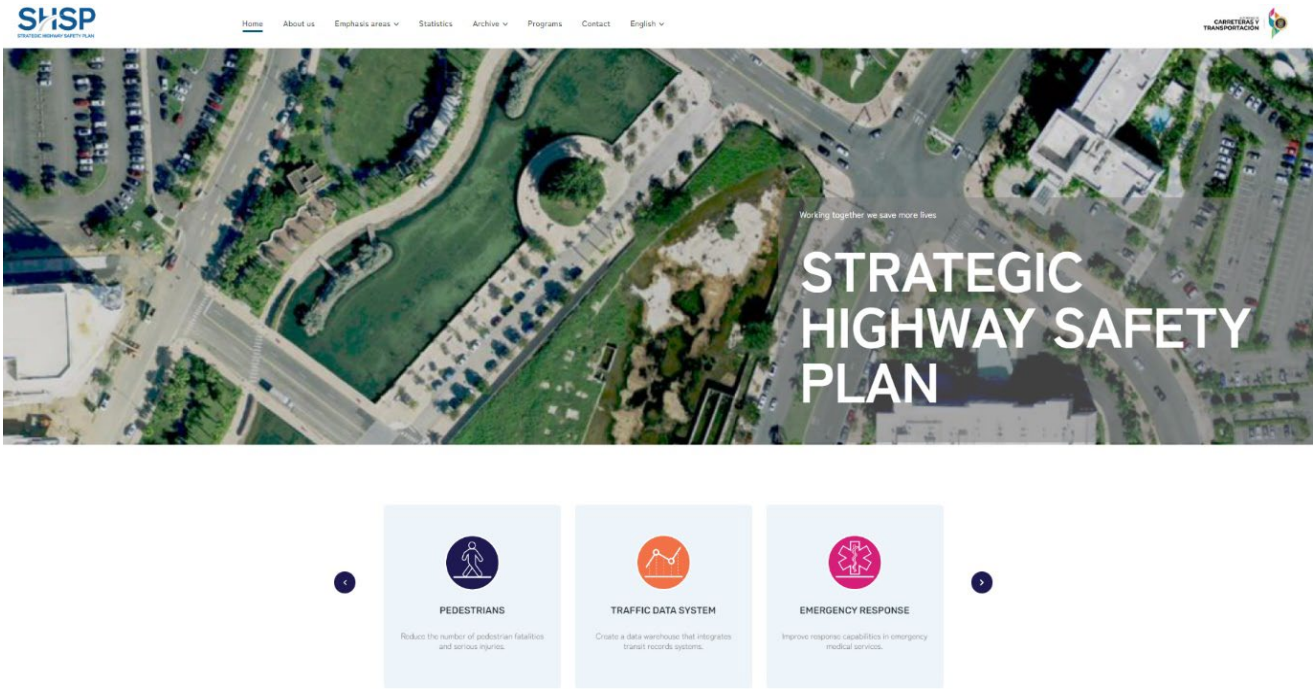


Figure 14 SHSP Website http://carreterasegurapr.com**.**

SHSP 2019-2023 evaluated the number of fatalities between 2014 and 2018 with population, vehicle miles traveled (VMT), travel time to work and previous plan emphasis areas. From that evaluation, this latest plan defined P.R. Emphasis Areas (EAs) that considered more influence in traffic crashes.

The 2019-2023 SHSP EAs 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 EAs. Puerto Rico needed to focus their effort towards reducing fatalities and serious injuries; having seven (7) EAs helped focus 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. This study also found that Puerto Rico has presented a historical problem with fatal crashes involving VRUs, specifically pedestrians. Puerto Rico has been one of the territories with the highest percent of pedestrian fatalities in the United States with an average of 30%. Therefore, one of the main EAs was designated for pedestrian focus.

The figure below presents the seven (7) EAs included in the SHSP 2019-2023, one of them being Pedestrians.

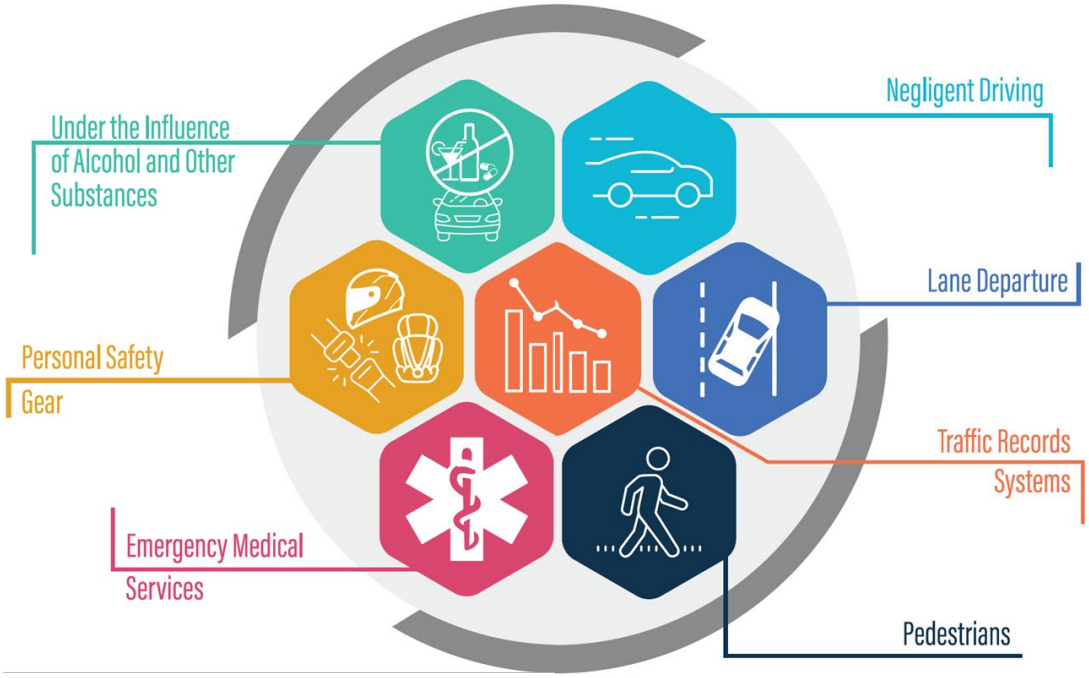


Figure 15 SHSP 2019-2023 Emphasis Areas *Source: 2019-2023 SHSP*

Each emphasis area has their own vision, objective, goal, strategies, and performance measure. Figure 16 presents the pedestrian emphasis strategic goal which is to reduce the pedestrian fatalities and serious injuries. Figure 16 also includes the 5-year moving average goal and some of the strategies included in the plan to achieve this goal.

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 strengthen 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.

PEFORMANCE 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.

Figure 16 SHSP 2019-2023 Pedestrian Emphasis Area *Source: 2019-2023 SHSP*

In addition, the SHSP included focus groups that were not directly an emphasis area, however, are included to be part of the areas that the SHSP team should always consider because they have an impact in highway safety and need to be monitored continuously. Three (3) areas that are important to mention for this assessment are "Elderly Population", "Cyclist" and "Work Zone". As shown in the figures below each focus group includes some recommendations for implementation as well as parallel efforts that have been developed for each.

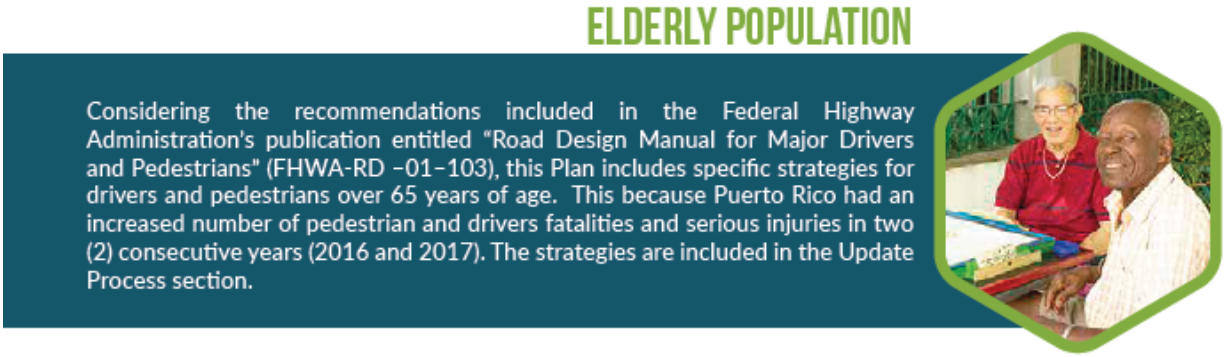


Figure 17 Elderly Population SHSP 2019-2023 Focus Group *Source: 2019-2023 SHSP*

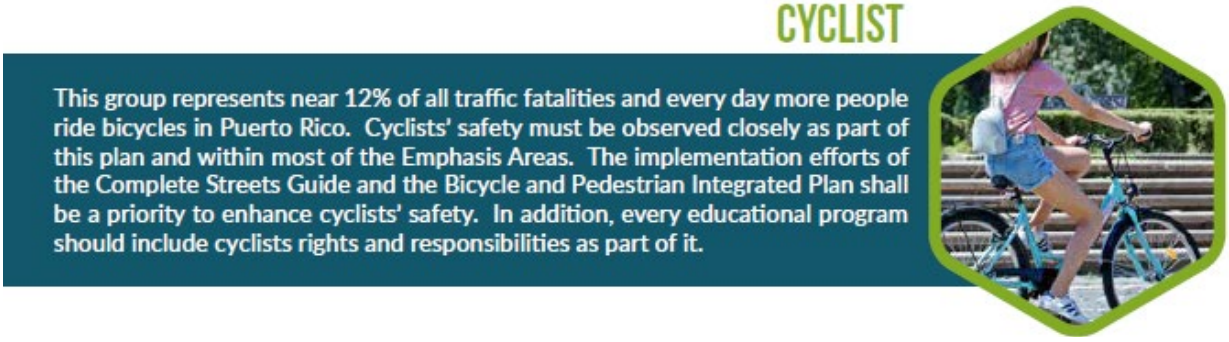


Figure 18 Cyclist SHSP 2019-2023 Focus Group *Source: 2019-2023 SHSP*

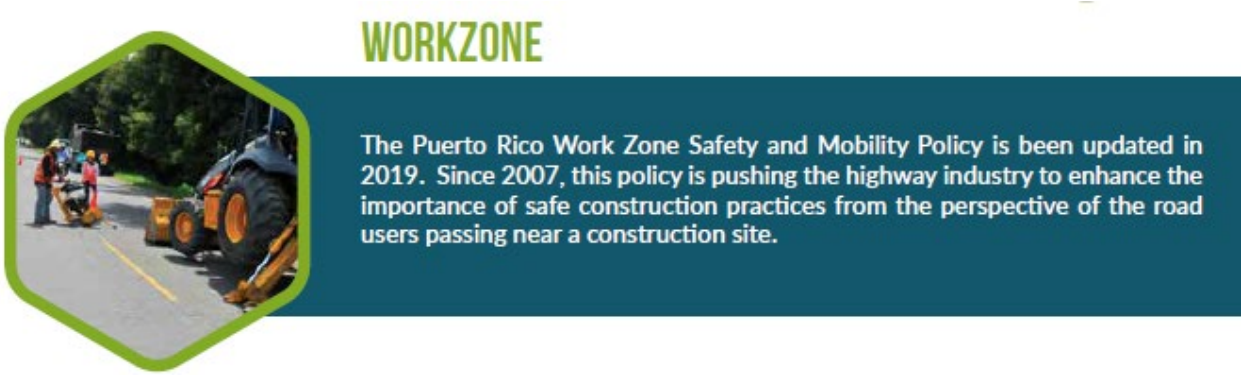


Figure 19 Work Zone SHSP 2019-2023 Focus Group *Source: 2019-2023 SHSP*

In 2018, the Puerto Rico Department of Transportation and Public Works (DTPW) and PRHTA Strategic Planning Office prepared the Puerto Rico Complete Streets Plan and Design Guidelines. This document was adopted by Puerto Rico Metropolitan Planning Organization (MPO) and was part of the Long-Range Transportation Plan (LRTP). In addition, the document is available in PRHTA's website at: Planificación Estratégica - ACT (pr.gov)

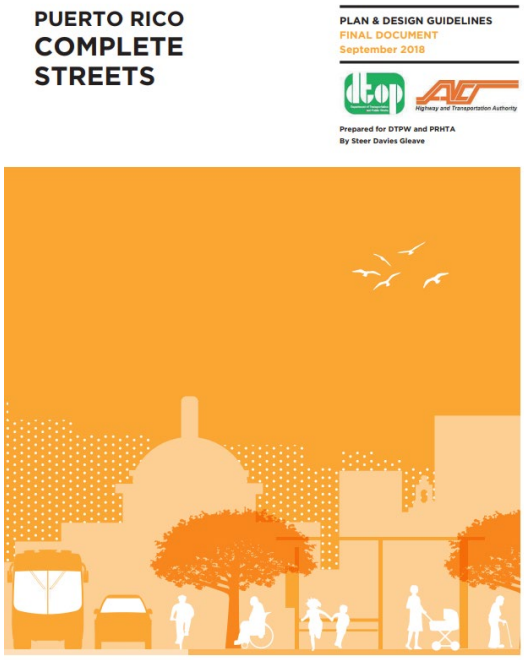


Figure 20 Puerto Rico Complete Streets Plan and Design Guidelines

The document was divided into two (2) main sections: Part A discussed Vision, Policy, and Regulatory Framework and Part B includes Design Guidance/Toolbox Displays. Part A reviewed current planning policies and laws and developed a regulatory framework, implementation strategies that include potential performance measures for the agency consideration. Part B provides complete streets elements and short-, medium- and long-term potential project examples.

In a parallel effort, in 2018, PRDTPW and PRHTA Strategic Planning Office prepared the Comprehensive Bicycle and Pedestrian Plan for Puerto Rico. Similar to the Complete Streets Plan, the document was adopted by Puerto Rico MPO and was part of the LRTP. Also, the document is available in PRHTA's website at: Planificación Estratégica - ACT (pr.gov)

The plan evaluated pedestrian and bicycle infrastructure existing conditions, provided an outline of best practices, discussed the challenges of walking and cycling in Puerto Rico, reviewed current design standards, outlined a development process and an implementation plan. The implementation plan, similar to the complete streets plan, includes short-, medium- and long-term recommendations as well as performance measures to monitor and evaluate the investment.

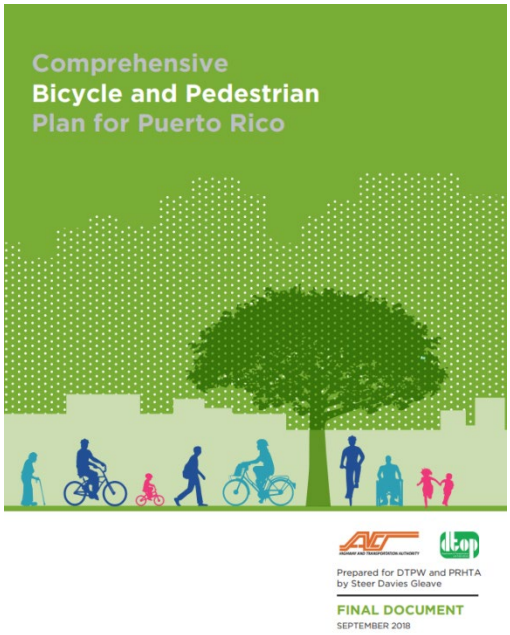


Figure 21 Comprehensive Bicycle and Pedestrian Plan for Puerto Rico

In addition, in 2021 PRHTA developed the High Crash Location Report (HCLR). The HCLR was part of the implementation of its SHSP. The main purpose of the report—previously prepared for 2014, 2016 and 2017— was to define the corridors (3-km or more), hot-spots (500-meters), and intersections with higher Crash Costs Factor (CCF) and Frequency Indexes (FI) for a five-year period (2014-2018). This provided a better understanding of the locations that need more attention from the perspectives of the 4Es (Engineering, Education, Enforcement and Emergency Medical Services).

The 2021 HCLR identifies Puerto Rico's statewide roadway network by computing the CCF and the FI by roadway functional classification based on the number of fatal, injury, and Property Damage Only (PDO) crashes (by segments) and the crash costs (Highway Safety Manual 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".

Figure 22 and Figure 23 presents the 2021 HCLR methodology that follows the network screening process from the highway safety manual (HSM) 2010.

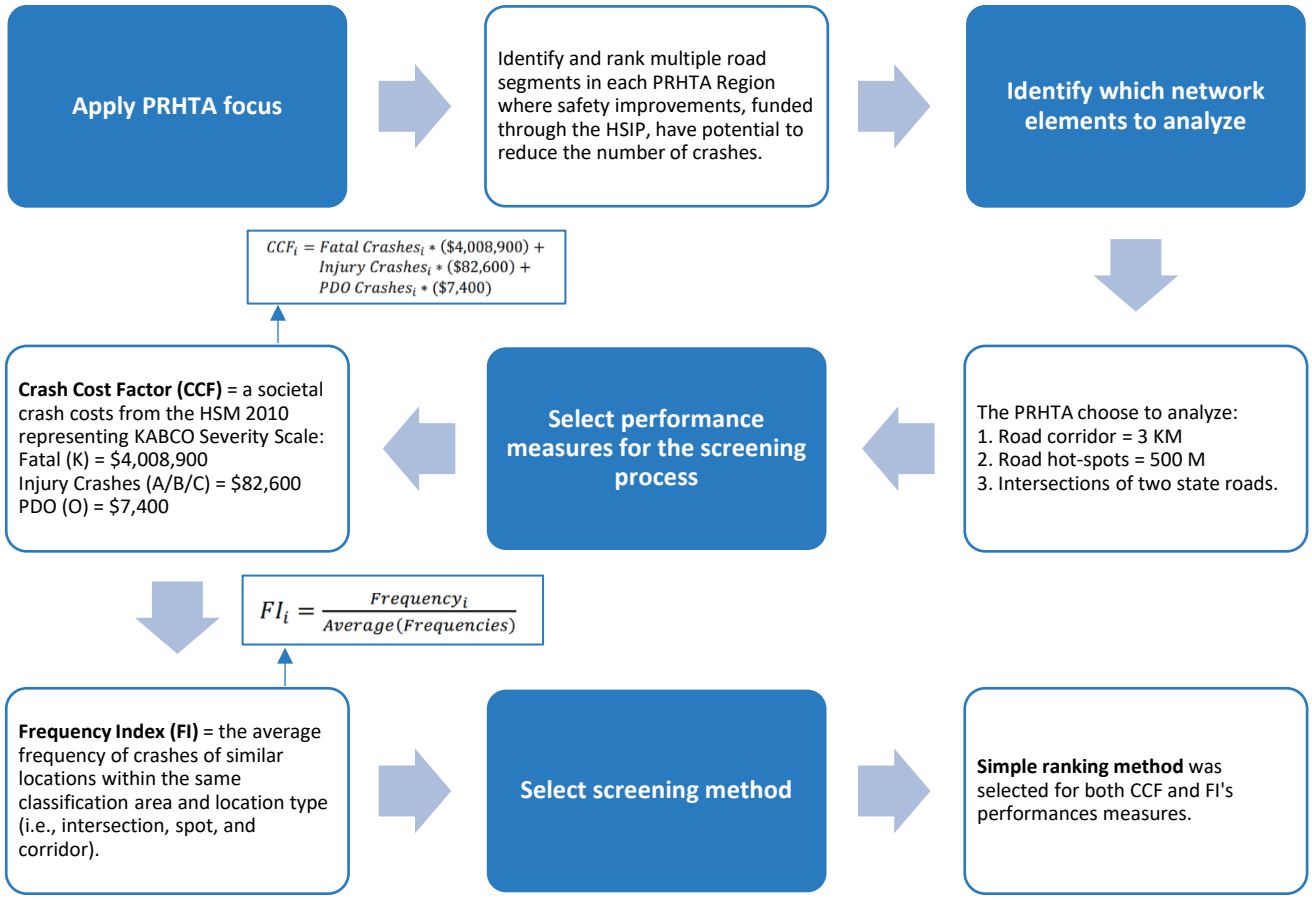


Figure 22 2021 HCLR Methodology *Source: HCL Report*

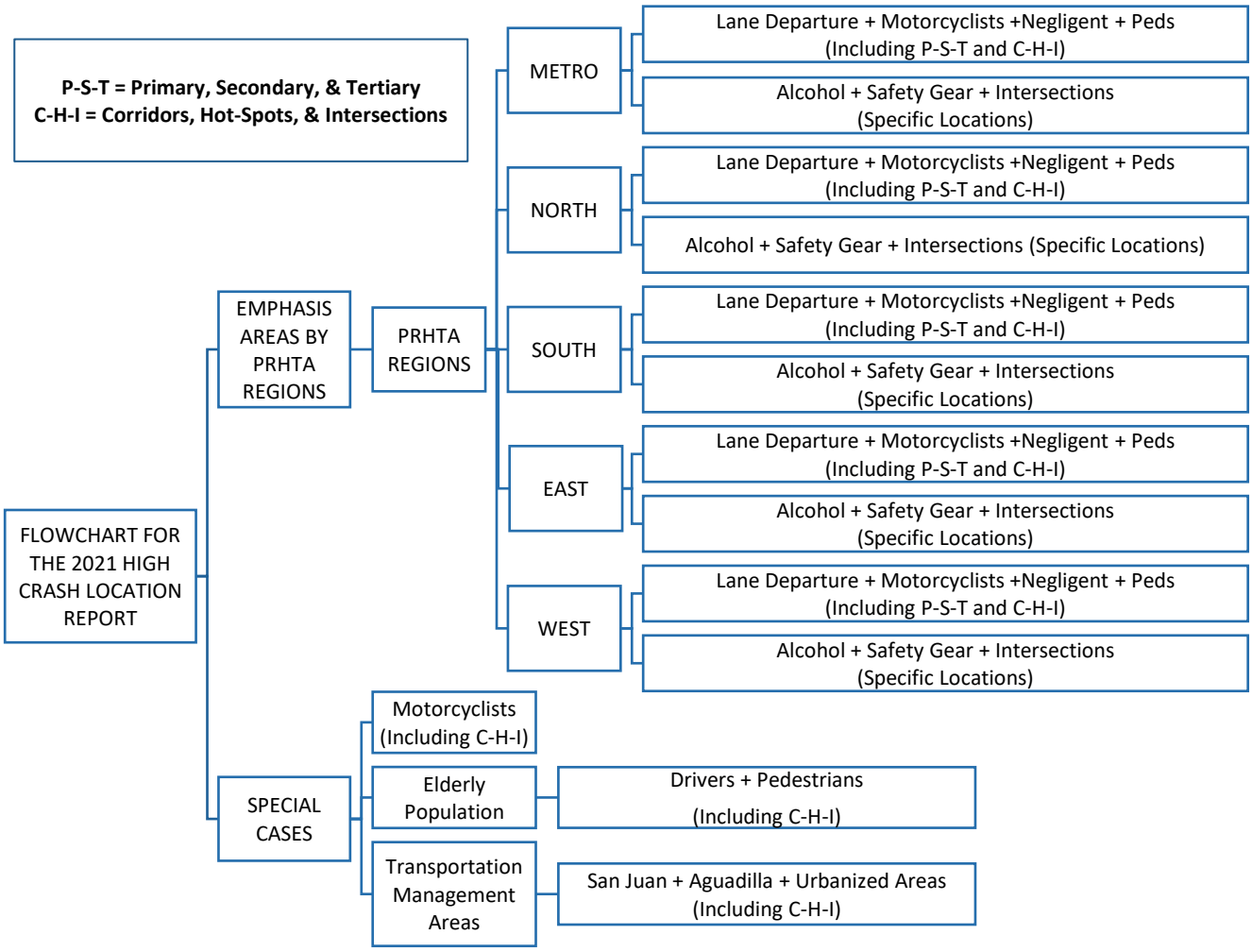


Figure 23 Flowchart for the Development of the 2021 HCLR *Source: HCL Report*

As shown in Figure 23, the SHSP emphasis areas were considered in the screening process. Therefore, the pedestrian emphasis area was included as part of the methodology. As such, maps and tables with the high crash corridors and hot spots were developed and included by each of the PRHTA regions. The results of the analysis were also embedded in a GIS tool that identifies the corridors, hot-spot, and intersection by PRHTA Region. Figure

24 presents a snapshot of the GIS tool. Figure 25 and Table 1 below show an example of PRHTA North Region, pedestrian corridors map and table.

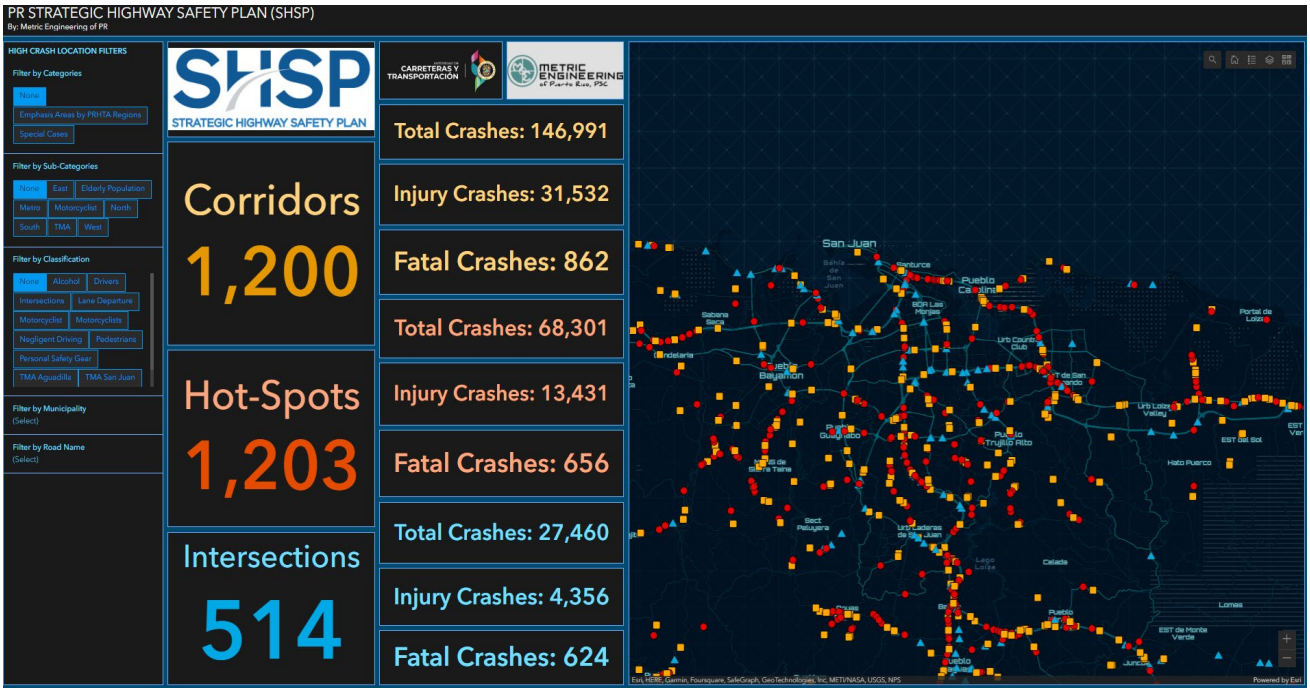


Figure 24 2021 HCLR GIS Tool

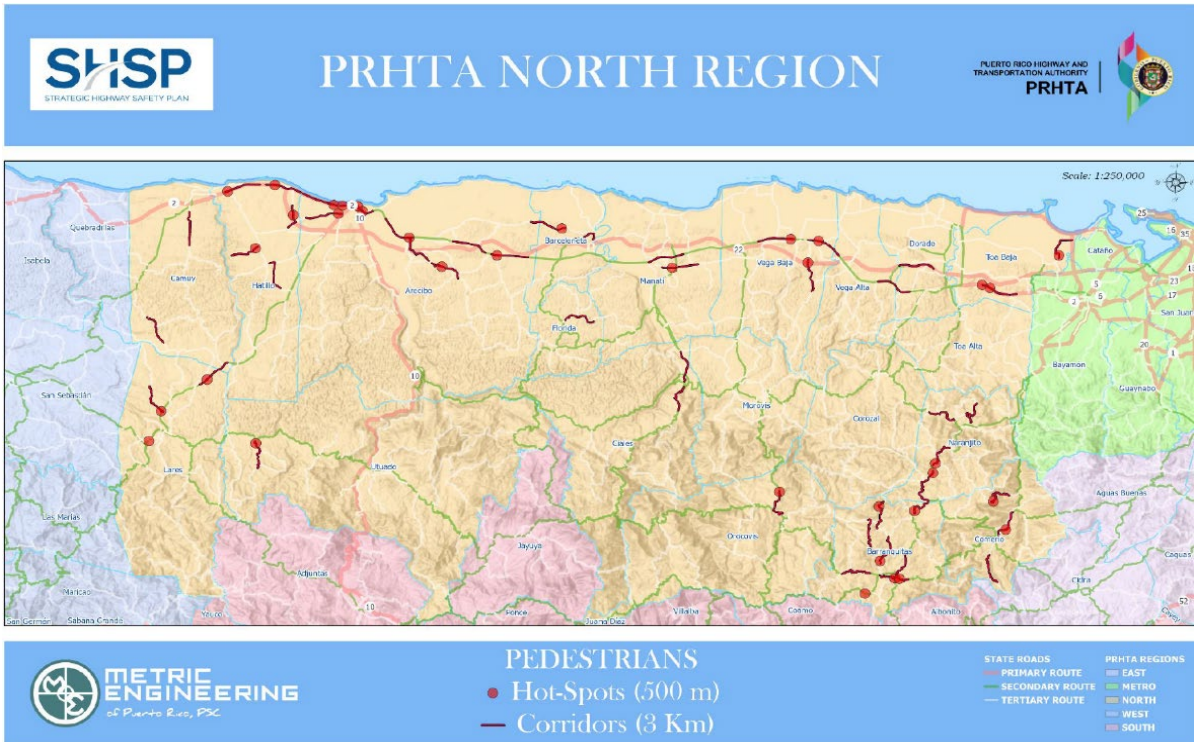


Figure 25 HCLR Pedestrian Corridor and Hot Spot Map for PRHTA North Region *Source: HCL Report*

Table 1 2021 HCLR Pedestrian Corridors Table for PRHTA North Region Source: HCL Report

FINAL RANK	Municipality	Route	Beg KM	End KM	Total Crashes	Fatal Crashes	Injury Crashes	PDO Crashes	ROAD CLASS
1	Arecibo	PR-2	75.3	78.3	16	1	15	0	PRIMARY
2	Arecibo	PR-2	70.8	73.8	9	2	7	0	PRIMARY
3	Naranjito	PR-152	14.4	17.4	10	1	9	0	SECONDARY
4	Hatillo	PR-2	85.3	88.3	10	1	9	0	PRIMARY
5	Barranquitas	PR-152	0.3	3.3	8	1	7	0	SECONDARY
6	Vega Baja	PR-2	38.4	41.4	7	4	3	0	PRIMARY
6	Arecibo	PR-2	60.9	63.9	7	4	3	0	PRIMARY
8	Arecibo	PR-653	0.1	3.1	5	1	4	0	TERTIARY
9	Lares	PR-129	18.3	21.3	5	2	3	0	SECONDARY
10	Barranquitas	PR-156	14.5	17.5	10	0	10	0	SECONDARY
11	Arecibo	PR-2	78.6	81.6	8	1	6	1	PRIMARY
12	Lares	PR-453	3.1	6.1	6	0	6	0	TERTIARY
12	Barranquitas	PR-771	5.7	8.7	4	1	3	0	TERTIARY
12	Comerío	PR-778	0.5	3.5	4	1	3	0	TERTIARY
15	Ciales	PR-149	14.6	17.6	7	0	7	0	SECONDARY
15	Orocovis	PR-155	29	32	7	0	7	0	SECONDARY
17	Vega Baja	PR-2	34.2	37.2	5	2	3	0	PRIMARY
17	Toa Baja	PR-2	17.8	20.8	4	4	0	0	PRIMARY
19	Barceloneta	PR-682	2.3	5.3	5	0	5	0	TERTIARY
19	Barranquitas	PR-156	10.6	13.6	6	0	6	0	SECONDARY
19	Naranjito	PR-152	10.6	13.6	6	0	6	0	SECONDARY
19	Hatillo	PR-130	8.2	11.2	6	0	6	0	SECONDARY
19	Barceloneta	PR-140	65.2	68.2	3	2	1	0	SECONDARY
24	Dorado	PR-2	27	30	3	2	1	0	PRIMARY
24	Manatí	PR-2	47.7	50.7	3	2	1	0	PRIMARY
24	Arecibo	PR-2	64.4	67.4	3	2	1	0	PRIMARY
24	Dorado	PR-22	25.2	28.2	3	2	1	0	PRIMARY
28	Manatí	PR-670	0.7	3.7	3	1	2	0	TERTIARY
28	Utuado	PR-602	0.2	3.2	3	1	2	0	TERTIARY
30	Ciales	PR-149	11.1	14.1	2	2	0	0	SECONDARY
31	Hatillo	PR-493	1.4	4.4	4	0	4	0	TERTIARY
31	Camuy	PR-486	0.5	3.5	4	0	4	0	TERTIARY
31	Florida	PR-641	0.3	3.3	4	0	4	0	TERTIARY
34	Barranquitas	PR-152	7.5	10.5	5	0	5	0	SECONDARY
34	Naranjito	PR-164	7.9	10.9	5	0	5	0	SECONDARY
34	Vega Baja	PR-160	2	5	5	0	5	0	SECONDARY
37	Arecibo	PR-638	3.4	6.4	2	1	1	0	TERTIARY
38	Hatillo	PR-2	81.8	84.8	6	0	5	1	PRIMARY
39	Barranquitas	PR-771	1.3	4.3	1	1	0	0	TERTIARY
39	Comerío	PR-780	5.6	8.6	1	1	0	0	TERTIARY

FINAL RANK	Municipality	Route	Beg KM	End KM	Total Crashes	Fatal Crashes	Injury Crashes	PDO Crashes	ROAD CLASS
39	Toa Baja	PR-866	5	8	1	1	0	0	TERTIARY
39	Hatillo	PR-491	0.2	3.2	1	1	0	0	TERTIARY
43	Barranquitas	PR-772	1.8	4.8	3	0	3	0	TERTIARY
43	Naranjito	PR-825	1	4	3	0	3	0	TERTIARY
43	Arecibo	PR-638	0.1	3.1	3	0	3	0	TERTIARY
43	Comerío	PR-775	1.5	4.5	3	0	3	0	TERTIARY
43	Camuy	PR-456	3.2	6.2	3	0	3	0	TERTIARY

After identifying locations within each region by emphasis areas, the HCLR recommended classifying road segments that had been analyzed and ranked within several emphasis areas. Therefore, to select a specific segment of a road that was repeated in multiple emphasis areas. This final tier helps maximize the Highway Safety Improvement Program (HSIP) funds toward roadways that a combination of safety countermeasures could enhance the safety of all users. Finally, the 2021 HCLR recommended some national resources and safety countermeasures that could be potentially implemented at the high crash locations. Examples of these countermeasures are shown in the figure below.

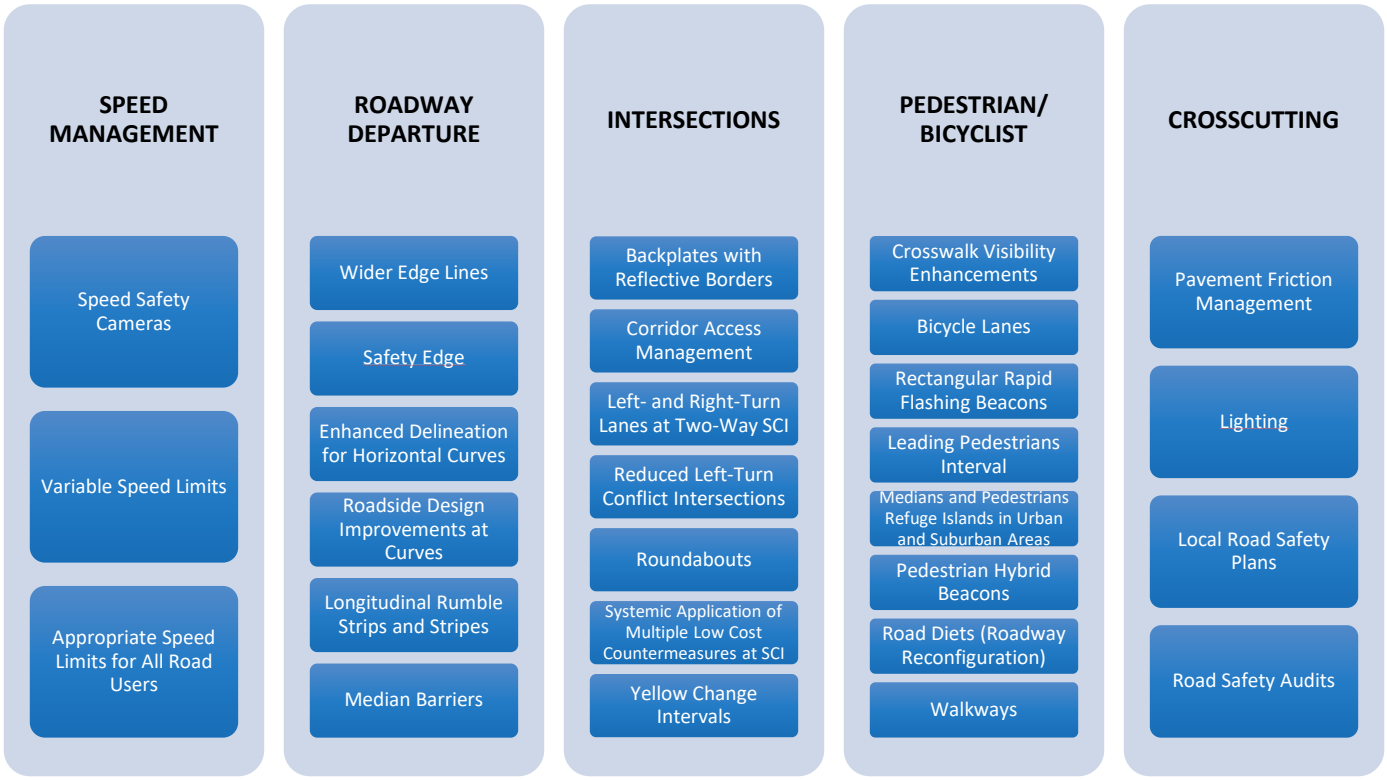


Figure 26 FHWA Proven Safety Countermeasures *Source: HCL Report*

For the locations identified in the HCLR, Road Safety Audits (RSA) and safety engineering evaluations have been performed identifying countermeasures and design implementation recommendations for potential project programming consideration. In addition, these locations have been included as safety improvement projects with HSIP funds.

Furthermore, PRHTA has taken a proactive step towards enhancing pedestrian safety by implementing innovative strategies as part of the SHSP. One such strategy is the adoption of the Every Day Counts (EDC) program from the Safe Transportation for Every Pedestrian (STEP) initiative, which is supported by the Federal Highway Administration. STEP consists of six (6) cost-effective countermeasures with known safety benefits, which can reduce pedestrian fatalities at crossing locations and signalized/unsignalized intersections. One of the countermeasures included Road Safety Audits (RSA). PRHTA has translated STEP guidelines and prompt list into Spanish and have performed STEP RSAs based on HCLR locations.

PRHTA joined the 2023-2024 EDC Round 7 program for *Nighttime Visibility for Safety* with a focus of pedestrians and bicyclists. PRHTA has the goal of developing design directives and standard drawings that consider vulnerable road users and be implemented in all projects at/near schools and urban centers. The implementation plan activities include training for division, departments as well as design consultants regarding the initiative and outcome documentation.

PRHTA operates and maintains traffic signals along main arterials such as PR-2, PR-17, PR-21, PR-23, among others at the Traffic Signals System Management Center (TSSMC). The agency currently is enhancing their management center and will have the capabilities for signal replacement projects, signal time modifications, tracking incidents and managing congestion. This provides an opportunity to integrate transit and all road users at these corridors.

This year PRHTA alongside transportation safety stakeholders are working on the development of the new 2024-2028 SHSP plan. The new plan, similar to the previous one, began with a data analysis of the current emphasis areas to determine if any change needs to be made and/or any new area/focus should be included. After the analysis, it was concluded that vulnerable road users should be a high priority area followed by speed management, impaired driving, occupant protection, lane departure and a new area of integrating communication efforts to increase awareness and education of all the areas. Figure 27 presents the 2024 – 2028 SHSP high priority and focus areas.

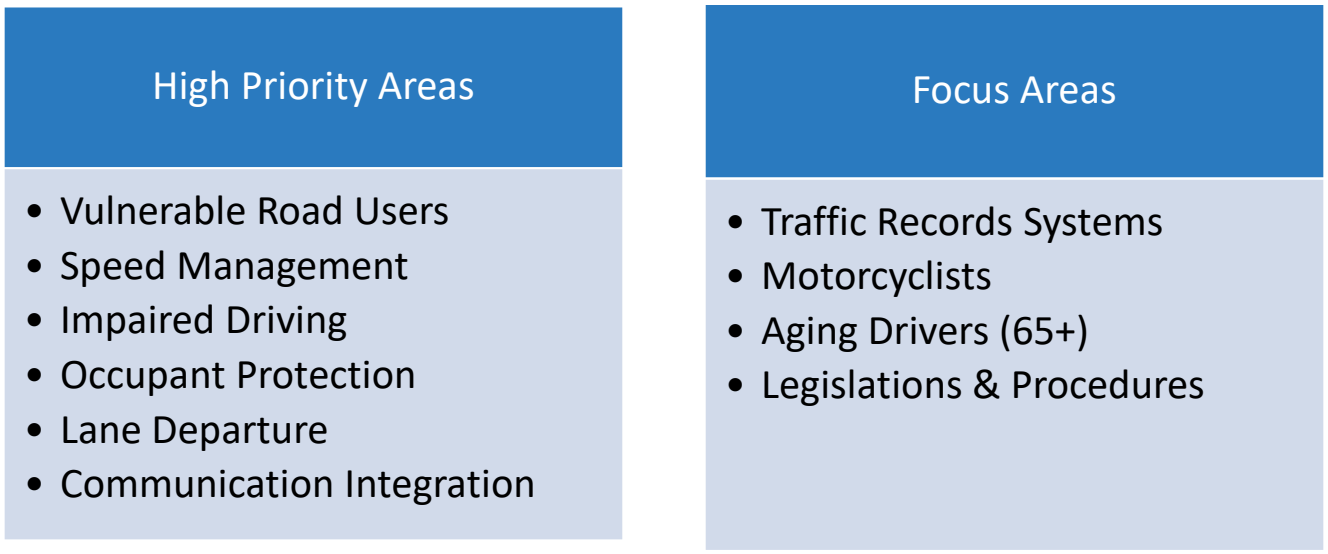


Figure 27 2024 - 2028 SHSP Emphasis Areas

The 2024-2028 SHSP plan has adopted the Federal Highway Administration Safe System Approach as backbone for their EAs as well as how to mitigate each one of them. The Safe System Approach is being applied with great success in a growing number of nations and cities around the world and has now taken hold in the United States.

As Figure 28 presents, this approach aims to eliminate fatal and serious injuries for all road users. It does so through a rounded view of the road system that first anticipates human mistakes, consider that humans are vulnerable as human body can tolerate certain low levels impact energy, promotes that the responsibility is shared by everyone, that safety should be proactive and that redundancy in the process is crucial.

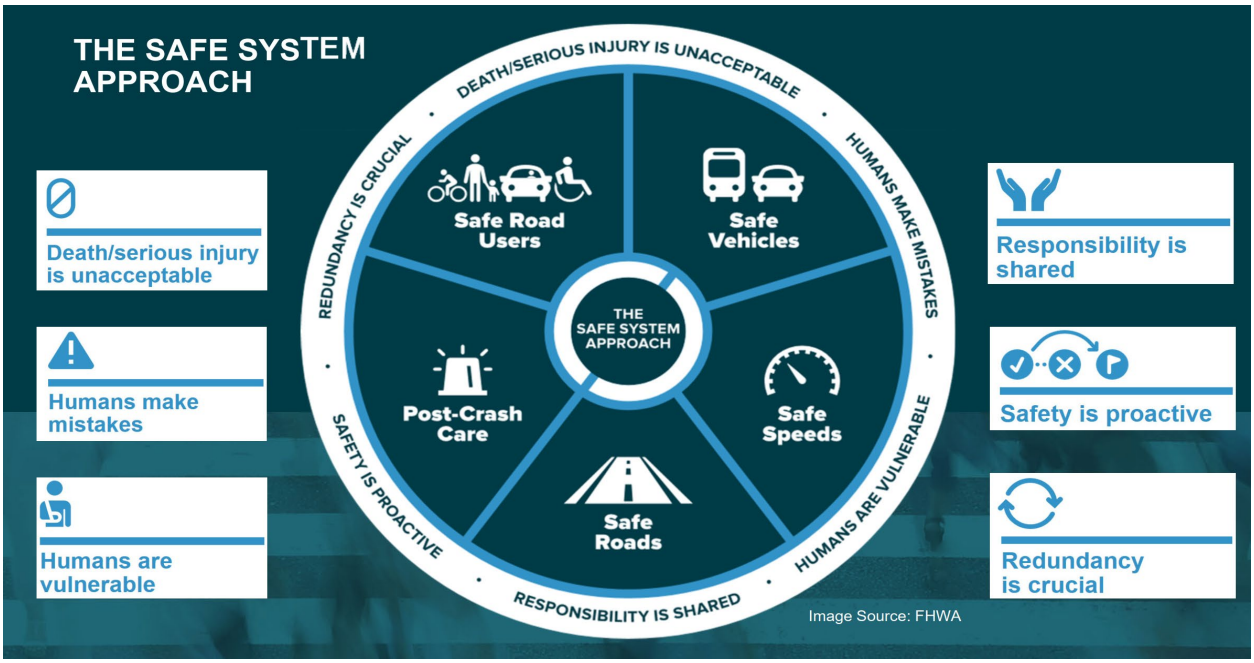


Figure 28 FHWA Safe System Approach *Source: FHWA* *Zero Deaths and Safe System | FHWA (dot.gov)*

The implementation of the Safe System Approach involves assessing the current state of practice, establishing a standardized approach, and making a commitment to a new paradigm shift.

Evaluation of Current State: This step involves assessing the current state of road safety practices, identifying areas where improvements are needed, and understanding the existing challenges and risks.

Development of the Approach: Once the evaluation is complete, the next step is to develop a comprehensive Safe System Approach. This approach should aim for uniformity in safety practices, ensuring that all stakeholders are on the same page and working towards common goals.

Paradigm Shift: Implementing the Safe System Approach often requires a significant shift in the way road safety is viewed and managed. It involves a commitment to a new paradigm that prioritizes safety above all else, even if it means making substantial changes to existing systems and practices.

The Safe System Approach seeks to create a system that is forgiving of human errors, with the ultimate goal of eliminating fatalities and serious injuries on the road. This approach recognizes that crashes will occur but aims to ensure that these incidents do not result in severe harm or loss of life. It involves optimizing across all the elements to create layers of protection against harm on the roads.

Figure 29 present a graphical explanation on how all these elements should align to provide these layers and avoid fatal and serious injury crashes from happening. The new 2024-2028 SHSP currently under development have the goal to incorporate this method to address all the emphasis areas as a whole.

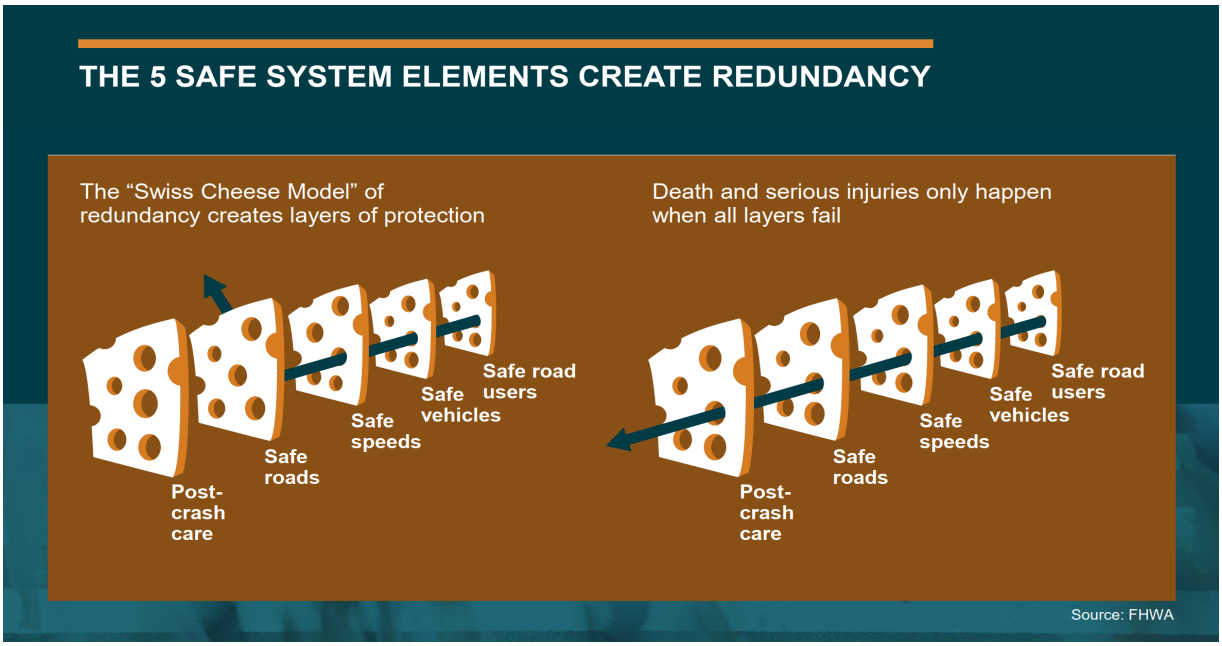


Figure 29 The 5 FHWA Safe System Elements Redundancy Graphic *Source: FHWA* *Zero Deaths and Safe System | FHWA (dot.gov)*

Safe Road Users —The safety of all road users is equitably addressed, continue education and communication to all road users including those who walk, bike, drive, ride transit, or travel by other modes. Examples include traffic campaigns, marketing safety information and law in the media and on billboards, promoting safety parks and education to school-age children and teenagers.

Safe Vehicles —Vehicles are designed and regulated to minimize the frequency and severity of a crash, using safety technology measures and occupant protection should be a continuous effort. Examples include occupant protection campaigns and interventions, research new technologies to be incorporated in government vehicles such as transit, police and EMS, research and prepare a plan for Autonomous vehicles impact.

Safe Speeds —Humans are vulnerable, therefore are less likely to survive high-speed crashes. Reducing speeds can help survivability of a crash. It reduces impact forces, provides more time for drivers to react and stop, and improves visibility (cone of vision). Examples include traffic calming measures, speed management policies, and target speed implementation.

Safe Roads —Planning and designing a transportation infrastructure to accommodate human mistakes can reduce the severity of crashes when they do occur. Examples include physically separate modes traveling at different speeds, provide dedicated times for different users to move through space, increase awareness of hazards and other road users of the road, managed crash angle with physical changes in geometry and install crash energy equipment.

Post-Crash Care —After a crash has occurred, those injured rely on emergency medical services responders to quickly arrive, stabilize their injuries, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities. Examples include continue coordination with first responders in traffic incident management meetings, investigate roads more traveled by EMS to prepare mitigation plans and assist with their quick arrival to the scene, gather any issues related to their process that is hindering their performance.

Summary of Quantitative Analysis

Puerto Rico is the smallest of the major islands of the Caribbean with 3,423.3 square miles of land. Puerto Rico is divided into 78 municipalities, including two municipal islands, Vieques and Culebra. According to the U.S. Census Bureau (2020) Puerto Rico has a population of approximately 3,285,874 people, from which 3,249,043 (99%) are Hispanic or Latino. Related to Race the 2020 Census report the distribution of race as shown in Figure 30.

Ethnicity and Race were considered in the analysis, however, as 99% of the population is Hispanic and 75.3 % are considered as two or more or some other race there was no significant correlation with the ethnicity or race variables.

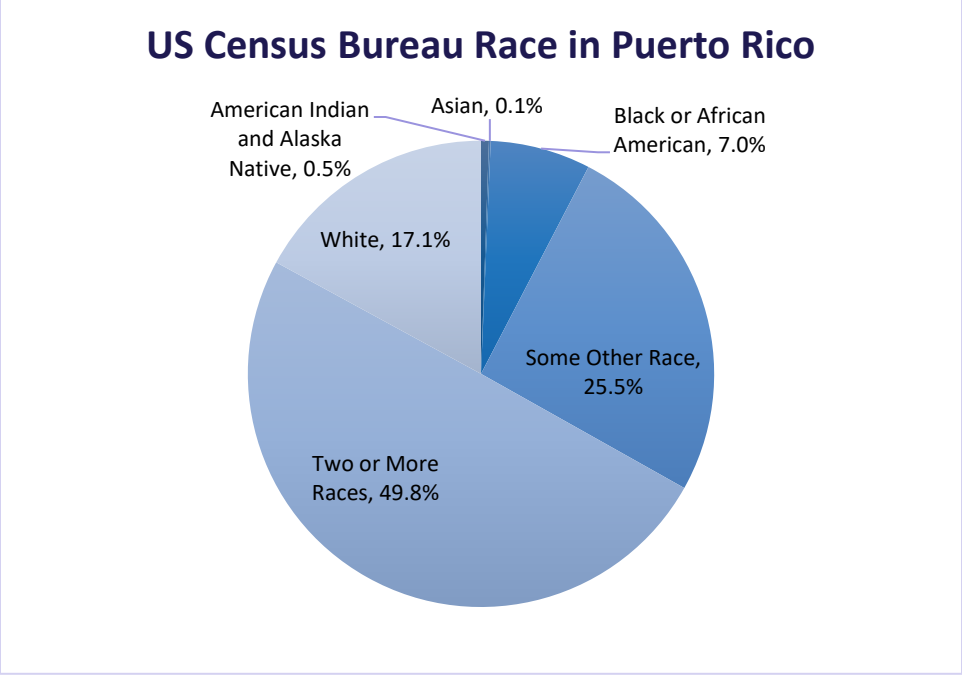


Figure 30 Puerto Rico Race Percentage ***Source: 2020 US Census Bureau***

In addition, the US Census Bureau reported by the 2021 American Community Survey (ACS) that **Puerto Rico has a 22% of population that is disabled**. This is higher than the **13% in United States**. The Figure 31 shows disability types reported in the 2021 ACS.

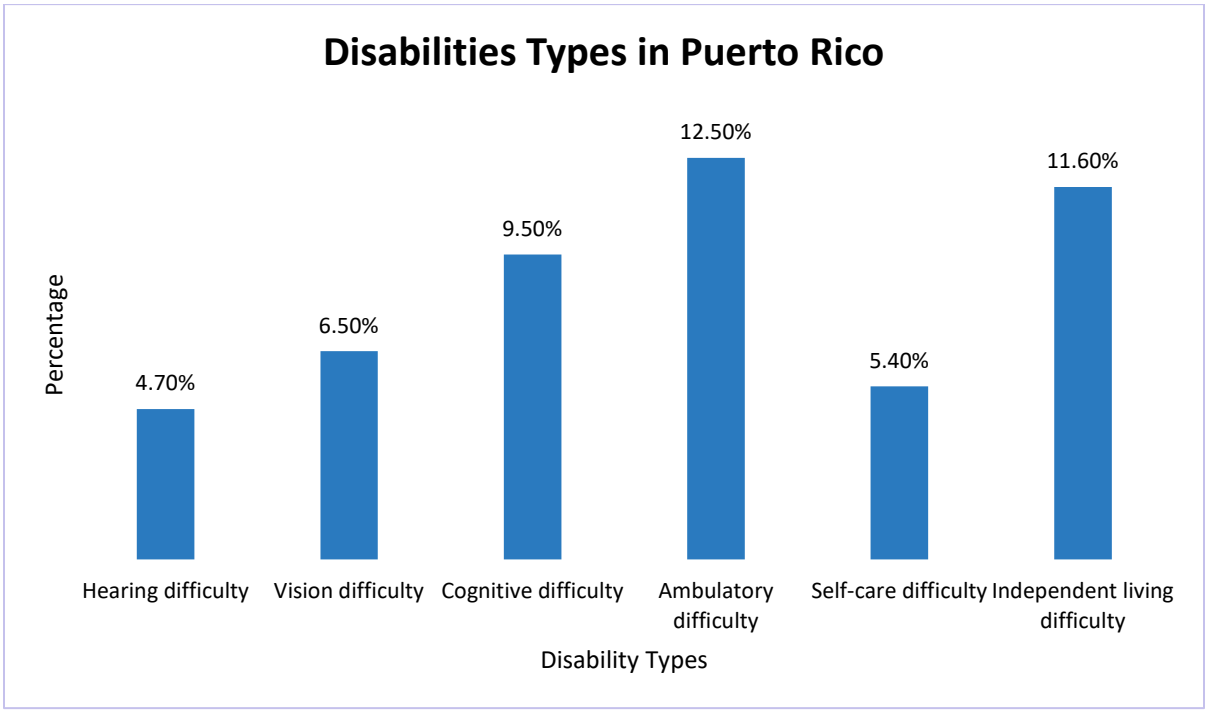


Figure 31 Disabilities Type Percentage in PR *Source: 2020 US Census Bureau*

According to the United States Census Bureau estimates, Puerto Rico's population for 2020 was 3,285,874 with a median age of 44.1 year. On the other hand, for 2010, the population was 3,725,789 people with a median age of 36.9 years and the national median age is 38.8. For the year 2020, the number of people 60 years old and over increased to 924,477, compared to 2010 which was 760,075. Additionally, there's a decrease in the population range of 0 to 14 years old and the birth rate is less than 2% annually. **This represents a disproportionate increase in the older adult population**.

The median household income in Puerto Rico is $22,237 with 40.5% poverty and an employment rate of 38.8%. In addition, as shown in Figure 32, 82.8% reported driving alone to work, 6.2% carpooled, 5.9% worked from home, 2.5% walked, 1.8% reported using other means, 0.7% use public transportation, and only 0.1% reported using a bicycle. Therefore, transportation costs associated with driving alone (gas, car maintenance, tag, etc.) also contribute as a factor in Puerto Rico residents household income.

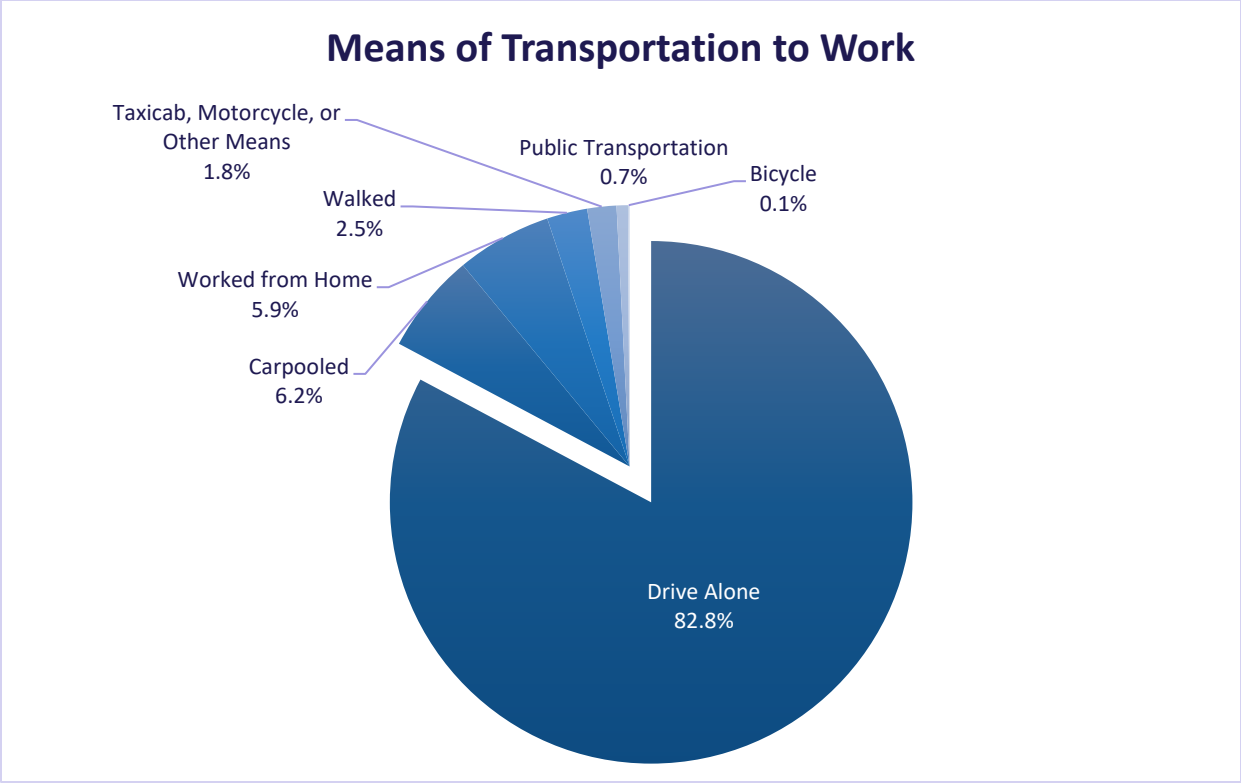


Figure 32 Means of Transportation to Work in Puerto Rico *Source: US Census Bureau*

The island 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.

Puerto Rico's transportation network includes eight (8) active airports (out of the 16), five (5) seaports, and 16,694 miles of paved roadways. In addition, the San Juan Metropolitan Area (SJMA) has a heavy rail urban train ("Tren Urbano") and two bus transit systems, Metropolitan Bus Authority (AMA, for its Spanish acronym) 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 shared ride systems such as Uber, and others, are serving mainly the SJMA.

For this assessment the following data sources were used for the analysis, correlation, and interpretations.

Roadway Safety Observatory (Source: "Observatorio Seguridad Vial - OSV; PR Traffic Safety Commision -- TSC")

- 2019 to 2022 Fatal and Serious Injury Crash Pedestrian and Bicyclist Data
- Location of crash
- Driver and victim age
- Time of Day
- Day/Month/Year

Highway Performance Monitoring System (HPMS - Source: PRHTA Highway System Office)

- Roadway Number Id
- Speed
- Annual Average Daily Traffic (AADT)
- Fuctional Classification
- Number of lanes
- Municipality/Region

2020 US Census Bureau

- Population
- Race and Etnicity
- Income
- Zero Car Household
- Disability

Transit (provided by Transit agency)

- Urban Train ("Tren Urbano - TU") line
- TU transit stations
- Metropolitan Bus Authority (AMA) routes
- AMA bus stops

Roadway Safety Observatory (OSV, for its Spanish acronym) is a web-based platform that contains police crash report variables information as well as it geocodes the crash using the latitude and longitude, or address included in the police report. The platform contains fields such as general person information (age, gender), crash information (severity of the crash, location, date, time, circumstance, etc.) as well as vehicle information (vehicles involved). This platform includes crash data from 2019 until 2022. Data for this year (2023) is available at the platform, however, it is still being processed. Therefore, is not considered complete as of the time for this assessment. Data prior to 2019 was managed by the University of Alabama Center for Advance Public Safety (CAPS) Critical Analysis Reporting Environment (CARE) database. However, between 2018 to 2019 Puerto Rico decided to start its own crash analysis tool and migrate from CARE to OSV. The database managed through CARE did not comply with the definitions of the KABCO severity scale, as PR police crash report only identified crash severity as fatal, injured (without distinguishing severity), or property damage only (PDO). In 2019, with PR Traffic Safety Commission (TSC) support, PR Police officially made the island-wide transition to a new digital form, known as the PPR-621.4, which includes the KABCO severity scale and was completely digital. In addition, some of the variables presented in this section display a percentage for “(No Value)”, “Not Coded”or “(blank)”. As the database originates from the police crash report, if the officer left blank the variable, then no information is coded in the platform.

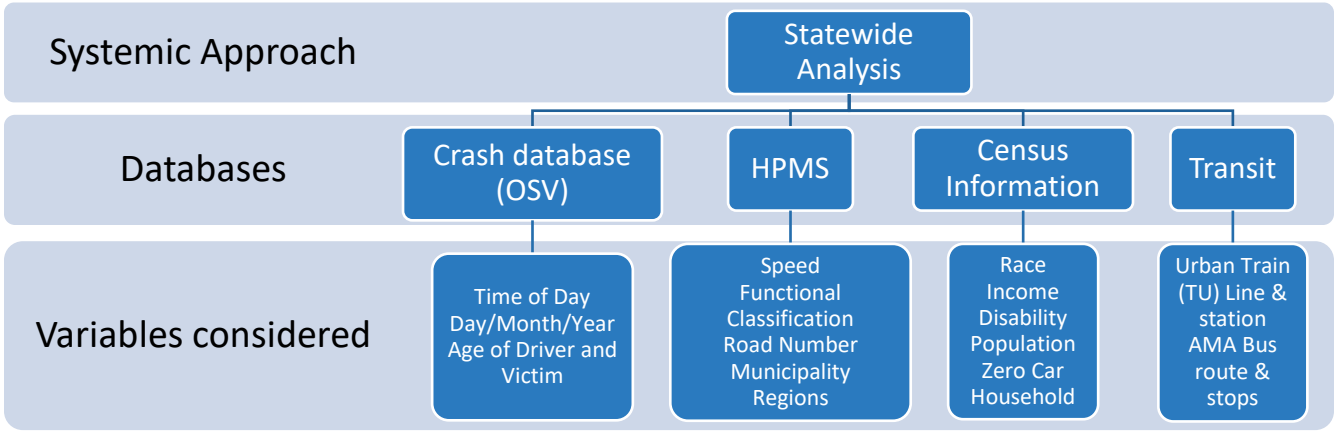
The Highway Performance Monitoring System (HPMS) data was provided by PRHTA Highway System Office. This database is updated annually by federal requirement and contains PR's roadway information. Although it does not include all roads, it includes all FHWA, Federal Emergency Management Agency (FEMA), National Highway System (NHS) roads, including state and local roadways. HPMS Products such as roadway identification number (id), roadway classification, length in kilometers, speed, AADT, number of lanes, width of lanes, median and shoulder presence, amongst others were considered.

In addition, the transit agency provided their most recent geocoded files with the fixed train alignment and stations, and bus stops and routes.

All these (4) databases (Census, OSV, HPMS and Transit) were uploaded as shapefiles in Geographical Information Systems (GIS) tool. For the statewide separate analyses and multiple correlations between the data were performed including spatially frequency and statistics.

Systemic Approach – High-Risk Roadway Features

The following flowchart presents a graphic explanation on how the data was analyzed and filtered for the statewide systemic approach. The intent was to identify characteristics and variables that were correlated with VRU crash data. This analysis helped with the identification of high-risk characteristics systemwide.



As requirement of the assessment and mentioned before, census data related to ethnicity and race was correlated with the VRU crash data. However, as shown in Figure 33,Puerto Rico's population majority (almost 99%) is Hispanic Minority. Therefore, the variable of ethnicity is not strongly correlated with the crash data.

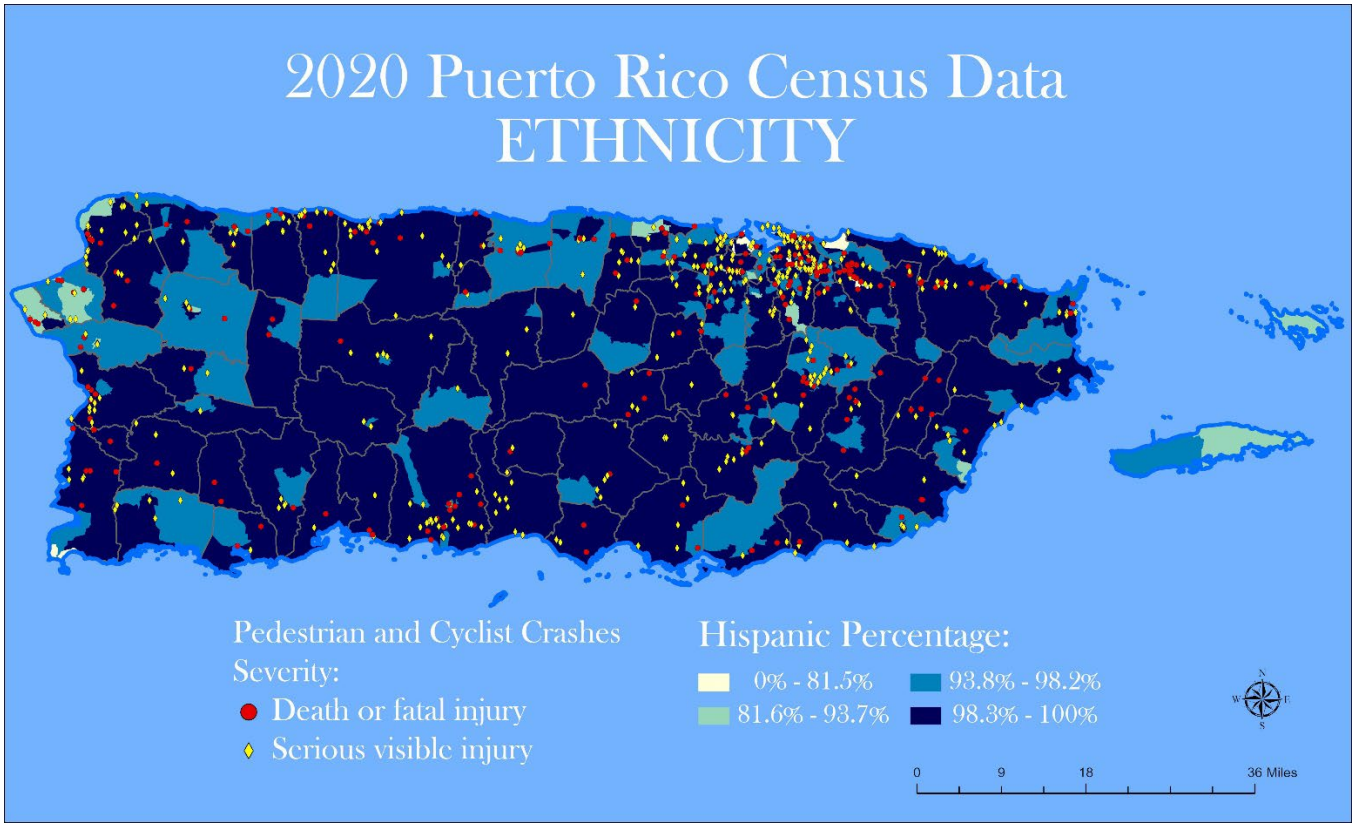


Figure 33 VRU Crash Data and Ethnicity Map *Source: 2020 US Census Bureau*

Race was also included in the correlations, as shown in Figure 30 it was found that most of the P.R. population is some other race (838,316 – 25%) and two or more race (1,635,791 – 49.8%). The population of Puerto Rico has been shaped by American Indian (taínos, in Spanish), European colonization (white Spanish) and slavery (African black population). Therefore, people of Puerto Rico identify themselves as a combination of multiple races. Similarly, to ethnicity, race was not found to be a significant variable with the crash variable location.

The following graphs provide a summary of the Vulnerable Road User data crashes.

Figure 34 presents the Vulnerable Road Users fatalities by year. It can be observed that in 2020 and 2022 the fatalities for pedestrians decreased, however, cyclist fatalities slightly increased.

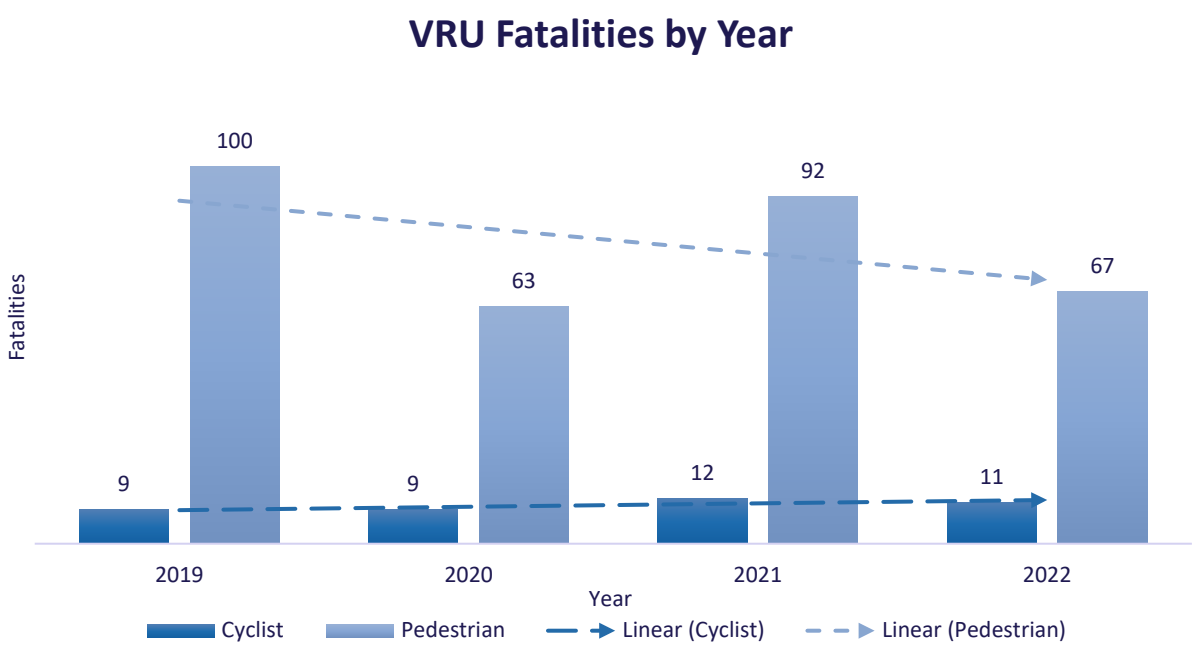


Figure 34 VRU Fatalities by Year

Figure 35 presents VRU Crash data by month, it could be observed that 55% of the fatal and serious injury VRU crashes occurred between July to December with August, October, November, and December being the highest months for VRU Crashes.

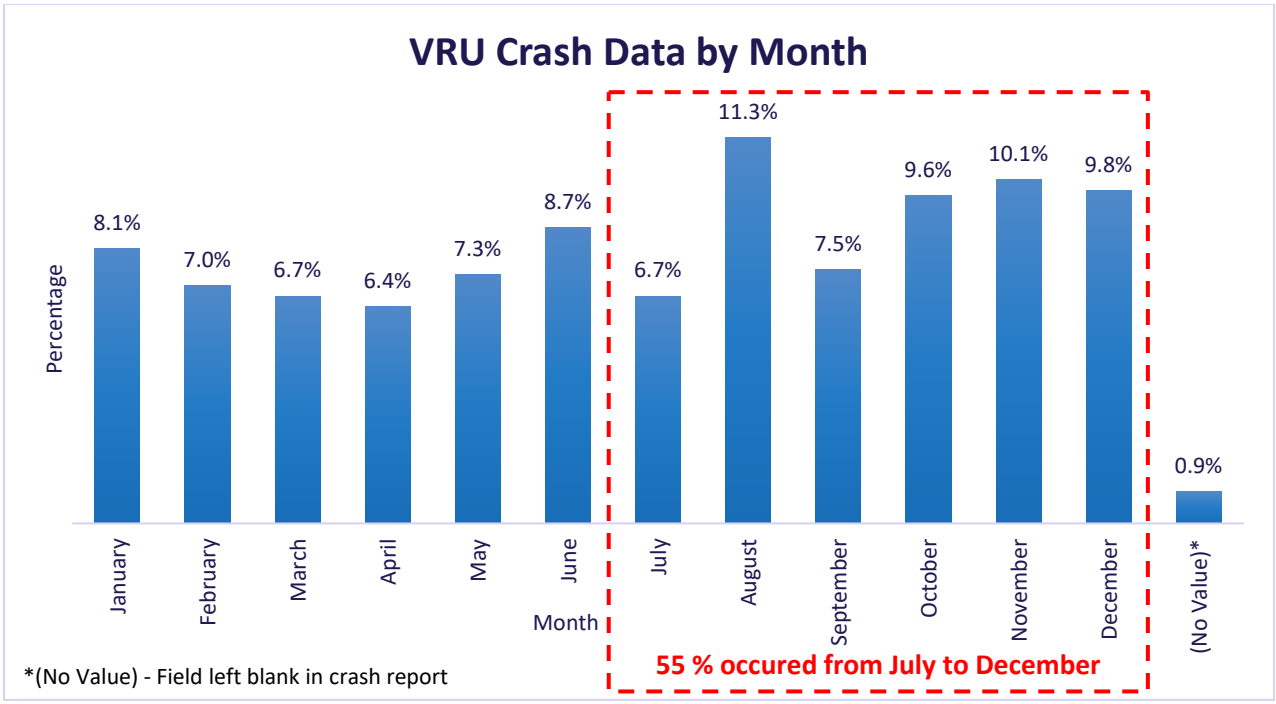


Figure 35 VRU Crash Fatal and Serious Injuries Data by Month

Since Puerto Rico's geography is mountainous and there is a significant portion of the roadway network that is considered rural, crash data locations were analyzed to identify if there was an overrepresentation in rural versus urban areas. Figure 36 shows that 84% of the VRU crashes occurred in urban areas. An example of an urban area could be where medical services, pharmacies, commercial activity typically occurs. Similarly, intersection versus segment was analyzed, and it was observed that 91% of the VRU crashes occur in a non-intersection related area.

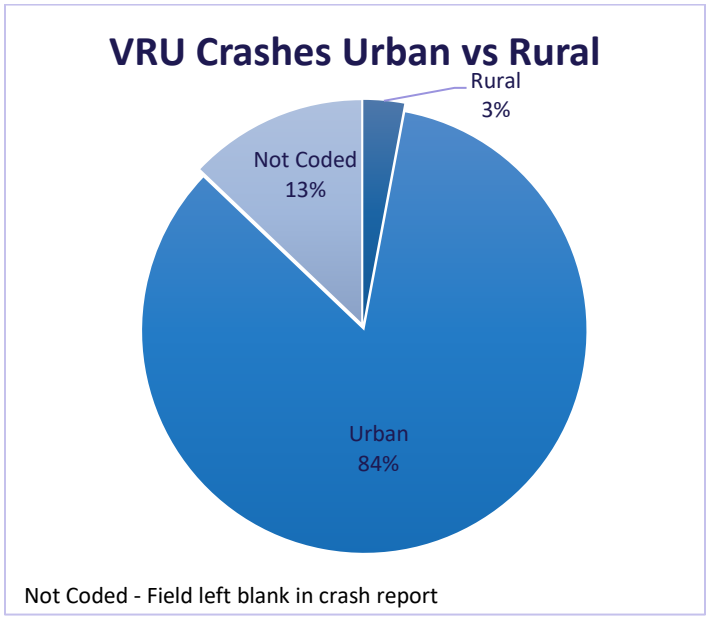


Figure 36 VRU Crashes Urban vs Rural

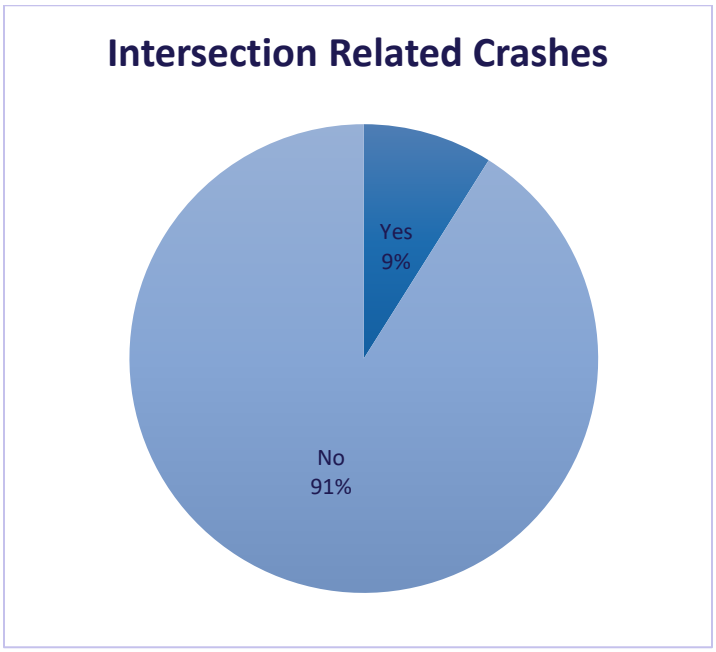


Figure 37 VRU Intersection Related Crashes

Figure 38 presents the driver age versus the victim age (vulnerable road users). It can be observed that the driver age is 40% between 18 and 50 years old, with 25% being 18 to 35 years old. However, the victim's age is 50% between 51 or over. As previously mentioned, Puerto Rico in comparison with the nation has a high population of elderly population. More so, typically people with advanced age prefer not to drive as it causes stress and understands that their mobility, reaction time and vision is not the same. Therefore, they prefer sometimes to walk and/or use transit to get their services (supermarkets, doctors' appointment, prescriptions). It is imperative that as this variable is significant and overrepresented that it needs to be considered when strategies, projects and efforts are developed.

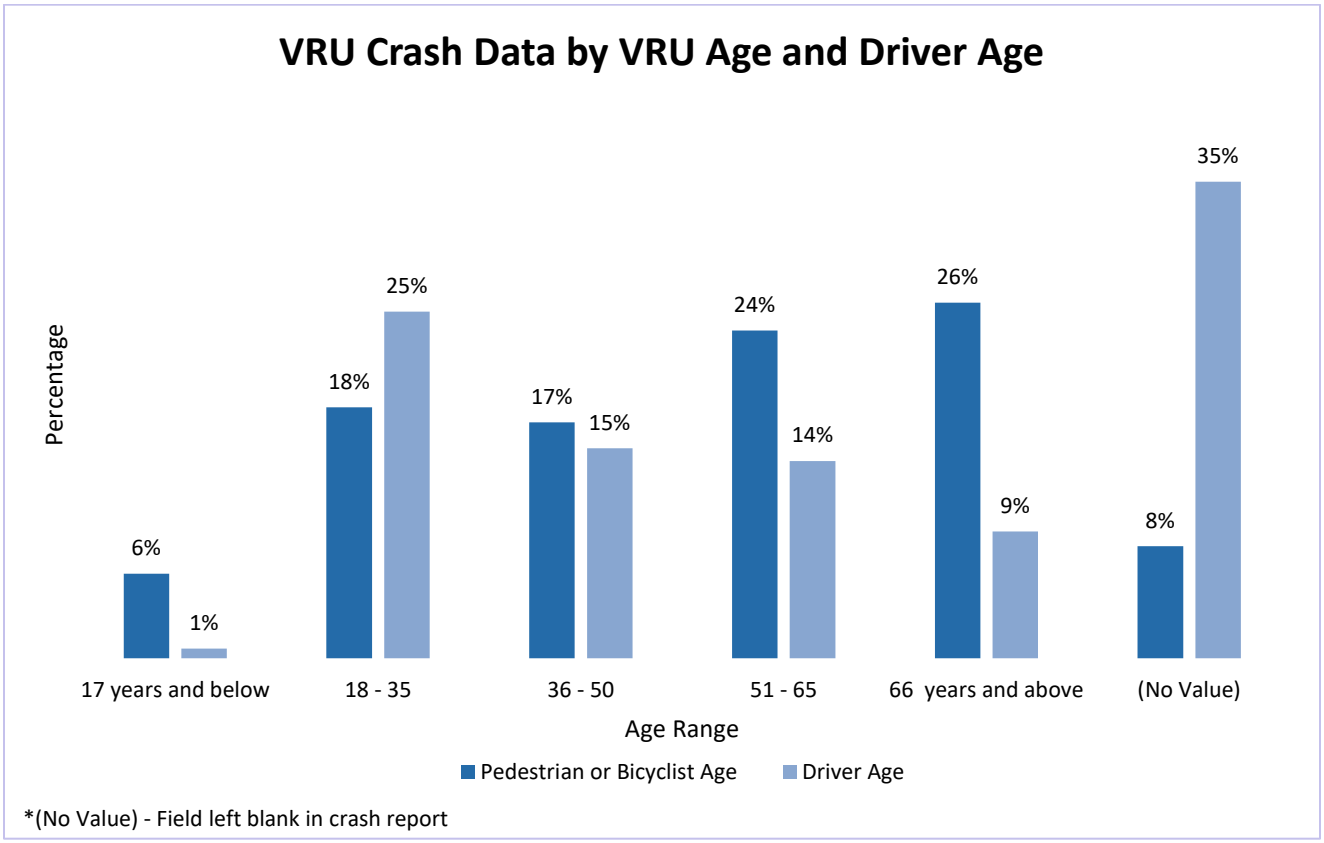


Figure 38 VRU Crash Data by Driver Age and VRU Victim Age

Figure 39 present the VRU crash percentage by time of day and it can be observed that 59% of the crashes occurred from 6:00 pm to 6:00 am. Therefore, were at nighttime or in low light conditions. The light/poor illumination variable not only is a significant variable for VRU crashes but overall PR fatalities and serious injury crashes.

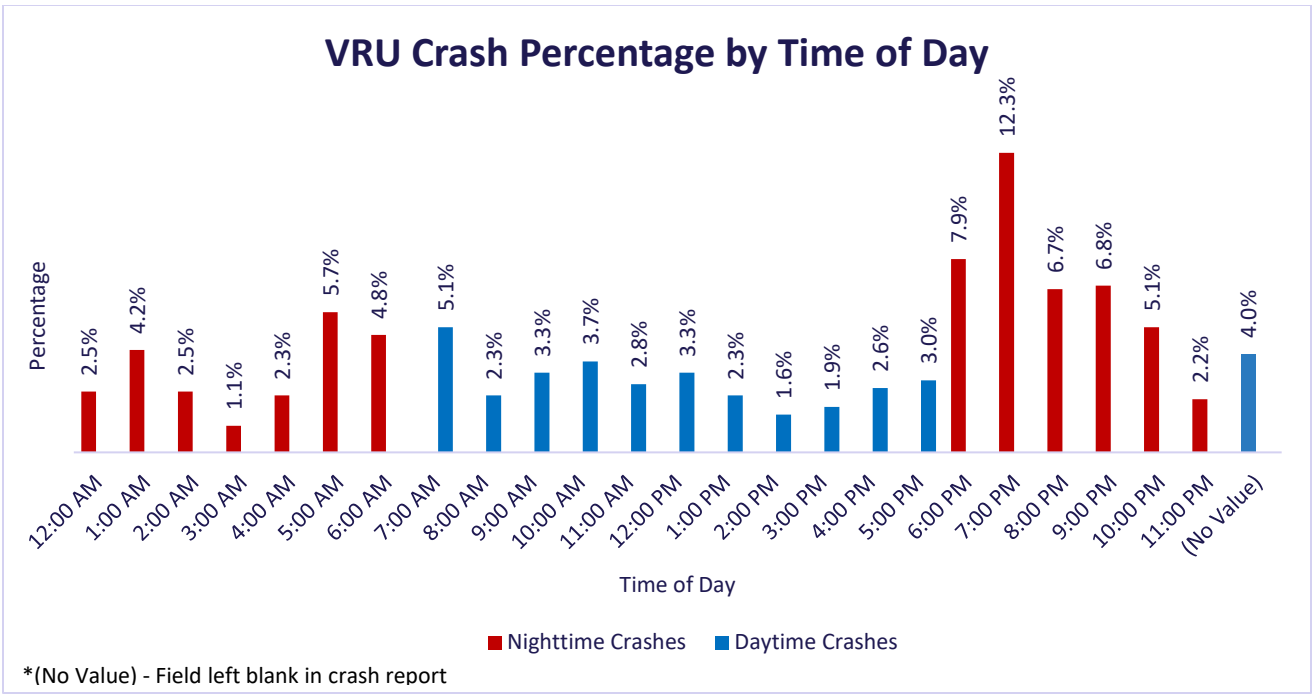


Figure 39 VRU Crash Percentage by Time of Day

Similarly, to the overall road users' fatalities and serious injuries as well as the nation results, it can be observed in Figure 40 that 59% of the VRU fatal and serious injuries crashes occurred in speed limit zones of 35 mph or higher.

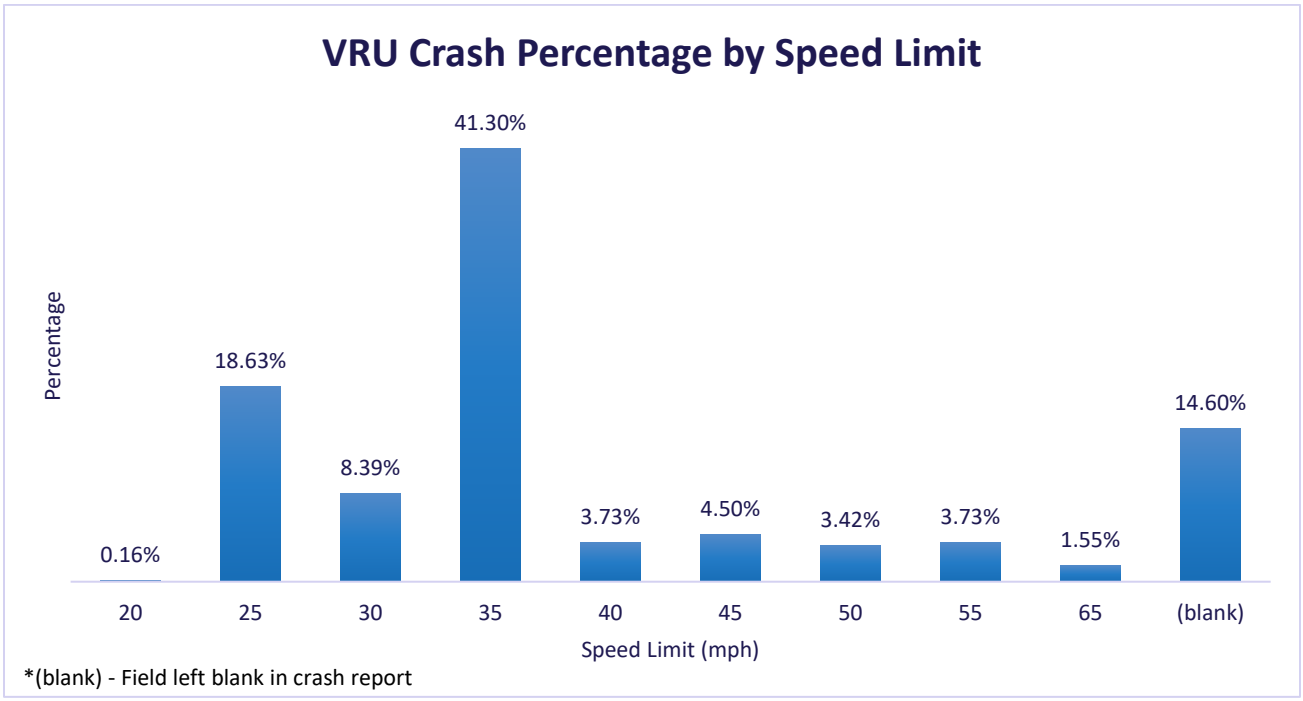


Figure 40 VRU Crash Percentage by Speed Limit

Figure 41 presents the Annual Average Daily Traffic (AADT) where these crashes are occurring. The majority of them (around 90%) are on roadways with less than 42,000 AADT.

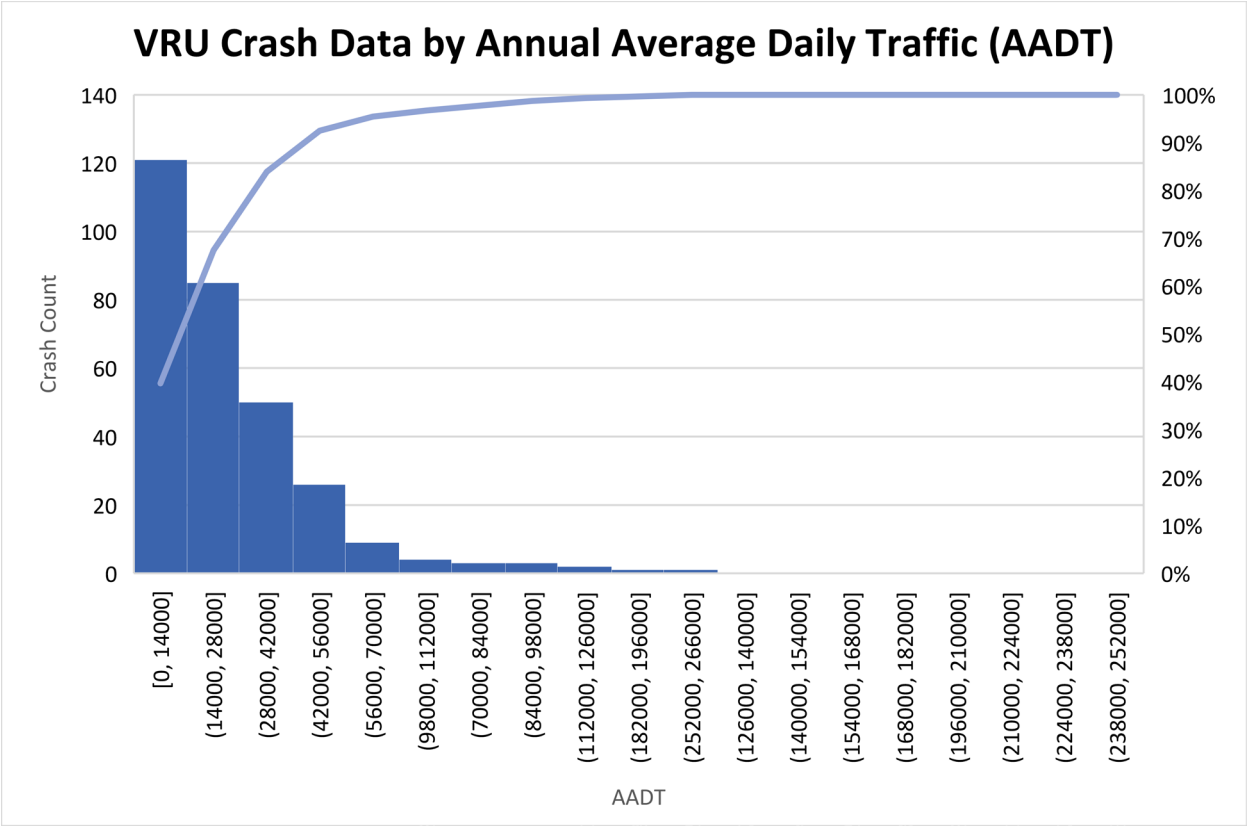


Figure 41 VRU Crash Data by Annual Average Daily Traffic (AADT)

Related to roadway classification, Figure 42 shows that 54.8% of the VRU crashes are occurring in Principal Arterials and Minor Arterials. This value was compared with the number of kilometers these two functional classifications represent in the PR roadway network which is 8% (2,704.65 total kilometers) as shown in Figure 43. It is recommended to focus systematically on these two-roadway classifications to address the likelihood of potential VRU crashes and the current trends.

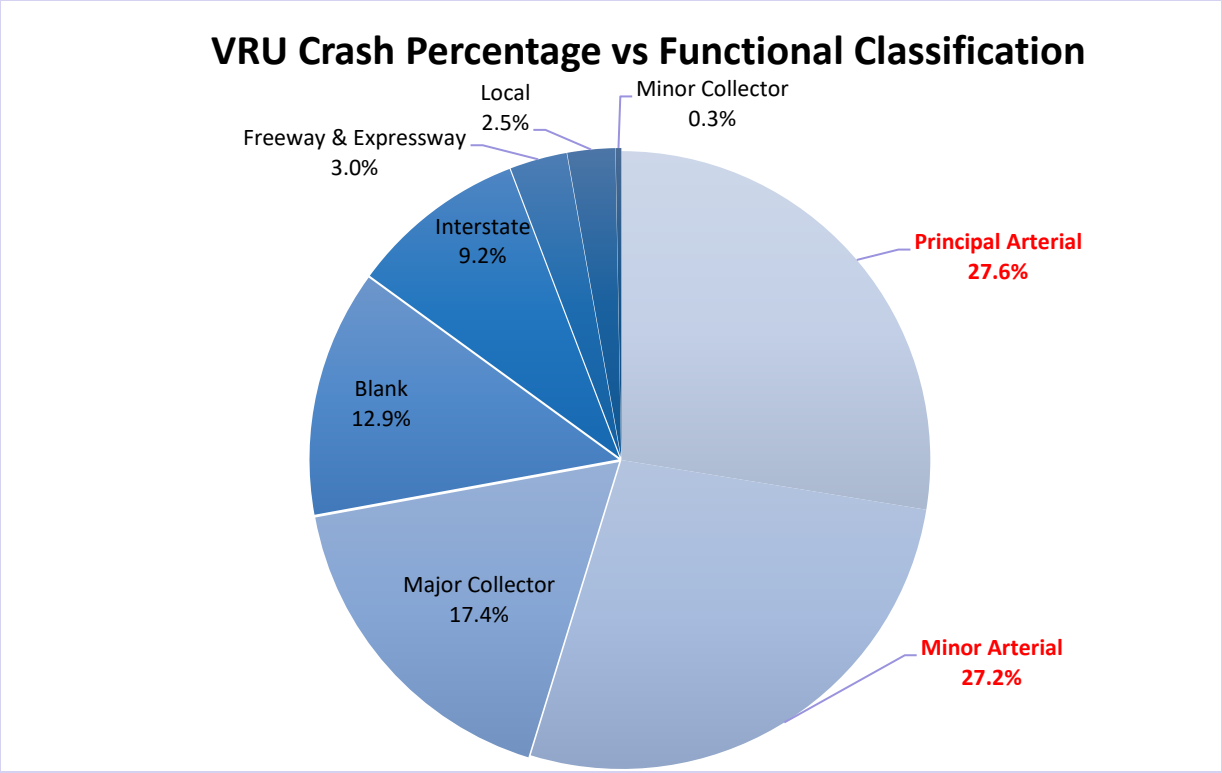


Figure 42 VRU Crash Percentage by Functional Classification

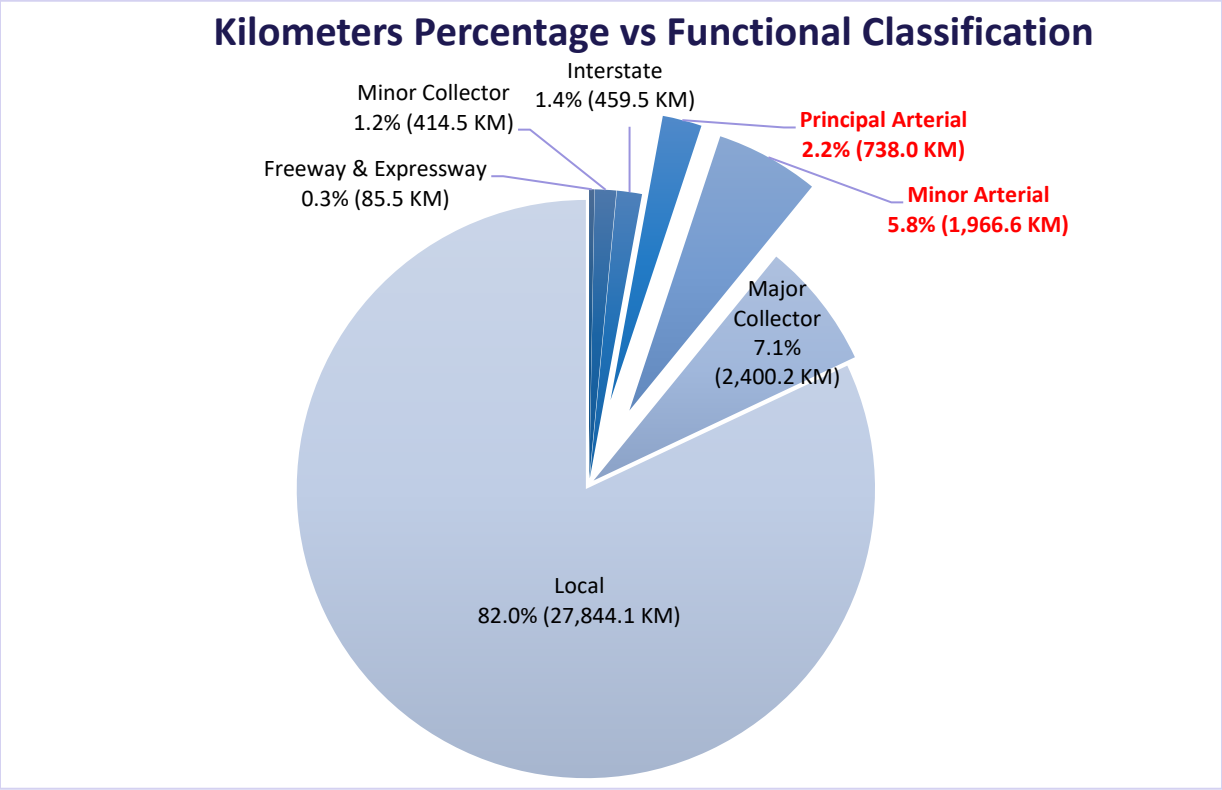


Figure 43 Kilometers Percentage by Functional Classification

In addition, VRU crashes were spatially correlated with the transit stations as well as the bus stop locations. Figure 44 shows that performing a half a mile (1/2 mile) buffer from the transit station (showed as TU in graph) and a quarter of a mile (1/4 mile) of the bus stops location (showed as AMA in graph), 29% of the crashes were occurring inside the buffer space. As shown in Figure 45 and Figure 46, some of the stops/stations buffer areas coincide spatially. Therefore, the numbers were not independent.

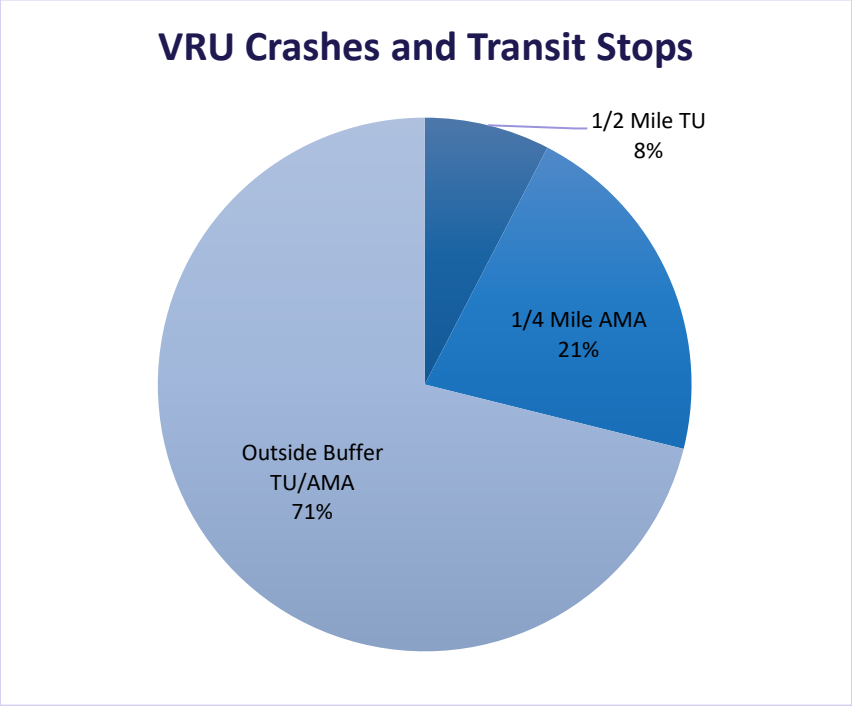


Figure 44 VRU Crashes and Transit Stops

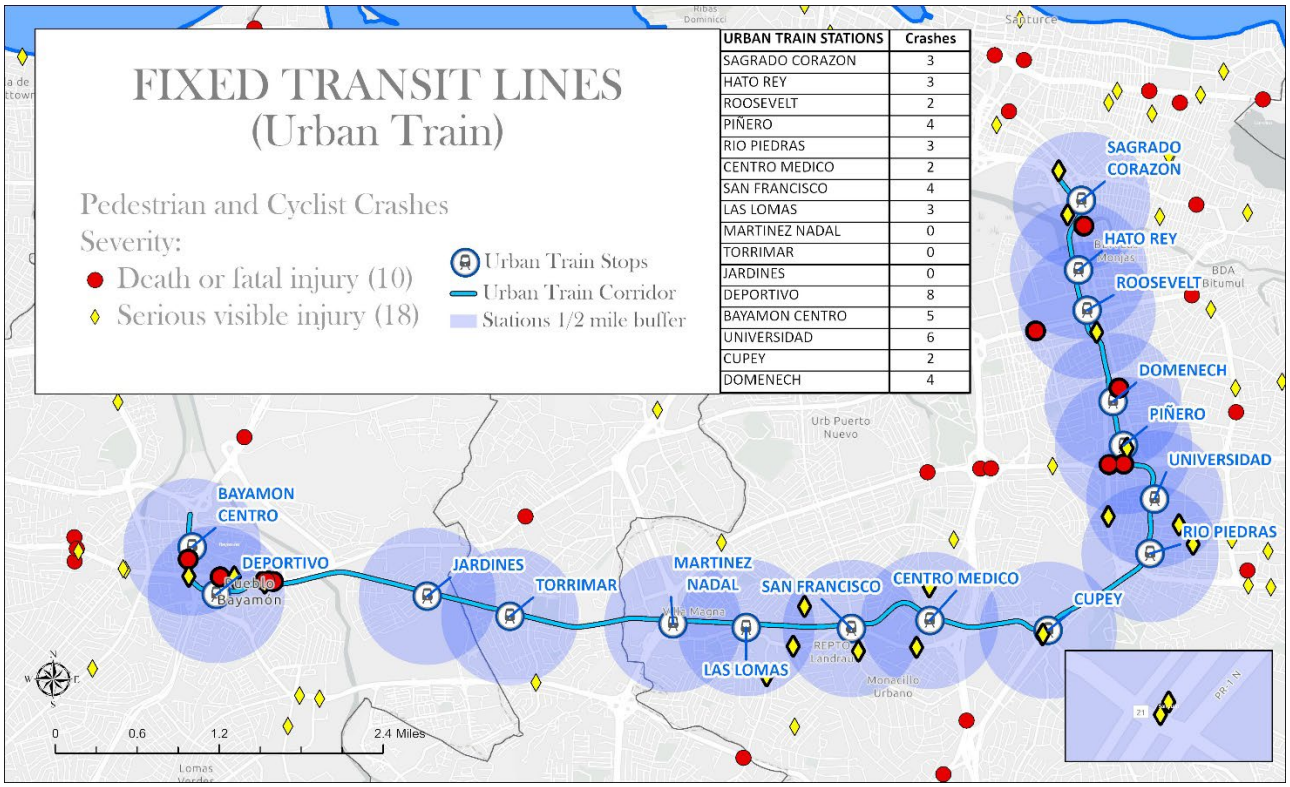


Figure 45 VRU Crash Location and Urban Train Station Buffer Map *Source: PRDTPW Transit Agency*

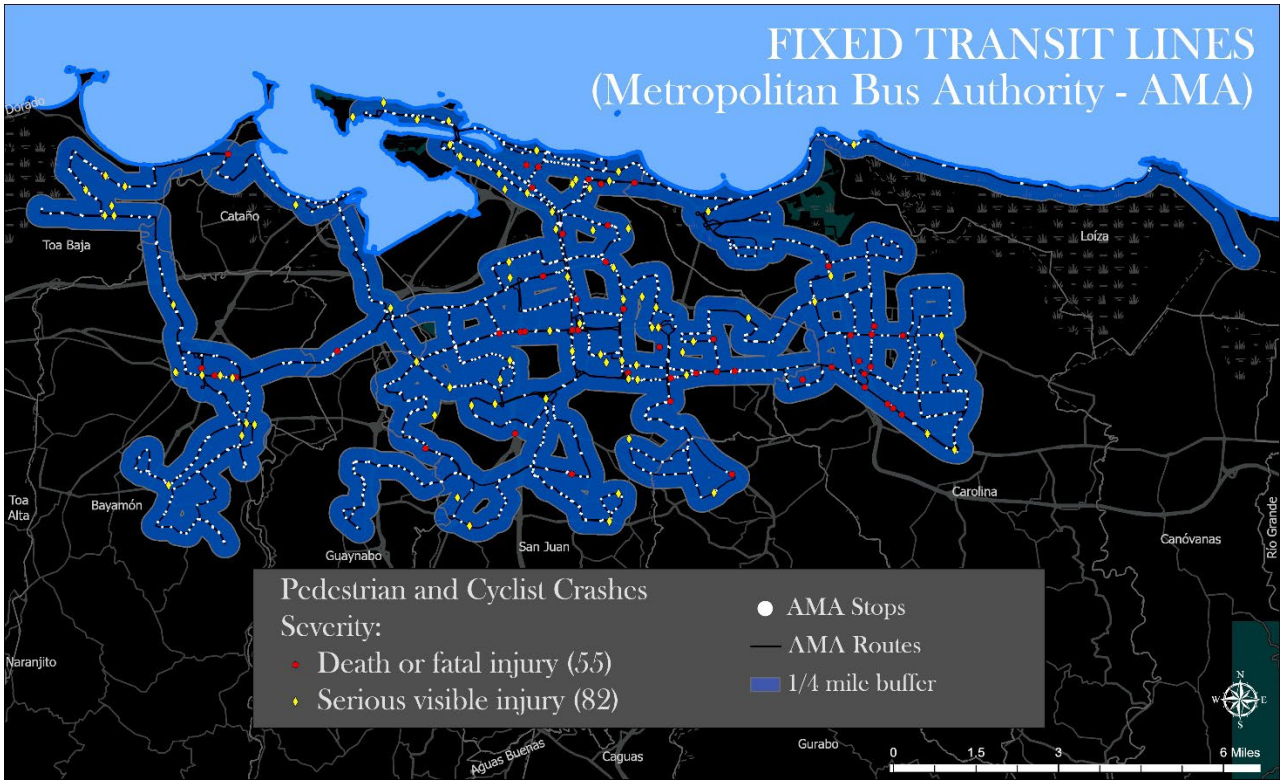


Figure 46 VRU Crash Location and AMA Bus Stop Buffer Map *Source: PRDTPW Transit Agency*

Based on the data analysis and data correlation, it was concluded that functional classification (principal and minor arterials), speed, and number of lanes were risk factors and contributing characteristics associated with the systemic approach. Variables such as population, AADT, time of day and age were also significant in the analysis and further considered in the high-risk evaluation.

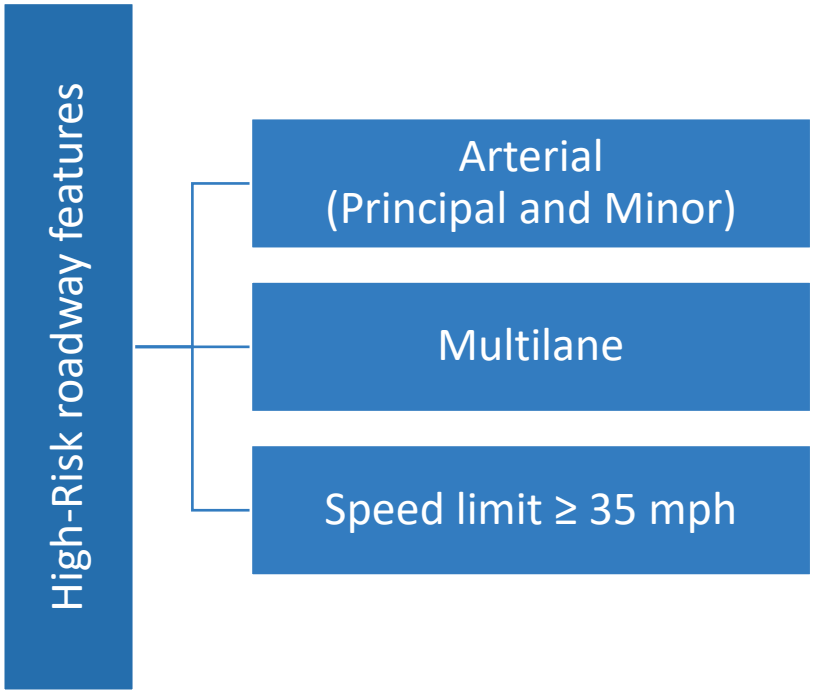


Figure 47 Systemic Approach High Risk Roadway Features

High-Risk Areas Identification

From this statewide analysis and after risk factors were determined, high-risk areas were identified. An analysis of the high-risk areas was performed. This second-tier analysis divided the island into five (5) regions following the PRHTA regions, so the geography characteristics and population were compared fairly among municipalities.

In addition, each municipality VRU fatal and serious injury (F & SI) crashes count was normalized with 2020 US Census population for each municipality, HPMS Vehicle Miles Traveled (VMT) by Municipality as well as the number of Kilometers (KM) per roadway in the Municipality. From there, Puerto Rico municipalities were ranked within their region using these four parameters (crashes, population, VMT and KM) and municipalities with above average results were selected. **Figure** 48and Figure 49 present a graphic explanation of the methodology.

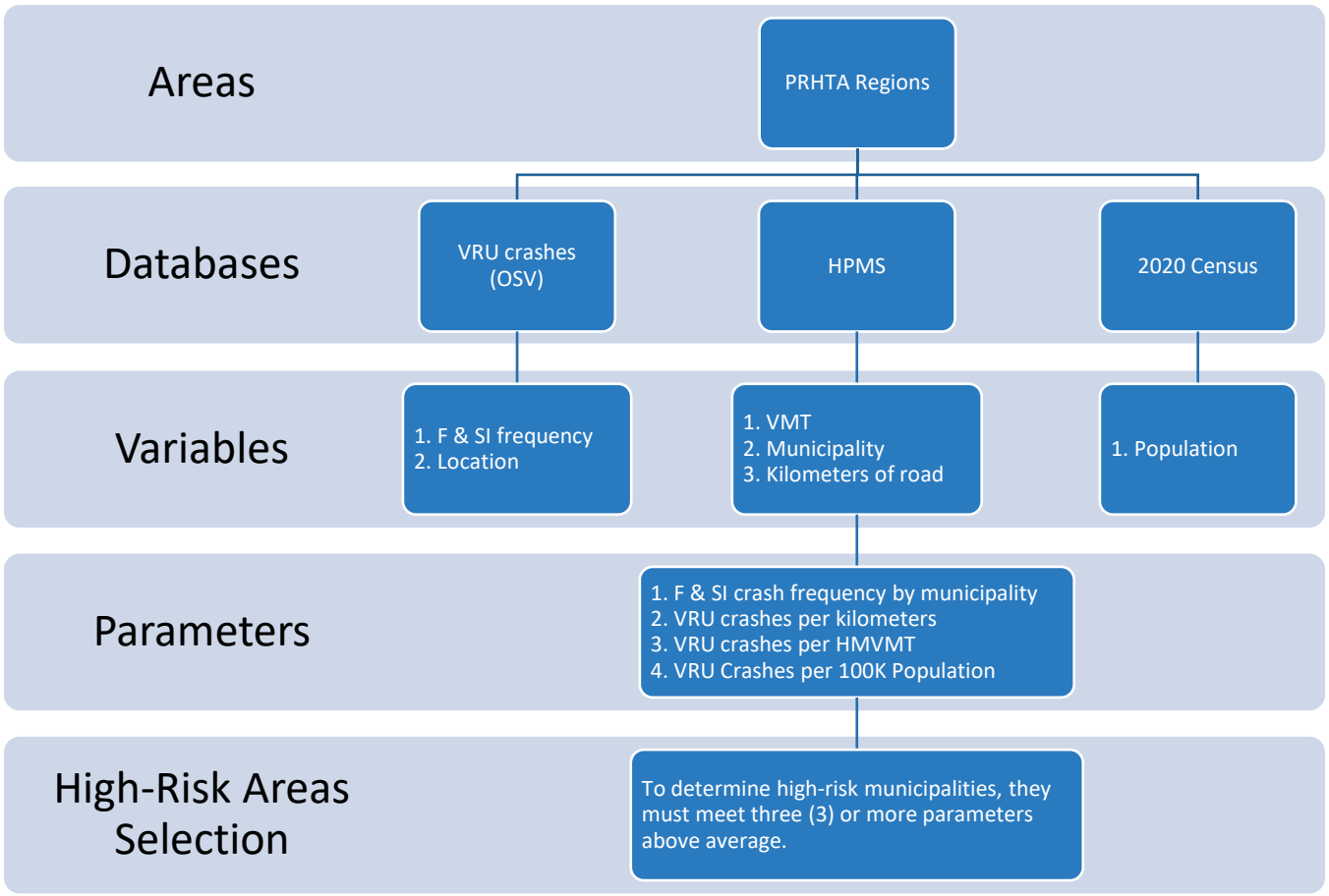


Figure 48 VRU High-Risk Areas Flowchart Methodology

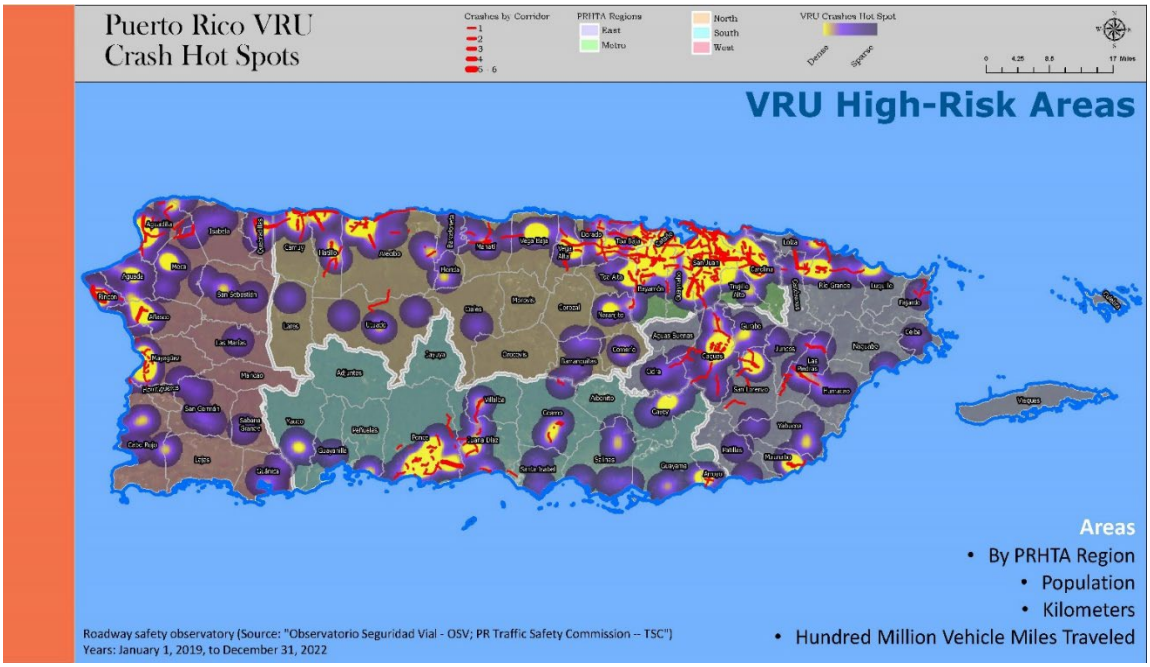


Figure 49 VRU High-Risk Areas Snapshot Methodology

Table 2 to Table 6 presents PRHTA Regions with their Municipalities and the parameters considered to determine the high-risk areas.

As mentioned before, VRU fatal and serious injury crash data count was normalized per capita, by total number of roadway kilometers and hundred million vehicle miles traveled (HMVMT) for each municipality. Then it was compared with their peer municipalities within the region. Finally, each parameter that was above average was highlighted. The municipalities with three (3) or more parameters above average were selected for this first tier of areas.

Table 2 PRHTA Region Metro Municipalities High-Risk Areas

Municipality	Roadway KM	Population	VMT	VRU Data	VRU/KM	VRU/100K Pop	VRU/HMVMT	Top Average
San Juan	1,605.2	334,776	7,615,500	94	0.059	28.08	3.38	1
Bayamón	1,200.1	181,577	2,451,400	33	0.027	18.17	3.69	2
Carolina	899.6	151,571	2,275,800	29	0.032	19.13	3.49	3
Cataño	124.6	22,364	409,200	5	0.040	22.36	3.35	4
Guaynabo	621.5	89,057	1,537,300	9	0.014	10.11	1.60	
Trujillo Alto	433.9	66,810	426,400	5	0.012	7.48	3.21	

Table 3 PRHTA Region North Municipalities High-Risk Areas

Municipality	Roadway KM	Population	VMT	VRU Data	VRU/KM	VRU/100K Pop	VRU/HMVMT	Top Average
Hatillo	420.6	38,021	409,300	12	0.029	31.56	8.03	1
Toa Baja	437.5	72,783	1,127,200	20	0.046	27.48	4.86	2
Vega Alta	328.3	34,786	361,700	8	0.024	23.00	6.06	3
Camuy	418.5	32,620	318,500	7	0.017	21.46	6.02	4
Arecibo	996.5	86,090	1,461,900	22	0.022	25.55	4.12	5
Manatí	421.0	38,751	728,100	9	0.021	23.23	3.39	6
Dorado	299.6	35,663	736,500	7	0.023	19.63	2.60	7
Barranquitas	395.6	28,944	144,200	6	0.015	20.73	11.40	
Toa Alta	477.5	66,041	313,600	7	0.015	10.60	6.12	
Utuado	751.7	27,535	370,400	6	0.008	21.79	4.44	
Naranjito	362.2	29,208	230,700	5	0.014	17.12	5.94	
Barceloneta	204.6	22,416	293,400	4	0.020	17.84	3.74	
Comerío	230.4	18,619	116,2500	2	0.009	10.74	4.71	
Ciales	316.7	16,742	183,8000	2	0.006	11.95	2.98	
Florida	100.1	11,538	83,500	1	0.010	8.67	3.28	
Vega Baja	506.3	53,684	608,910	4	0.008	7.45	1.80	
Lares	495.1	27,774	242,000	2	0.004	7.20	2.26	
Morovis	319.4	28,277	171,000	1	0.003	3.54	1.60	
Corozal	447.9	34,322	242,300	1	0.002	2.91	1.13	

Table 4 PRHTA Region West Municipalities High-Risk Areas

Municipality	Roadway KM	Population	VMT	VRU Data	VRU/KM	VRU/100K Pop	VRU/HMVMT	Top Average
Aguadilla	506.7	53,931	849,500	22	0.043	40.79	7.10	1
Quebradillas	243.0	23,332	188,100	7	0.029	30.00	10.20	2
Rincón	216.6	15,316	44,900	6	0.028	39.17	36.61	3
Añasco	373.4	25,026	343,800	7	0.019	27.97	5.58	4
Mayagüez	694.3	70,609	1,760,800	16	0.023	22.66	2.49	5
Cabo Rojo	617.1	46,718	432,600	9	0.015	19.26	5.70	
Aguada	437.3	37,666	342,900	7	0.016	18.58	5.59	
Lajas	334.4	22,936	173,900	5	0.015	21.80	7.88	
Las Marías	319.6	8,705	48,700	3	0.009	34.46	16.88	
Isabela	494.9	42,754	370,000	6	0.012	14.03	4.44	
Guánica	212.5	12,800	313,400	3	0.014	23.44	2.62	
Maricao	218.5	4,575	15,900	1	0.005	21.86	17.23	
Moca	469.4	37,279	233,100	4	0.009	10.73	4.70	
San Sebastián	619.8	38,969	316,600	5	0.008	12.83	4.33	
San Germán	461.3	31,174	593,300	4	0.009	12.83	1.85	
Hormigueros	148.2	15,413	368,500	2	0.013	12.98	1.49	
Sabana Grande	291.6	22,351	282,800	2	0.007	8.95	1.94	

Table 5 PRHTA Region East Municipalities High-Risk Areas

Municipality	Roadway KM	Population	VMT	VRU Data	VRU/KM	VRU/100K Pop	VRU/HMVMT	Top Average
Loíza	160.3	22,657	116,200	7	0.044	30.90	16.50	1
Río Grande	463.4	45,840	516,100	12	0.026	26.18	6.37	2
Maunabo	160.8	10,368	89,800	5	0.031	48.23	15.25	3
Caguas	902.9	125,136	2,894,400	29	0.032	23.17	2.75	4
San Lorenzo	533.3	37,260	345,300	8	0.015	21.47	6.35	5
Las Piedras	327.8	34,814	321,000	7	0.021	20.11	5.97	6
Fajardo	299.5	31,375	580,500	7	0.023	22.31	3.30	7
Humacao	508.2	49,924	949,900	8	0.016	16.02	2.31	
Canóvanas	389.9	41,637	425,400	7	0.018	16.81	4.51	
Luquillo	199.5	17,449	317,000	5	0.025	28.65	4.32	
Cidra	484.1	39,515	409,100	5	0.010	12.65	3.35	
Gurabo	392.9	40,061	708,400	5	0.013	12.48	1.93	
Yabucoa	467.4	29,305	288,000	4	0.009	13.65	3.81	
Patillas	280.5	15,524	129,100	2	0.007	12.88	4.24	
Naguabo	308.3	22,964	214,700	2	0.006	8.71	2.55	
Aguas Buenas	338.5	23,538	124,500	1	0.003	4.25	2.20	
Juncos	327.0	36,672	549,200	1	0.003	2.73	0.50	

Table 6 PRHTA Region South Municipalities High-Risk Areas

Municipality	Roadway KM	Population	VMT	VRU Data	VRU/KM	VRU/100K Pop	VRU/HMVMT	Top Average
Ponce	1,241	132,138	2,508,400	31	0.025	23.46	3.39	1
Juana Díaz	441	45,923	763,200	9	0.020	19.60	3.23	2
Arroyo	176	15,289	212,100	4	0.023	26.16	5.17	3
Cayey	566	40,782	922,500	9	0.016	22.07	2.67	4
Villalba	330	21,466	128,400	4	0.012	18.63	8.53	5
Coamo	489	33,887	487,300	6	0.012	17.71	3.37	6
Peñuelas	360	19,763	287,600	4	0.011	20.24	3.81	
Santa Isabel	236	19,822	354,100	4	0.017	20.18	3.09	
Salinas	513	25,000	456,400	5	0.010	20.00	3.00	
Yauco	508	32,904	582,800	4	0.008	12.16	1.88	
Guayama	520	35,262	602,600	4	0.008	11.34	1.82	
Guayanilla	311	17,064	287,800	2	0.006	11.72	1.90	
Jayuya	287	14,495	81,800	1	0.003	6.90	3.35	
Aibonito	327	24,555	318,250	2	0.006	8.14	1.72	
Adjuntas	490	17,905	241,300	1	0.002	5.59	1.14	

As shown in Figure 49, an SHSP interactive map was developed for each region which identifies the VRU roadway location for the municipalities identified as high-risk areas. Figure 50 presents the Puerto Rico map divided into the five (5) regions, the municipalities selected as high-risk areas and VRU Crash data hot spots.

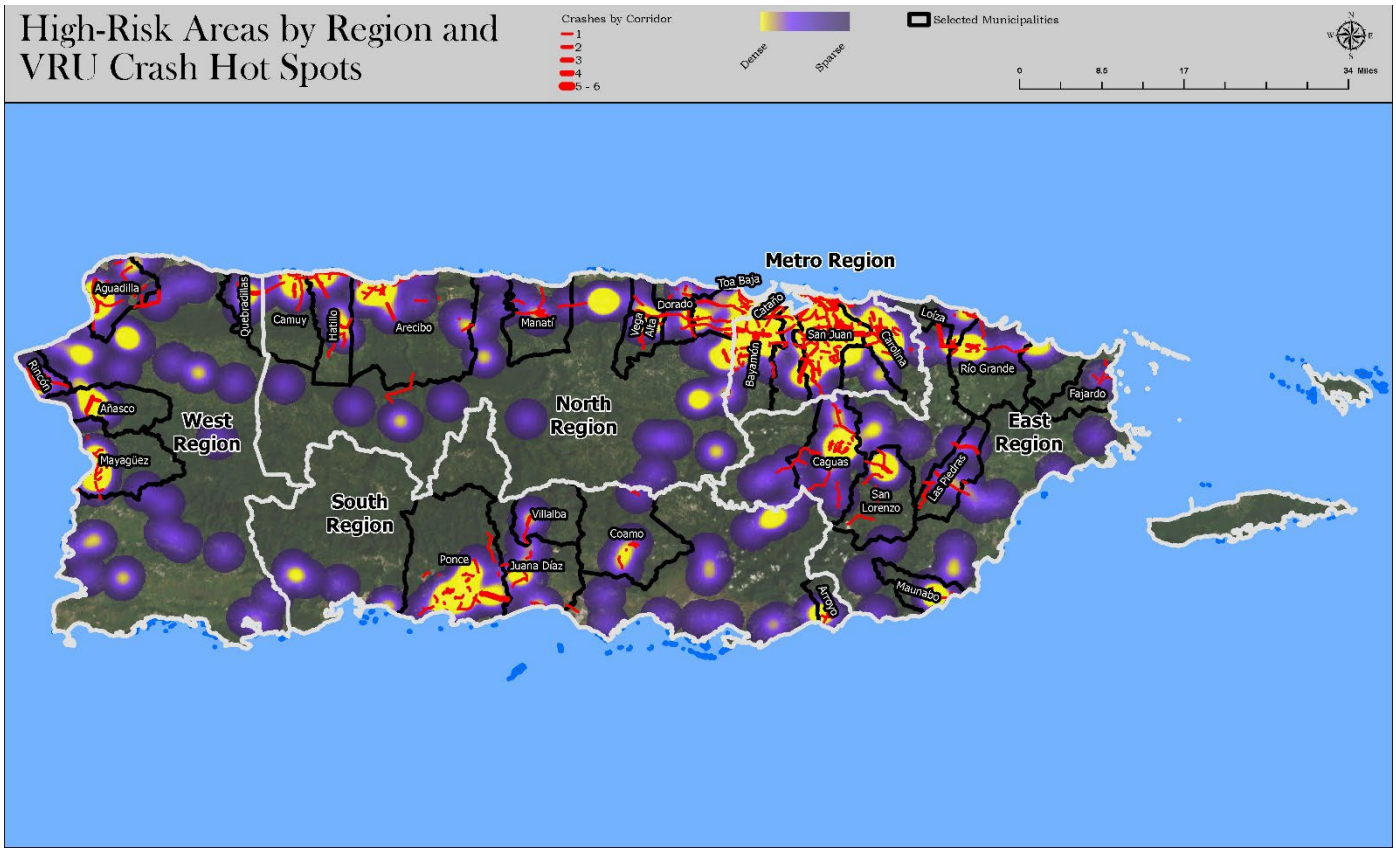


Figure 50 High-Risk Areas by Regions and VRU Crash Hot Spots

Figure 51 shows the municipalities within each region that were identified as high-risk areas.

Metro	North	West	East	South
• San Juan • Bayamón • Carolina • Cataño	• Hatillo • Toa Baja • Vega Alta • Camuy • Arecibo • Manatí • Dorado	• Aguadilla • Quebradillas • Rincón • Añasco • Mayaguez	• Loíza • Rio Grande • Maunabo • Caguas • San Lorenzo • Las Piedras • Fajardo	• Ponce • Juana Díaz • Arroyo • Cayey • Villalba • Coamo

Figure 51 High-Risk Areas Municipalities by Region

Roadway segments and intersection maps and tables were developed for each municipality identified as high-risk areas and are included in Appendix E. Additionally, as part of this Assessment, an interactive GIS map was developed. The tables in Appendix E include the route name, start, and end locations, segment length, and VRU crash severity. A snapshot of Metro Region hot-spot map and table are shown below.

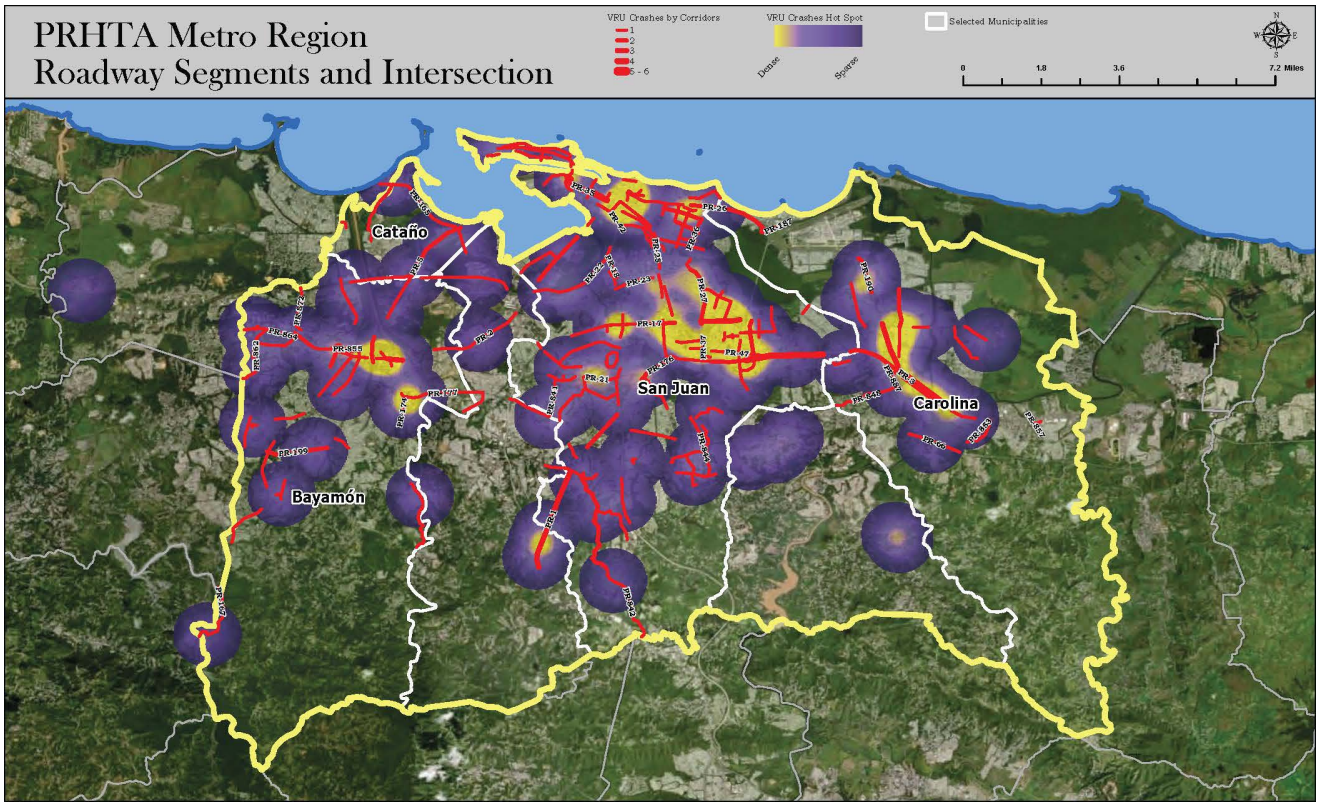


Figure 52 PRHTA Region Metro Roadway Segments and Intersection

Table 7 PRHTA Region Metro Municipality of Carolina VRU Corridors

Roadway Name	Municipality of Carolina From KM	To KM	Length KM	Fatal	Serious Injury
PR-3	8.8	10.6	1.80	5	1
PR-26	13.6	15.5	1.90	3	
Avenida Sanchez Osorio	1.12	2.55	1.40	2	
PR-26	4.44	7.34	2.90	1	1
PR-3	6.6	8.8	2.20	2	
PR-26	11	12.35	1.35	1	1
PR-857 @ KM 0.27	0	0.6	0.60	1	
PR-187	0	0.95	0.95		1
PR-853	0	1.3	1.30		1
Avenida Calderon	0	1.56	1.56		1
Avenida Sanchez Osorio	0	1.12	1.10	1	
Avenida Paseo de los Gigantes	0.96	1.68	0.53	1	
PR-887	1.2	1.8	0.60		1
PR-848	2.3	4.7	2.38		1
Avenida Paseo de los Gigantes	2.98	3.88	0.93		1
PR-66	3.1	5	1.90	1	
PR-3	10.9	11.8	0.90		1
Avenida El Comandante			1.70	1	
Plaza Escorial/Entrada Sams			0.64	1	

Furthermore, a VRU data analysis was performed in each of the regions to verify if the high-risk factors were similar at region level. It was found that principal arterials were still overrepresented, and the roadways identified the majority have multiple lanes. Therefore, it can be concluded that the high-risk factors also apply to each of the regions. Figure 53 presents PRHTA Metro Region Functional Classification where VRU crashes were occurring.

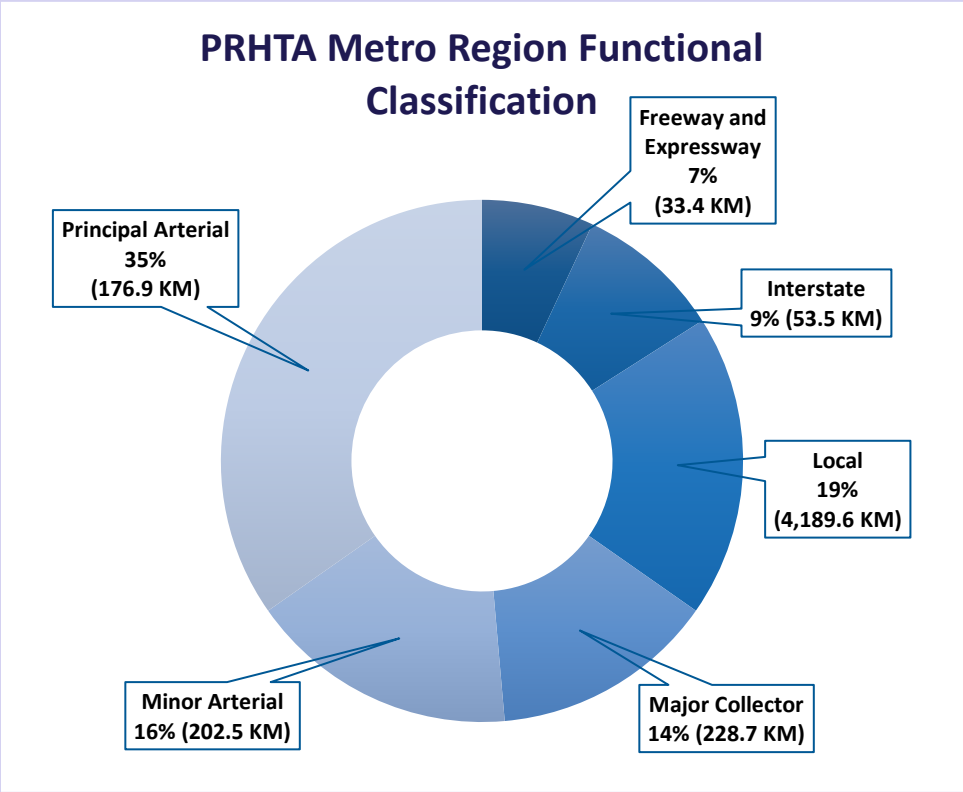


Figure 53 PRHTA Metro Region VRU Crashes by Functional Classification

Summary of Consultation

As part of the VRU Safety Assessment consultations with safety stakeholders and agencies within the high-risk areas were required. The meeting's intent was to discuss current data findings, preliminary results and initial conclusion and discuss potential strategies that could be included as part of the VRU Safety Assessment. Also, gathering local perspective and knowledge as well as any additional data that the agencies/municipalities could share with the team for further review and lessons learned with the safety stakeholders to understand potential barriers for the implementation of strategies. The intent was to present emphasis areas performance and VRU data conclusions to discuss strategies (what's been working and what needs to be modified), strategies that follows the Safe System Approach and new recommendations.

As previously explained, the high-risk areas were selected by Puerto Rico PRHTA Regions (Metro, North, South, East and West). Therefore, four (4) consultation meetings were scheduled between August 29 to September 8, 2023. For the meetings development two steps were completed: planning and execution. The planning process included selection of host municipality, meeting location, date, and time as well as the content of the meeting to established time frame and potential refreshments needed. After, invitations, calendar outlooks were prepared with a one-page handout that presented some of the key findings and the agenda item.

Figure 54 shows the general process followed for the meeting planning and execution.

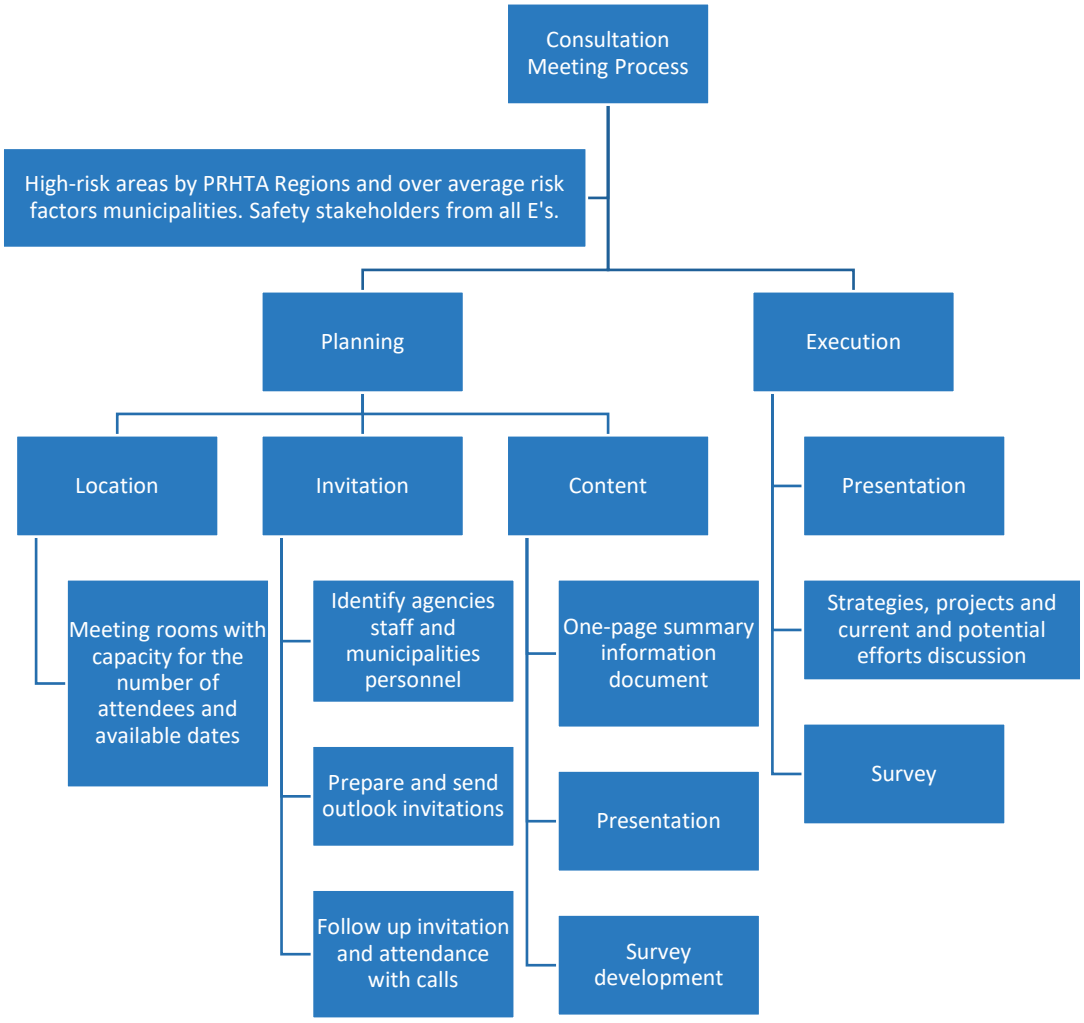


Figure 54 Consultation Meeting Process Flowchart

Consultation Meeting Planning and Execution

This section describes the process in more detail including the locations, invitations, and content.

Consultation Meeting Location

The consultation meetings were scheduled in one (1) municipality within each PRHTA Region and identified as a high-risk area by the data correlations. The following figure presents the PRHTA Regions, the host Municipality and the location for each meeting.

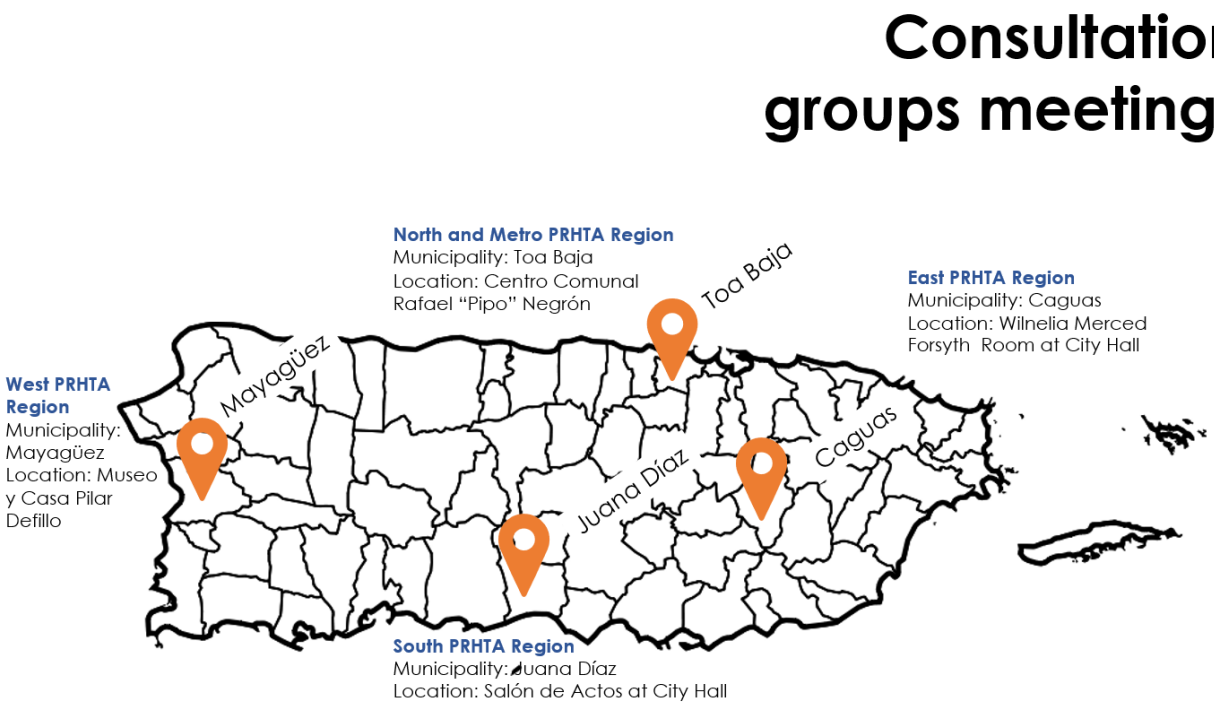


Figure 55 Consultation Group Meetings Location Map

Consultation Meeting Invitation

Based on the data, municipalities that ranked over the average by region were selected to be included in consultation meeting invitations, as well as agencies and safety stakeholders representing all four (4) E's (Education, Engineering, Enforcement and Emergency Medical Services). It was encouraged that the municipality also include all their staff representing these divisions. Therefore, municipality engineering and planning departments were invited as well as municipality police and emergency responders. Personnel from the PRHTA, PR Traffic Safety Commission (TSC), PR Police Department, Federal Highway Administration (FHWA), PR Emergency Services Corps, University Safety Program and American Association of Retired Persons (AARP) were invited to all meetings.

In addition, the PRHTA Executive Director signed and sent a formal letter to all municipality mayors identified as high-risk areas, inviting, and encouraging them and their staff to attend the meetings.

The invitation included an informative document with crash data statistics, a brief overview of the meeting content and agenda. Municipalities were contacted by phone to encourage and confirm their attendance and an email close to each meeting date was sent with additional information about parking and how to get to the site.

Consultation Meeting Content

All consultation meeting documents, presentations, survey links and photos were posted on the SHSP website (https://carreteraseguraprc.com/) for access to all interested safety stakeholders and partners.

An informative document was included in the invitation. Figure 56presents the handout that was included in the invitations in addition to the agenda. The first page has a general description of the activity and location, the second page had crash data statistics and the third page had the meeting agenda. The handout and email communication were in Spanish.

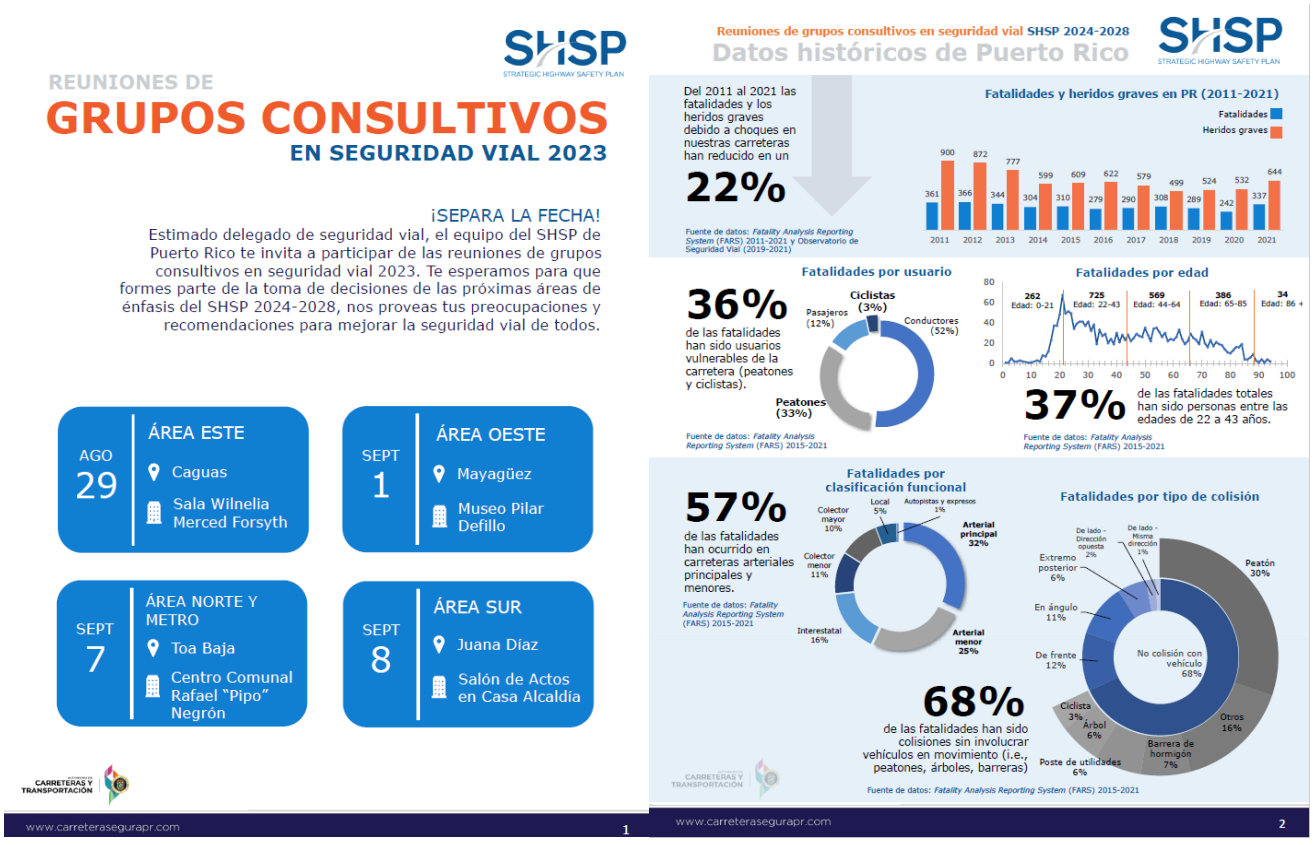


Figure 56 2024-2028 SHSP and VRU Safety Assessment Handout.

The meeting presentation included a discussion of the new 2024 to 2028 SHSP emphasis areas, focus areas, as well as an overview of the Safe System Approach. Following that discussion the SHSP Team went over the VRU Safety Assessment background, development process, database, data analysis, preliminary results, importance of consultation meeting and discussion of potential strategies and projects. Each consultive meeting presentation included the section of the data and results of their specific region. The following images include snapshots of the presentation. It should be noted that, the full presentations were shared with all attendees.

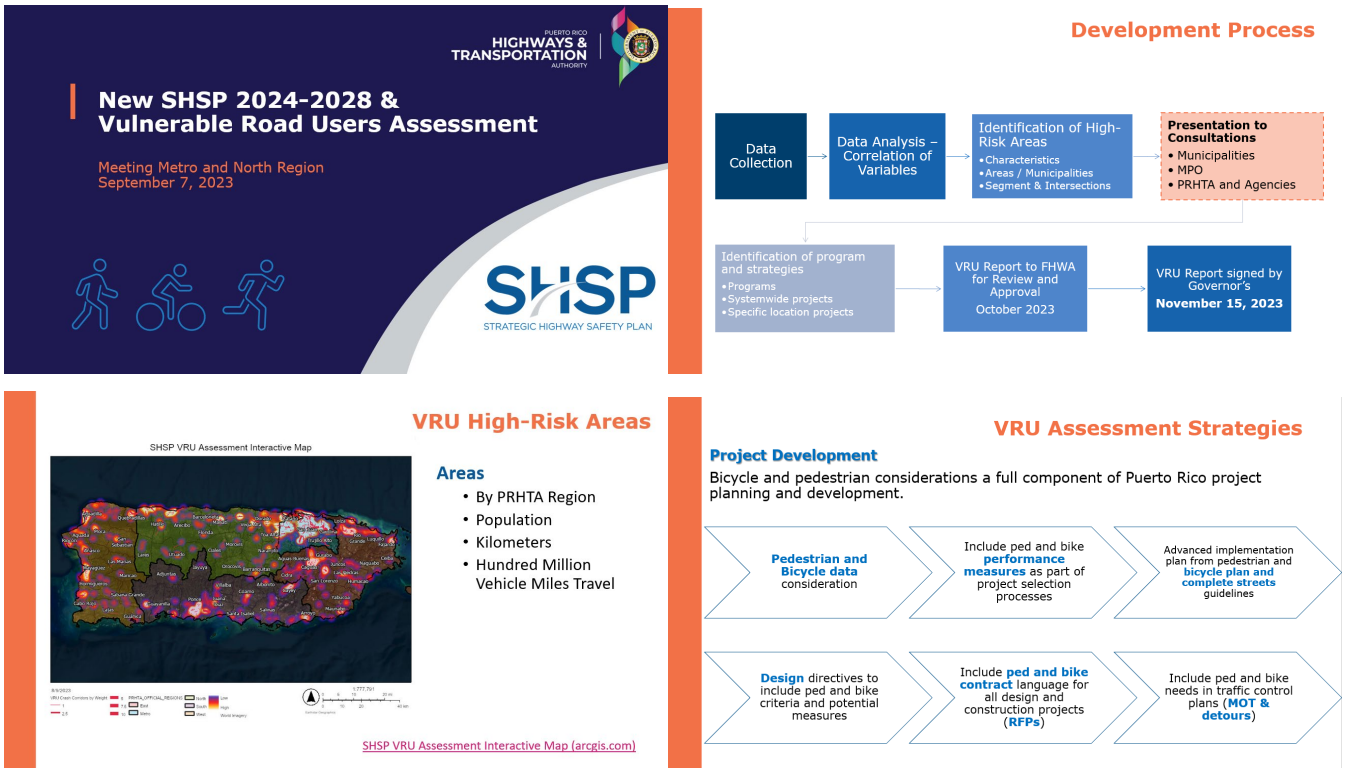


Figure 57 Meeting Presentations Snapshots

In addition, a survey was conducted in all four (4) meetings using Microsoft Office forms. Five (5) different links were developed, one (1) for each of the four (4) meeting and one (1) general link for further distribution on the SHSP website, PRHTA postmaster and for any other stakeholder that wanted to share the survey within their agencies, friends and/or family.

The survey was divided in four sections. The first section had questions regarding pedestrian accessibility and safety perception, the second section was related to cycling infrastructure and perception, the third section included questions related to potential projects and funding prioritization and the fourth section included questions related to demographics such as age, gender, income, home and work location, disability status and education.

The meeting presentation content was prepared in English. However, the content was explained at the meeting in Spanish and the survey content was developed in Spanish.

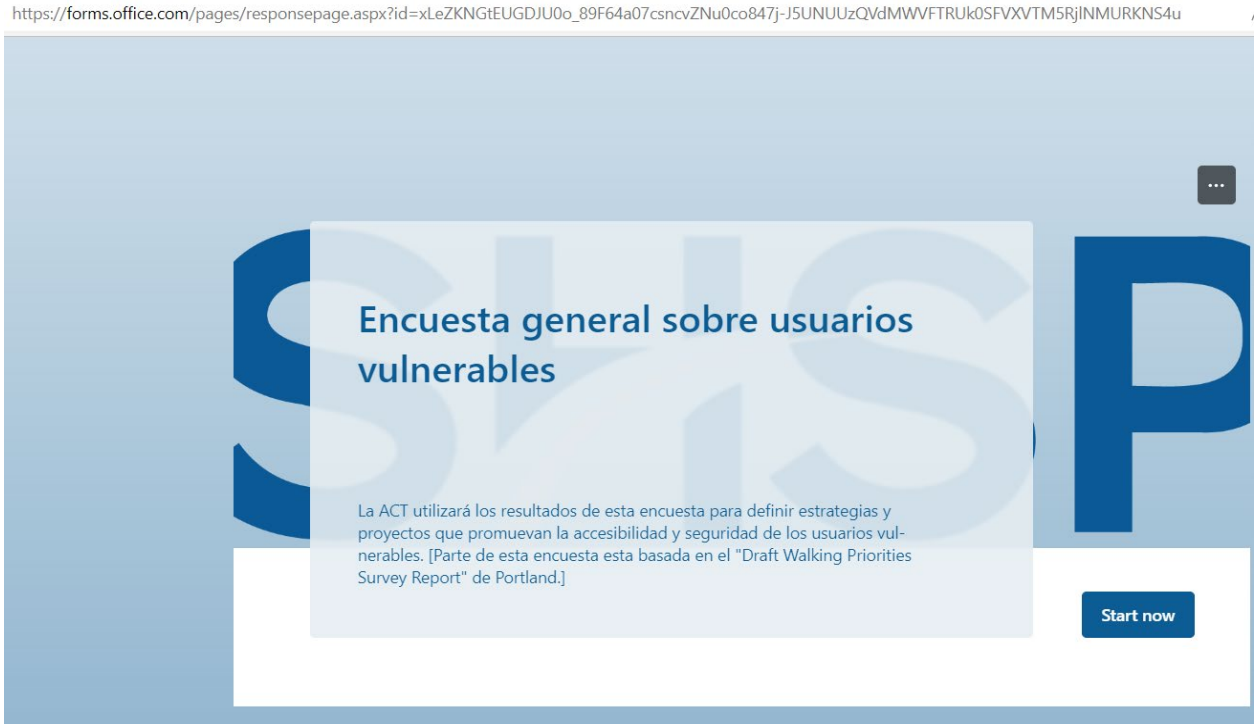


Figure 58 General Survey Related to VRU

Consultation Meeting Strategies, Projects, Current and Potential Efforts Discussion

After presenting the database, data correlations and preliminary results, a discussion with the attendees related to their perspective, data analysis results, current efforts, and potential strategies or ideas was performed.

East Region:

Attendees at the East Region meeting included Municipality of Caguas, Municipality of Fajardo, Municipality of Las Piedras. Municipality personnel included planning, public works, transportation, and police. Also, PR Traffic Safety Commission (TSC), Traffic and Alcohol Instructors Programs (FIESTA abbreviation in Spanish) personnel, PRHTA, PR Police – Highway Patrol Bureau attended this meeting.

During the presentation, it was mentioned that there is a belief that in Puerto Rico, people rarely walk, but this does not align with the pedestrian crash data. Police personnel commented that it should be taken into consideration that in recent years, with the increase in gas prices, many people have been forced to use their vehicles less. Similarly, older adults choose to walk.

Among those present, it was discussed how they were working on education for new drivers and those with learner's permits. They mentioned that in the Municipality of Caguas, they are working on a P.E.S.E.T. (Educational Park for Traffic Safety) at the East Sports Complex for elementary and middle school students.

The hours during which the highest number of crashes occur are between 6 pm and 6 am. One of the main possible causes is attributed to the lack of lighting on the roads, which led to mentioning that an effort should be made to meet with LUMA (as a significant portion of the streetlights are the responsibility of that agency) to see how the situation can be addressed. On the other hand, Caguas personnel mentioned an initiative that they have been working on as a pilot project with the installation of solar streetlights in residential areas. They suggested that this type of initiative could be considered using FHWA funds.

The participants mentioned roadway PR-142, which falls under the jurisdiction of three municipalities in the North Region, have some safety risks, including the lack of lighting and pavement markings (including Reflective Pavement Markings), resulting in a lack of guidance for drivers.

Also, it was mentioned by the participants that new processes of regulatory agencies such as Office of Management of Permissions (OGPe, abbreviation in Spanish) and Planning Board (JP, abbreviation in Spanish) have expedited the issuance of land use permits, often bypassing, or not allowing for the necessary analysis of the impact that these businesses may have on transportation and safety. For example, in previous governments and prior to the Joint Regulation, there was time to consult with the relevant safety agencies, and depending on the type of business, certain requirements had to be met, such as the number of required parking spaces, and they had to demonstrate functionality, among other things. With the current process, many of these steps are not prioritized, and the corresponding requirements are not established. These situations can result in a lack of functional parking spaces, parking spaces that back onto roads, an inability to provide customer safety within a perimeter to access their vehicle, which can pose safety issues for both drivers and vulnerable users. Furthermore, it was mentioned that there is a Public Infrastructure Regulation from the Planning Board that is rarely enforced.

The Municipality of Caguas also mentioned the Cagüitas Linear Trail project and other complete street projects within the municipality. To achieve these projects, although they understand that available funds are competitive, they allocate their own funds to match.

As part of the discussion on various topics, it was recommended that fines for drivers be higher so that they can have a greater effect in changing behaviors such as cell phone use, speeding, and driving under the influence of alcohol.

During the final discussion, after filling out the survey, it was generally concluded that these are challenges that will continue, but efforts in awareness campaigns and education must continue because it is a slow process that should yield results in the long run. Meanwhile, personnel from the Municipality of Caguas mentioned that one of the challenges they face when trying to implement complete street guidelines and improvements to enhance transportation safety is the acquisition of funds and general education.

West Region:

Attendees at the West Region meeting included Municipality of Mayaguez, Municipality of Isabela, Municipality of Aguadilla, Municipality of Rincon. Municipality personnel included planning, public works, and police. Also, PR Traffic Safety Commission (TSC), TSC Safety, Traffic and Alcohol Instructors Programs (FIESTA abbreviation in Spanish) personnel, PR Police – Highway Patrol Bureau attended this meeting.

Some general comments included the large elderly population, pedestrian bridges with only stairs that can be a problem for people with disabilities or mobility problems. It was mentioned that sidewalks at the urban centers are not wide enough for a person in wheelchair and some are obstructed by light poles, among other objects.

It was suggested as part of the policies to be analyzed that the mandatory use of government-provided identification be reviewed. Currently, officers have difficulties when dealing with pedestrians and cyclists who are misusing the roadways because they do not carry identification. This creates a problem because if they refuse to identify themselves or provide a false name, it makes it impossible to take them to court. It was suggested that instead of conveying a punitive message about this measure, the message should be related to pedestrian and cyclist safety; for example, having identification makes it easier to identify and provide necessary care in the event of an accident.

Related to emergency responders and similar for construction workers, participants mentioned that there is a law that states that if there is an incident on the road, drivers must move to the left lane and/or reduce their speed. The problem in Puerto Rico is that people are unaware of this law or do not comply, and they often pass near incidents at high speeds, frequently impacting the people attending to the emergency. People indicate that there isn't a lot of knowledge about this law and that it needs to be promoted and enforced.

A discussion was held on how people, in particular young individuals, no longer respect officers. In the past, officers used to go to schools to give talks and educate students about safety, and this should be resumed. Further, it was clarified that the police have an education program in western schools, but they cannot meet all the requests they receive. Additionally, it was mentioned that in the municipality of Arecibo, there is a safety park for

traffic, which is free to the public. It was suggested that a strategic plan be developed to ensure that all schools in the area receive education on traffic safety.

At the end of the meeting the Municipality of Aguadilla mentioned that an effort of all federal agencies grant application requirements should be coordinated. They are pursuing Federal Transit Administration (FTA) funds for a trolley route and stops as well as Environmental Protection Agency (EPA) grant funds for solar street light poles and these are all efforts that could be combined to achieve vulnerable road user safety. Additionally, to each agency specific requirements it should be included in their scope to gather and analyze these VRU Crash Data and implement countermeasures that could potentially mitigate VRU crashes.

North and Metro Region:

Attendees at the North and Metro Region meeting were Municipality of Toa Baja, Municipality of Manati, Municipality of Canovanas, Municipality of Cataño, Municipality of Bayamon, Municipality of Hatillo, Municipality of San Juan, Municipality of Vega Alta, and Municipality of Camuy. Municipality personnel included planning, engineering/public works, and police. Also, PR Traffic Safety Commission (TSC), TSC Safety, Traffic and Alcohol Instructors Programs (FIESTA abbreviation in Spanish) personnel, PR Police – Highway Patrol Bureau, Justice Department, Mothers Against Drunk Driving (MAAD) attended this meeting.

Municipality of Manatí personnel mentioned that a Linear Path is being developed in the northern area, from Quebradillas to Hatillo. They added that there are some issues regarding the poor condition of the infrastructure, and the transfer of these assets is a complicated process since maintenance is presumed to be the responsibility of government agencies, and many municipalities are willing to take over asset management. They also mentioned that the number of cyclists has increased, and many solutions can be found by addressing technical issues that are not being addressed, such as maintenance.

The Municipality of Toa Baja commented on the availability of the information for municipalities regarding areas with the highest crashes, as it is currently very difficult to obtain or there is no knowledge of where to find it. They recently had the experience of needing data to prepare the Safety4All proposal. Having better communication with municipalities about this data and the areas to focus efforts on was suggested. It was mentioned that the Strategic Highway Safety Plan (SHSP) could be a tool for municipalities and workshops on how to create a municipal safety plan should be conducted. They also mentioned that they believe the Metropolitan Planning Organization (MPO) should be more proactive with municipalities in providing information about available data resources and funds application resources. Safety4All is an opportunity for municipalities to begin addressing these issues as it provides funding for the preparation of a safety action plan. On the same topic, it was mentioned that Traffic Safety Commission (TSC) is no longer part of MPO meetings, and it might be a good opportunity for

municipalities to suggest their inclusion again as they are a valuable resource for data collection. It was suggested to include Safety4All as part of the SHSP. The municipality of Toa Baja also asked if the interactive map mentioned in the meeting was available. This map could be available once the results are finalized, and the report is approved.

The Municipality of San Juan commented on their projects, such as the Linear Path in Miramar, which they are working on with the Convention District; complete street projects for areas along Ponce de León Ave, Gándara Ave, University Ave, and De Diego Ave; FTA funds requested for sidewalk improvements, including all infrastructure within the trolley stops' radius (they have 9 in operation); they are working on sidewalk improvements with ordinary funds; they have a smart traffic light pilot project in the Condado area; they are developing an application for the public transportation system; they have requested Community Development Block Grant Disaster Recovery (CDBG-DR) funds. Regarding Safety4All, they mentioned data related to the time to create the plan (1 year), the time for implementation (2 years), and that it may include modeling. TSC mentioned that they can help complement the educational part of the projects.

South Region:

Attendees at the South Region meeting included Municipality of Ponce, Municipality of Juana Diaz, and Municipality of Coamo. Municipality personnel included planning, police, and emergency medical services (EMS). Also, TSC Safety, Traffic and Alcohol Instructors Programs (FIESTA abbreviation in Spanish) and PRHTA personnel attended this meeting.

The participants pointed out that in Puerto Rico, even if the law is enforced, people will not respect it if the government continues to grant exemptions for fines, even though there is a high level of outstanding traffic fines.

The following suggestion/question was discussed: "If the law establishes a speed limit of 65 mph on all roads in Puerto Rico, why do they allow cars with a higher speed limit?" It was suggested that a law should be enacted to prevent cars with a speed greater than 65 mph from entering Puerto Rico and to confiscate modified cars.

Participants recommended that similar to emergency medical services (EMS) personnel have to take mandatory continuing education classes on traffic laws, the same should be imposed for regular drivers.

They added that because continued education is for law professionals, drivers are unaware of the most recent law changes.

It was discussed that in 2005, the PRHTA invited prosecutors to train them on the law enforcement and EMS processes and it was successful. They recommended to be done again.

Related to infrastructure participants indicated that there is a problem with signage and gave the example that in the municipality of Guayama on PR-52, near the toll exit for the Albergue Olímpico, the road sign indicates a maximum speed of 65 mph while the toll sign indicates 55 mph.

They talked about the importance of lighting, markings, and signage since fatal crashes have occurred due to these factors. They expressed that pedestrian bridges are not designed for people with disabilities and the elderly.

They mentioned that roads may be repaved, but they are not marked, which is a problem in dividing the space for pedestrians or cyclists from that of drivers. They mentioned that there should be an overall improvement of pedestrian infrastructure.

In addition, they mentioned that many people are driving under the influence, and it is getting more difficult for enforcement to prove and process in court as prosecutors are not being consistent with the law. Therefore, they recommended having a gathering between judges/prosecutors and law enforcement personnel to discuss protocols, procedures, and consistency for better enforce.

They mentioned a problem with EMS vehicles where they are charged toll fines when they drive by a toll road to save a life. Due to this, they have fewer vehicles since their license plates are not renewed until the person who drove the vehicle pays the fines. This is because, as government vehicles, fines cannot be paid with public money. It was suggested that ambulances should have a seal that allows them to pass through tolls without being fined.

They expressed that the reason why emergency vehicles do not arrive on time should be included in the 911 report.

They added that the message that elderly people cannot be confined must continue to be conveyed. The statistics are real, and many elderly people are the ones walking on the roads in Puerto Rico.

Summary of Consultation Meetings:

The following summarizes all the region meeting comments by the four pillars of safety: education, enforcement, engineering, and emergency medical services. Similarly, the following recommendations and issues are identified with the Safe System Approach element.

- Education (Safe Road Users)
    - Promote the educational parks that are available and would be developed for school-age children. Discuss collaboration opportunities with the Department of Education and Police to make alliances and reach out to as many schools possible so they could be part of these education programs.

- Coordinate a gathering between judges/prosecutors and law enforcement to discuss protocols, procedures and inform the identification and processes that follow law enforcement with drivers under the influence. This will help the law to be enforced correctly and follow through at court without any technical errors.
- Educate drivers every time Law 22 (Vehicle and Traffic Law of Puerto Rico) is amended and/or develop a continued education for drivers to reinforce traffic laws.
- As part of "Move Over Law", create and promote campaigns to educate drivers that in case of incidents and/or if enforcement and EMS personnel are present to move to the other lane and/or reduce speeds.
- Provide workshops to municipalities regarding SHSP, crash database, and other related safety efforts.
- Continuing education related to safety, complete streets, and importance to enhance the transportation system. As funds are competitive there's a need to highlight the importance of these topics and identify champions.
- Continue the conversation between peers, municipalities, safety stakeholders as they could learn from each other regarding fund availability, potential efforts and projects that align with VRU and safety overall.

- Enforcement (Safe Road Users and Safe Speeds)
  - Research potential ways to test and process drivers under drug influence such as cannabis.
  - Research regulatory process for land use permits and suggest that transportation and safety should be part of the permit review and approval process.
  - Review policies for the potential mandatory use of government-provided identification to all road users. It was suggested that instead of conveying a punitive message about this measure, the message should be related to pedestrian and cyclist safety; for example, having identification makes it easier to identify and provide necessary care in the event of a crash.
  - Recommendation of higher fines for drivers speeding, using cell phones as well as driving under the influence.
- Engineering (Safe Speed, Safe Streets and Safe Vehicles)
  - Investigate initiatives to pursue solar streetlights.
  - Implement and improve pavement markings, signing, and Reflective Pavement Markers (RPMs) in all streets.

- Many municipalities have their own trail projects, sidewalks improvements projects, complete streets efforts. However, many of the participants mentioned maintenance as an issue that needs to be addressed.
- Develop a sidewalk repository to monitor and rate their quality as assets for maintenance and reconstruction projects.
- Develop a pedestrian bridge repository and identify if maintenance or reconstruction needs to be addressed. The participant mentioned that many of these bridges only have stairs and/or are not designed for people with disabilities or mobility constraints.
- Provide technical support to municipalities regarding their interest in developing their own safety plan.
- Research vehicle regulatory process and information regarding the idea of establishing a maximum speed limit as well as the role of autonomous vehicles that aligns with safety.

- Emergency Medical Services (Post Crash Care)
  - Investigate 911 data as it relates to the time emergency vehicles arrive at the scene.
  - Research process of toll fine for government issued vehicles and suggest a different seal or mechanism that allows them to pass through tolls without being fined.

Survey Results

As explained previously, a survey was conducted during all four (4) consultive meetings using microsoft office forms. Five (5) different links were developed, one (1) for each of the four (4) meeting and one (1) general link for further distribution through the SHSP website, PRHTA postmaster and for any other stakeholder wanted to share within their agencies, friends and/or family. The general survey was available for the public until september 22, 2023.

The survey was divided in four sections. The first section had questions regarding pedestrian accessibility and safety perception, the second section was related to cycling infrastruture and perception, the third section included questions related to potential projects and funding prioritization and the fourth section included questions related to demographics such as age, gender, income, home and work location, disability status and education.

The following graphs shows the participants demographics results. Several participant did not submit a response to some of the questions and, therefore, show up as "Blank" in some of the Figures.

Figure 59 to Figure 61 presents the PRHTA Region and Municipality where the participants live and work.

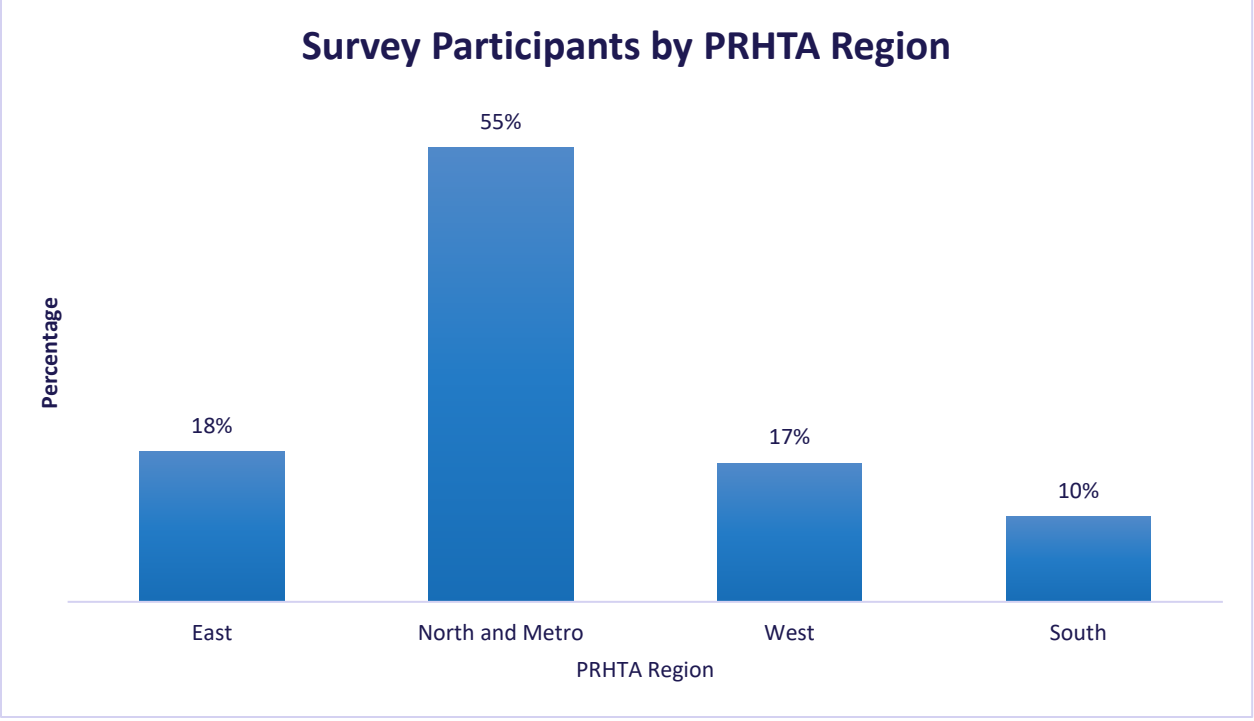


Figure 59 Survey Participants by PRHTA Region

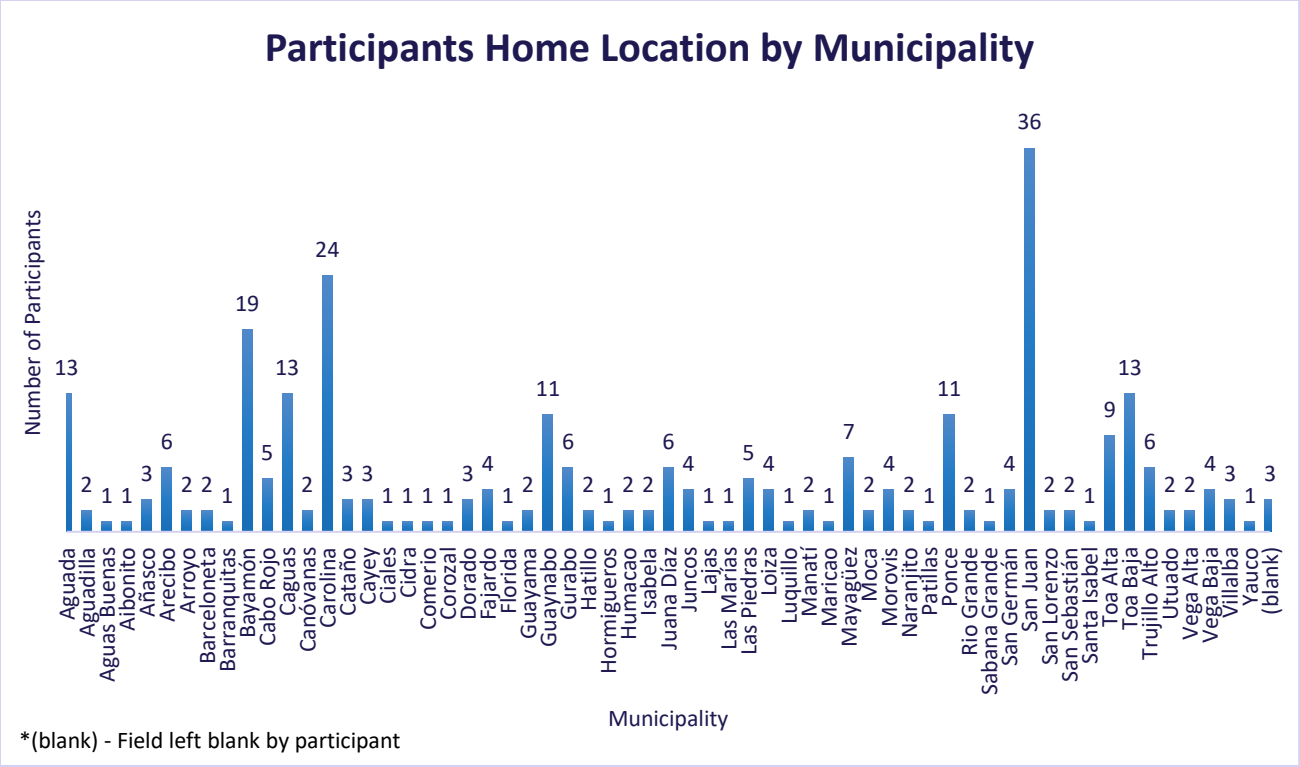


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Figure 60 Participants Home Location by Municipality

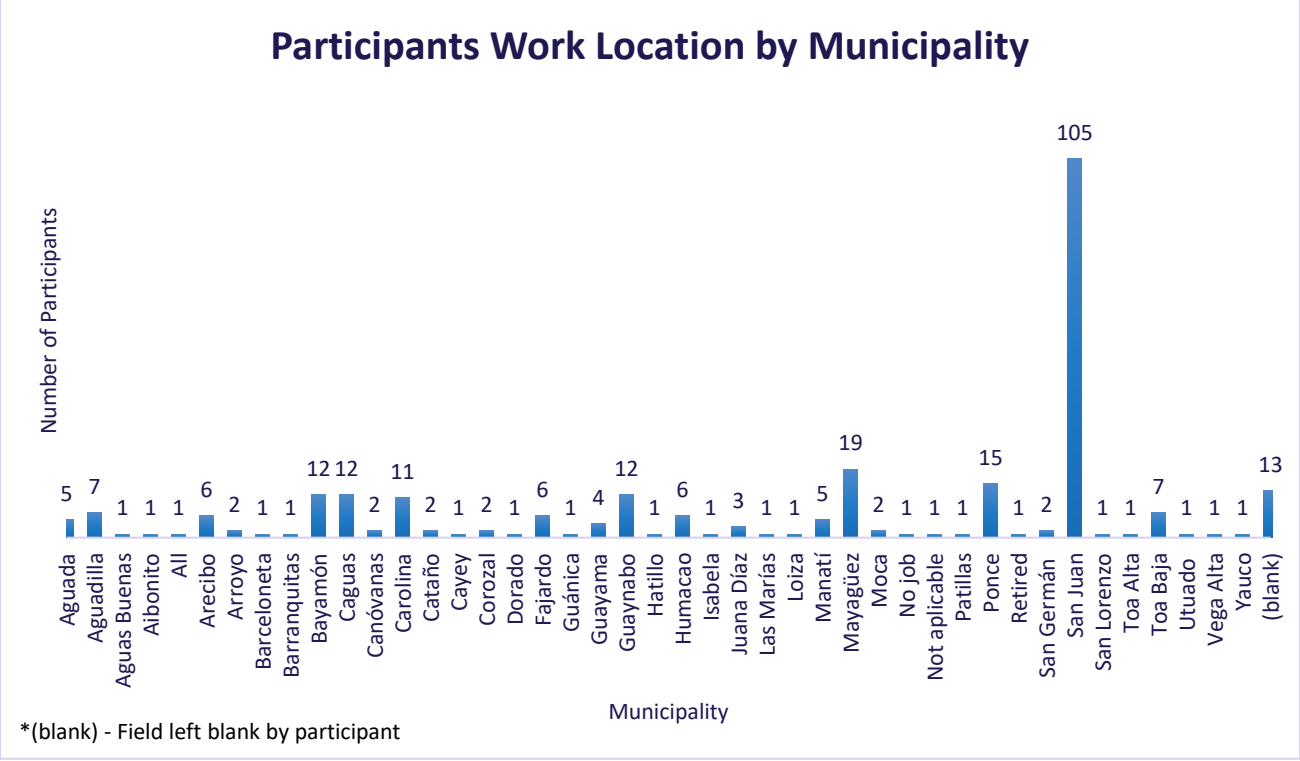

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Figure 61 Participants Work Location by Municipality

Figure 62 and Figure 63 presents survey participants age and gender. The survey participants' age varies; however, the highest range with 36.65% was between 45 to 54 years old and second range with 29.54% was between 55 to 65 years old. As discussed in the quantitative analysis, VRU victims' age was overrepresented for 50 years old and above. Therefore, it was important to gather input from this particular age group.

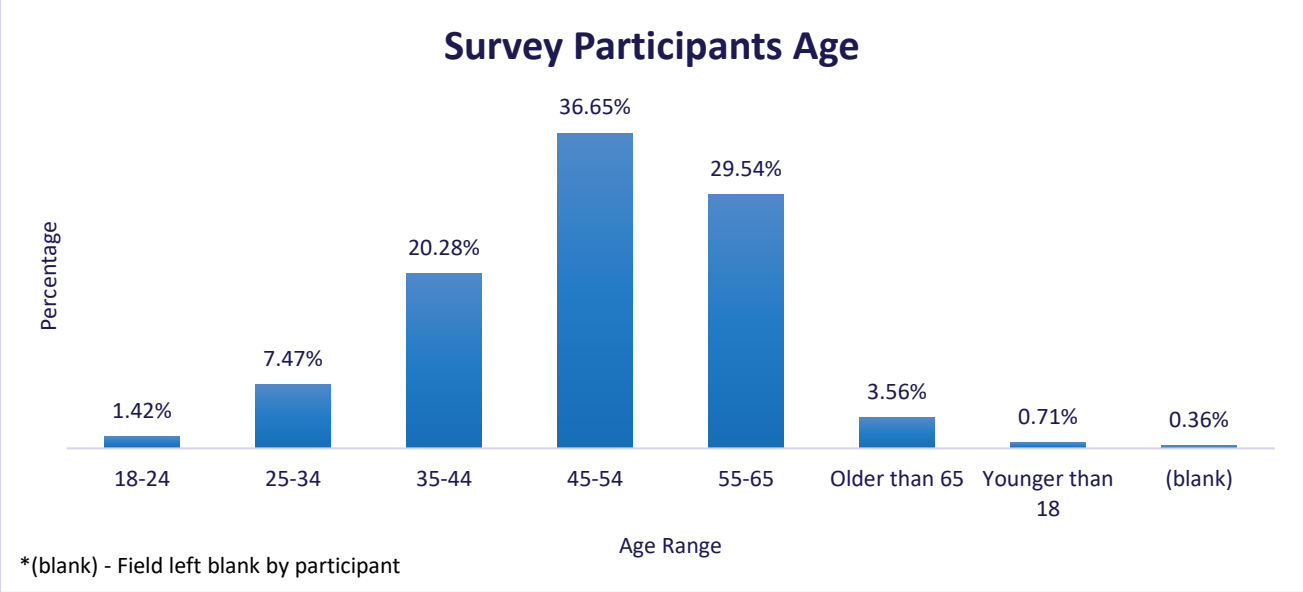


Figure 62 Survey Participants by Age

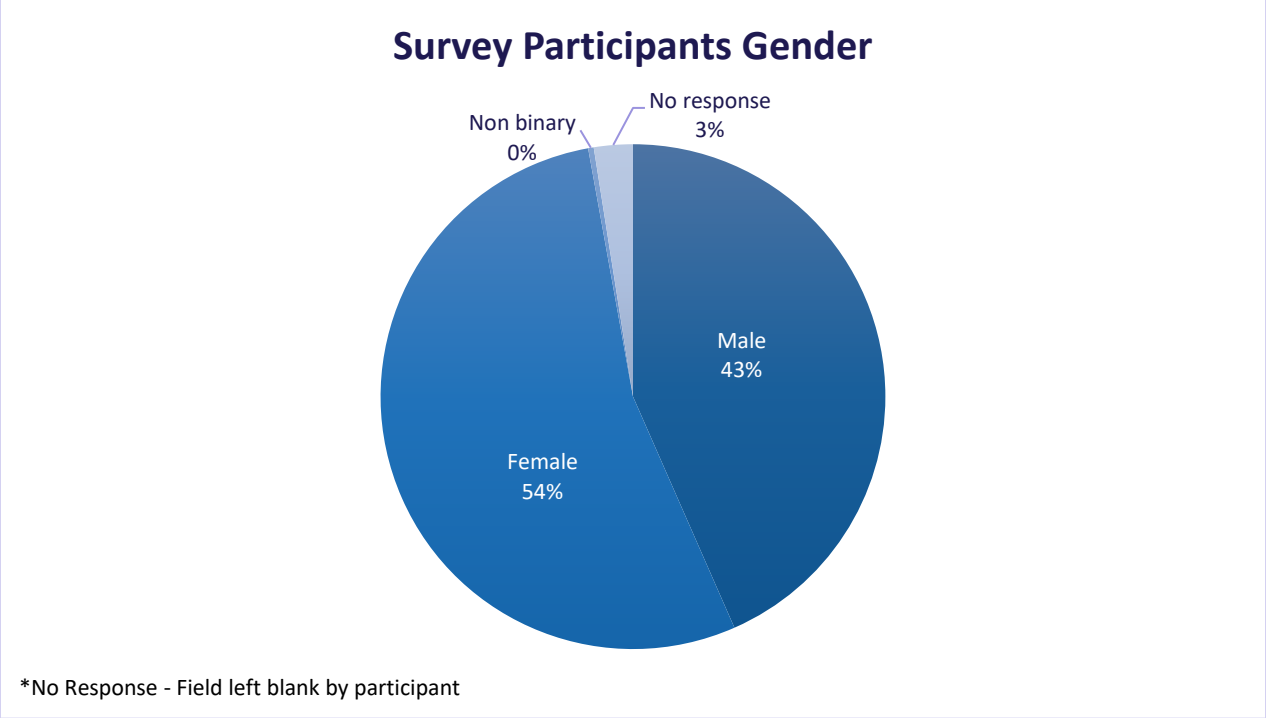


Figure 63 Survey Participants by Gender

Figure 64 and Figure 65 presents survey participants education level and annual income. These two questions were asked to have a sense of the population responding the survey. From the Census it was found that the median household income in PR is $22,237, therefore, participants input within all ranges but particular to the median household income was important to have.

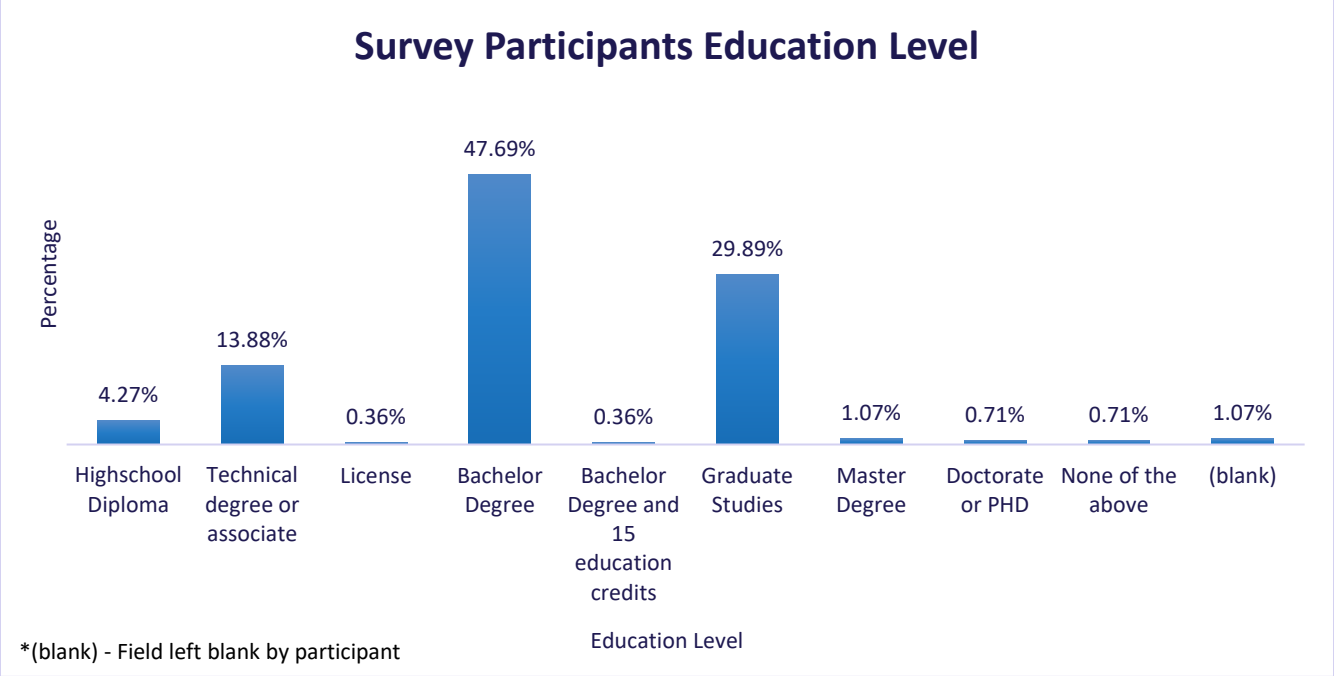


Figure 64 Survey Participants by Education Level

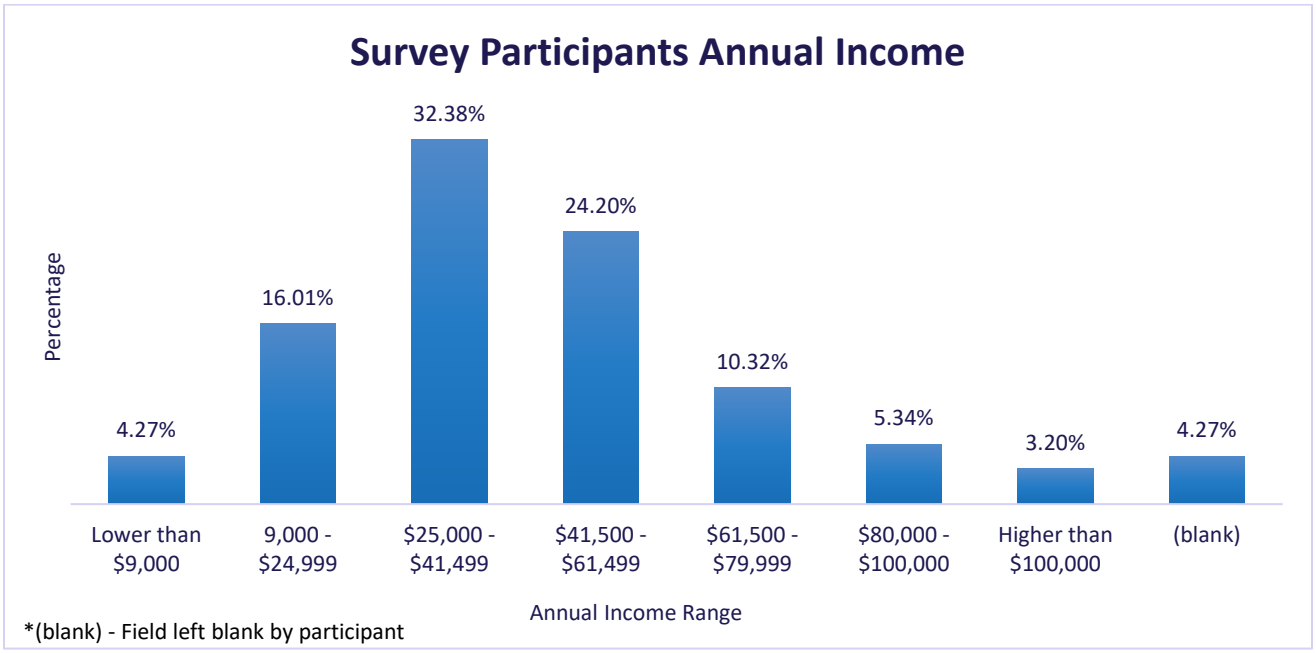


Figure 65 Survey Participants Annual Income Range

As mentioned before, Puerto Rico has 22% of population that is disabled. This percentage is higher than the U.S. national average of 13%. Generally, elderly population have some disability and/or mobility limitation that need to be considered in the roadway infrastructure planning and design. Therefore, the survey asked the participants if they had a disability and/or if they live with a person with disability. As shown in Figure 66 and Figure 67, it can be observed that 14% of the participants have a disability and 26% live with someone with disability.

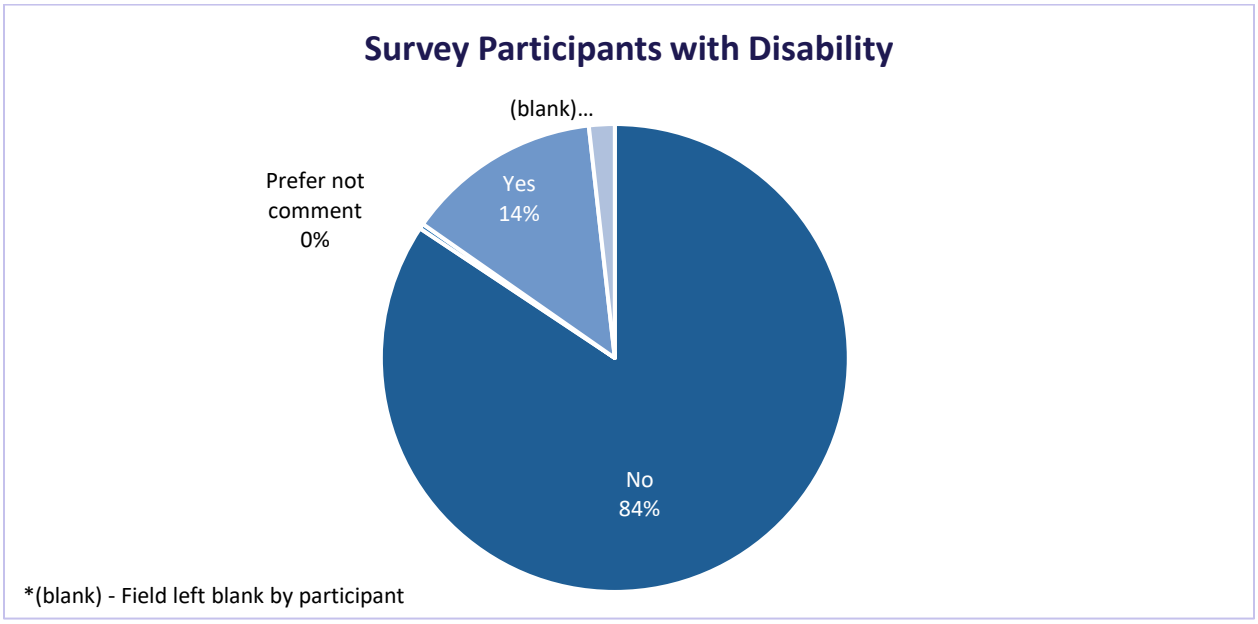


Figure 66 Survey Participants with Disability

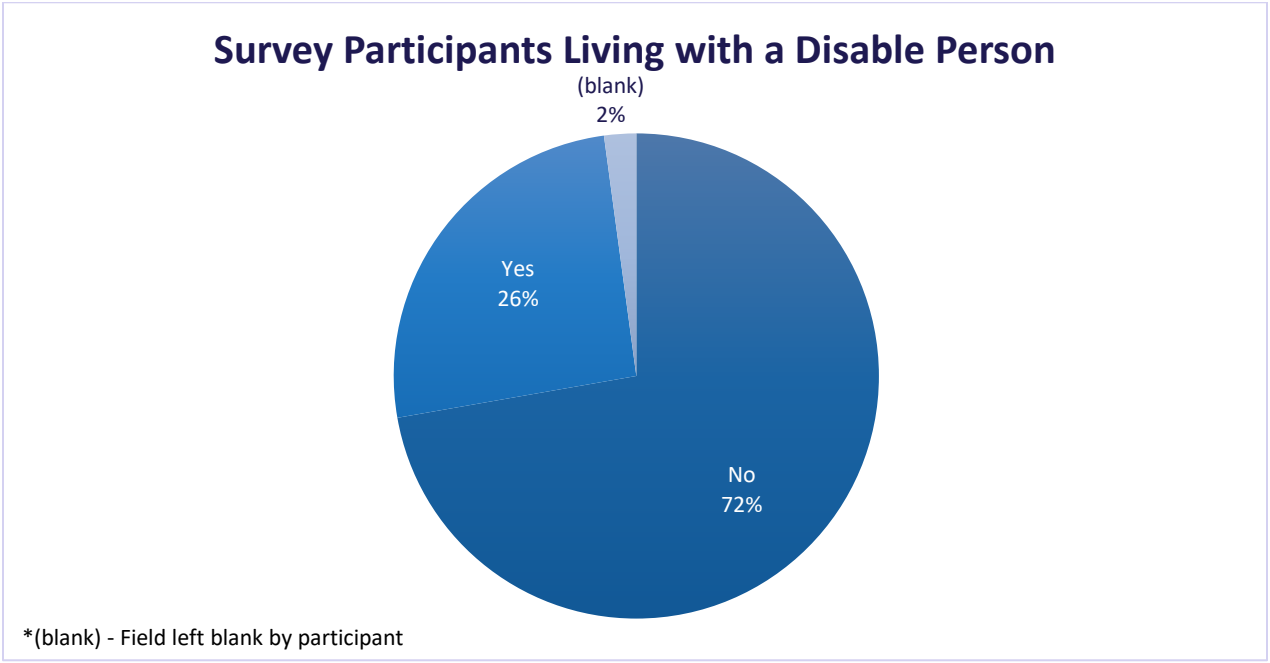


Figure 67 Survey Participants Living with Someone with Disability

The following figures present the survey results by priority order based on the average score. As mentioned, the first question asked was related to pedestrian infrastructure.: ***What makes walking Puerto Rico Streets more difficult or challenging?***

VRU Pedestrian Survey Question

Priority Order	Survey Question	Survey Average Response
1	Poor or no lighting on sidewalks.	4.66
2	Cracked, raised, or any other tripping hazard sidewalks.	4.64
3	Lack of connectivity and continuity of sidewalks on highly congested streets (i.e., high traffic volume)	4.58
4	People speeding on highly congested streets (i.e., high traffic volume).	4.51
5	People speeding on residential streets.	4.47
6	Lack of curb ramps at intersection sidewalks.	4.40
7	Few or no safe crossing points on busy streets (i.e., outside of intersections).	4.39
8	Lack of connectivity and continuity of sidewalks in residential streets.	4.32
9	Drivers not yielding the right of way to pedestrians when they cross the street.	4.30
10	Insufficient time to cross the street.	3.81

Figure 68 VRU Pedestrian Survey Question Results

As shown in Figure 68, survey participants response was higher for “poor or no lighting on sidewalks” with a 4.66 of 5 score. Followed by cracked/raised sidewalks, lack of connectivity and people speeding.

The second question was related to cycling: ***What makes cycling on Puerto Rico streets more difficult or challenging?***

VRU Cycling Survey Question

Priority Order	Survey Question	Survey Average Response
1	Lack of dedicated bicycle lanes.	4.60
2	Lack of cycling infrastructure near workplaces.	4.58
3	Drivers do not respect or protect cyclists (e.g., speeding vehicles, failure to yield).	4.33
4	Cyclists do not obey applicable traffic rules.	4.24
5	The topography of many streets in Puerto Rico (e.g., hills) makes it challenging to use them.	3.63
6	High temperatures.	3.31

Figure 69 VRU Cycling Survey Questions Results

As shown in Figure survey participants response was higher for "lack of dedicated bicycle lanes" with a 4.60 of 5 score. Followed by lack of infrastructure near workplaces and drivers not respecting the cyclist.

The third question was related to survey input regarding where the efforts should be focused: ***What types of places/streets are the most important for mobility improvements?***

VRU Location to Prioritize Survey Question

Priority Order	Survey Question	Survey Average Response
1	Areas with a higher population of elderly individuals, disabled individuals, low-income residents, and/or those who depend on public transportation.	4.68
2	Streets where fatalities and serious injuries have occurred.	4.59
3	Streets that connect people to public transportation/bus stops.	4.58
4	Streets that connect families and children to schools.	4.57
5	Residential streets that lack sidewalks or walking paths.	4.48
6	Streets that connect local businesses (e.g., local supermarkets, stores, and/or services) to neighborhoods/communities.	4.48
7	Areas where the majority of people live and/or work.	4.46
8	Along and through busy streets (i.e., high vehicular traffic volume).	4.35
9	Streets that connect people to parks.	4.24
10	Streets that connect people to libraries, community centers, and other community facilities.	4.17

Figure 70 VRU Location to Prioritize Survey Question Results

As shown in Figure 70 “Areas with a higher population of elderly individuals, disabled individuals, low-income residents, and/or those who depend on public transportation.” response had a higher average value with 4.68 of 5. Followed by Streets where fatalities and serious injuries have occurred and Streets that connect people to public transportation/bus stops.

In all three (3) sections there was an open comment box for participants to add any note/feedback related to the question and/or any general input.

Approximately 40% of the feedback was related to sidewalk infrastructure improvement needs such as signing, pavement markings, curb ramps, pedestrian signal, pedestrian bridges maintenance of sidewalk, etc. However, 25% of the comments related to vehicles parked on sidewalks, obstructing pedestrian movement and recommending verifying the process of providing commercial establishments permits. Other topics were illumination, vegetation in sidewalks, utilities obstructing the sidewalk path and continued education for all users. Figure 71 presents some quotes from the survey comment open box.

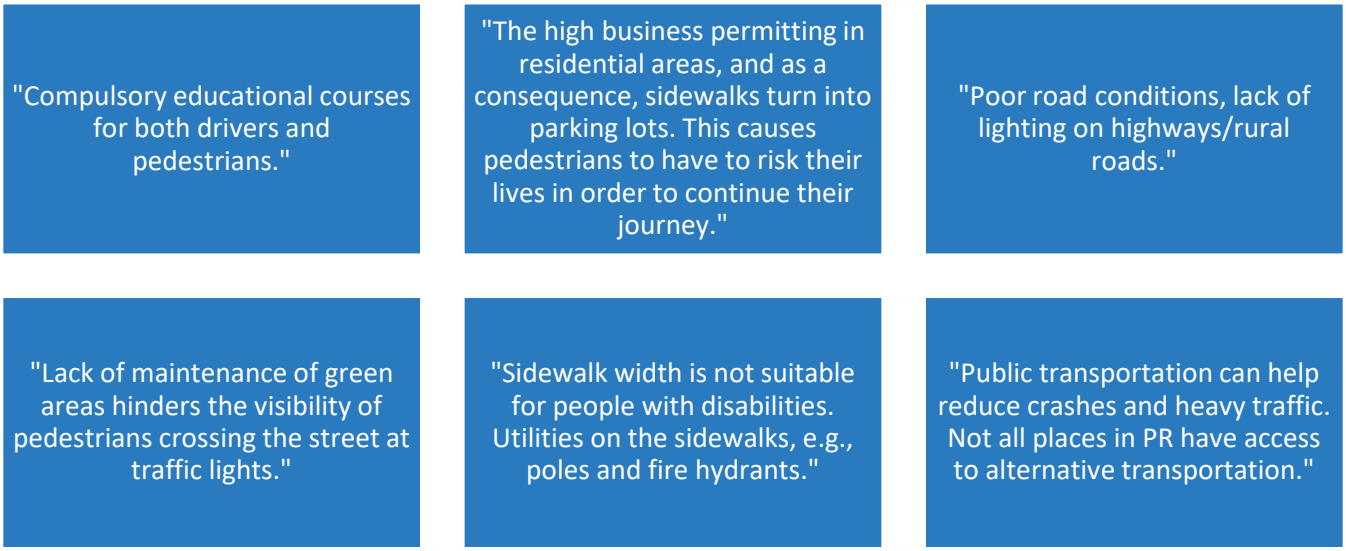


Figure 71 Survey Participants Comments in the Pedestrian Question Section

On the cycling question open box, 42% of the comments were related to education to drivers, to cyclist and in general, 45% were related to cycling infrastructure, lacking bicycle lanes, safe places for cycling to travel, the other comments were related to amending the law so police can fine cyclist.

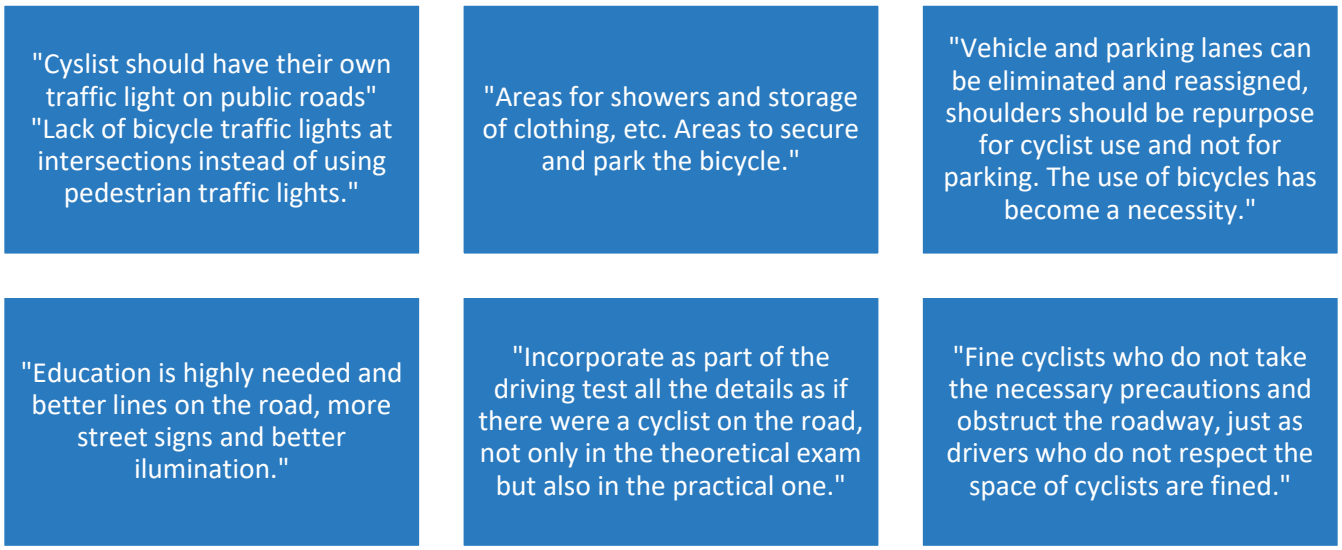


Figure 72 Survey Participants Comments in the Cyclist Question Section

The third section also included an optional open box, similar to previous comments, they were related to the need to enhance illumination in roadways, education, maintenance and improving/enhance pedestrian and cycling infrastructure.

"It is a topic of great interest, and it is necessary for agency leaders to take this work seriously and be proactive so that favorable results can be seen for the citizens."

"Improve roadway maintenance, especially the painting of lines on the pavement."

"Repair and/or build sidewalks, improve lighting, plant more trees."

"Build sidewalks for pedestrians, lanes or areas for cyclists. Install traffic lights indicating when pedestrians can cross and add more marked crosswalks on public roads!"

"More signage, speed cameras that automatically issue fines in areas where speeding occurs."

"Improving lighting on roads and implementing stricter laws and penalties for people who do not comply with traffic rules."

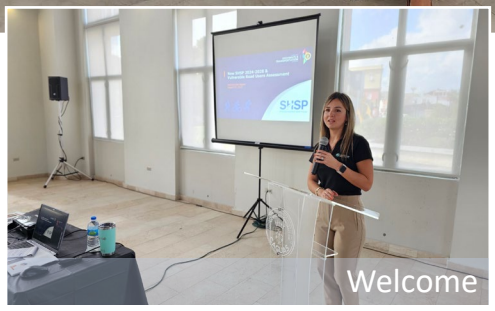
"Public transportation island-wide and within the municipality would increase safety for its users and alleviate the high traffic volume, thereby improving conditions for pedestrians and cyclists."

"Improve AMA transportation routes again; there are many elderly people who are being affected (they have to walk more, wait times at the stops are very long, and we are experiencing extreme heat, among other factors)."

"Make it part of school year curriculum to educate our children and young people about the responsibility we all have as pedestrians. That there are laws that apply to us as cyclists and pedestrians, as well as drivers."

"Education, electronic modules in DISCO to obtain a license. They should take courses every school year from a young age, starting with posture while walking and integrating safety as an essential part of the social fabric, appreciating the existence of our society."

Region East



Region West

Welcome

Presentation

Discussion

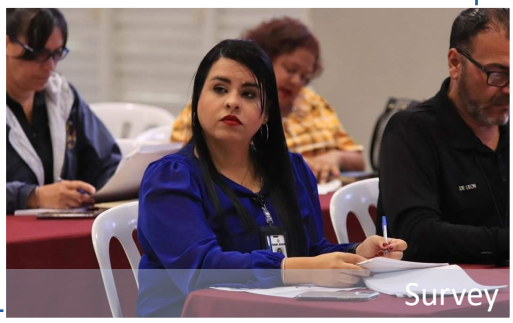
Survey

Region North and Metro

Welcome


Presentation


Discussion


Survey

Region South


Welcome


Presentation


Discussion


Survey

Program of Projects or Strategies

To eliminate vulnerable road users fatal and serious injury requires a collaborative effort from all agencies, entities as well as changing the paradigm, perspective and current planning and design practices of roadway infrastructure. This section is divided into general strategies following the Safe System Approach, Project Development section that includes PRHTA processes recommendations to incorporate VRU in all phases, Systemic Approach to proactively address VRU as well as identification of roadway project's locations within each region.

Safe System Approach

Following the Safe System Approach the following strategies were recommended, discussed, and will be incorporated into relevant SHSP emphasis areas, strategies, and actions, as appropriate, and implemented through PR planning procedures.

Safe Road Users

Education was a topic discussed in all group consultation meetings including survey comments from general participants. Cultivating internal and external leadership and continuing multi-jurisdictional collaborations are key to addressing decision making process and priorities. It was recommended to continue the current coordination and educational efforts as well as to expand them. The following strategies were recommended:

Strategy 1: Empower decision makers, government officials, enforcement, law prosecutors, technical planning, engineering staff as well as safety stakeholders, and the community as a whole with safety information, to spread messaging and promote a culture of safe mobility.

Actions:

a. Coordinate communication efforts for driver behavior campaigns and VRU behavior campaigns, based on crash data, to raise awareness about Vulnerable Road Users and community/people roles in the effort to have safer streets.
b. Identify a strategy for developing stronger relationships with community groups and neighborhoods through two-way communication.
c. Identify Senior Citizens residences and places of gathering to engage in Road Safety Audits as well as opportunity to educate them.
d. Reach out to educational partners that teach young children all the way to elderly adults for support and partnership in spreading safety knowledge and awareness.

e. Promote the educational parks that are available and would be developed for school-age children. Discuss collaboration opportunities with the Department of Education and Police to make alliances and reach out to as many schools possible so they could be part of these education programs.
f. Assist with campaigns recommendations to educate drivers related to “Move Over Law” and emergency vehicles priority.
g. Assist with public campaigns related to innovative geometric intersections on the island. (Roundabout, etc.) in media and social media platforms (TV campaign, YouTube, FB, etc.)

Strategy 2: Create a culture of roadway safety and understanding of throughout the safety stakeholders’ agencies.

Actions:

a. Coordinate technical workshops for decision makers, government officials, as well as technical planning and engineering staff.
b. Coordinate and assist for enforcement and law prosecutors gathering to discuss protocols and procedures for better application of the law and cases in court.
c. Develop an internal staff communication and education plan to expand awareness of the SHSP and VRU efforts and how various Departments are involved.
d. Provide workshops to municipalities regarding SHSP, crash database, and other related safety efforts.
e. Continue with SHSP pedestrian task force and include VRU as a whole. Extend meeting invitation to key municipalities and safety champions.
f. Continue the conversation between peers, municipalities, safety stakeholders as they could learn from each other regarding fund availability, potential efforts and projects that align with VRU and safety overall.

Safe Vehicles

Address the regulating role of the agencies to provide streets with infrastructure that supports future emerging technologies.

Strategy 1: Leverage technological innovations in mobility and micromobility.

Actions:

a. Investigate the regulatory process of shared micromobility vehicles and create a program to expand the availability of them.
b. Research, plan and implement a curb management program.

Strategy 2: Promote and coordinate efforts to elevate the role of public transit in creating a safer transportation system.

Actions:

a. Create a Safe Routes to Transit and support efforts and projects that improve roadway facilities around transit station and bus stops.
b. Collaborate with transit agency to create transit enhanced corridors and/or potentially dedicated transit lanes at TSSMC Corridors.

Safe Speeds

Prevent fatal and serious injury crashes by managing vehicle speeds.

Strategy 1: Update codes, manuals, and guidance to support speed reductions.

Actions:

a. Advance the PR Complete Streets Plan, design guidelines and countermeasures through the development of a design prompt list / checklist as a first step while the manuals and standard specification are being revised.
b. Support and provide technical assistance to Municipalities for their potential local safety plan and/or traffic calming program development.
c. Establish a speed management peer exchange with "Negligent driving" Emphasis area group.
d. Develop and implement speed management programs that set and reinforce vehicle speeds which are balanced with VRU risk and spaces, including consideration of human factors. Where feasible, consider using physical and geometric modifications such as raised crossings, raised intersections, raised tables, and other traffic calming elements to buffer speed.

Strategy 2: Lower posted speeds and implement road designs to achieve target speeds.

Actions:

a. Create an implementation plan for speed management on PRHTA High Crash Locations and VRU Corridors in need of lower posted speeds to align with land use context.
b. Proactively communicate speed limit changes with the community.
c. Advocate for speed limit changes and traffic calming devices countermeasures on PRHTA High Crash Locations and VRU Corridors.

d. Support geometric designs such as roundabouts that reduce speeds and manage crash angles where feasible as well as the installation/maintenance of crash energy roadside hardware.

Strategy 3: Work with Police Department to inform and implement speed reduction efforts.

Actions:

a. Continue conducting High Visibility Enforcement efforts to reduce speeding on key High Crash Locations streets and others with reported speeding concerns.
b. Implement speed feedback signs and collect speed data to inform and coordinate engineering and enforcement effort.

Safe Roads

Plan and design streets to guide appropriate road user behavior and human error mistakes.

Strategy 1: Create safer streets for all road users through enhanced planning, design, and operations.

Actions:

a. Research regulatory process for land use permits and suggest that transportation and safety should be part of the permit review and approval process.
b. Prioritize Safety Improvements on the High Crash Locations and VRU Corridors.
c. Integrate systemic safety best practices into all aspects and processes of PRHTA and Municipal projects.
d. Evaluate and enhance traffic signal operations to include pedestrian and cycling users.
e. Consider separating users in space, in time, and/or increasing attentiveness and awareness as shown in Figure 73.
f. Provide space between vehicles and VRU travel areas to create convenient paths to organized and controlled crossings. Consider using wider multimodal (8 feet or wider) sidewalks as an alternative to separated sidewalks and bike lanes.
g. Integrate proven safety countermeasures in HSIP safety projects, VRU corridors as well as projects in the agency where feasible.

Strategy 2: Expand the PR walk, bike, and transit network.

Actions:

a. Improve walking and biking experience at locations near active transportation modes including transit.
b. Develop and promote a Multimodal Wayfinding Program.

c. Develop a sidewalk repository to monitor and rate their quality as assets for maintenance and reconstruction projects.
d. Develop a pedestrian bridge repository and identify if maintenance or reconstruction needs to be addressed.
e. Use findings of the inventory, condition assessments and RSAs to develop, adopt and fund a long-term VRU infrastructure improvement, operations and maintenance program which gives particular attention in connecting the network to specific destinations (bus stops, retail, institutions, etc.). This program and plan should be part of the pavement preservation plan.

Strategy 3: Prioritize Vulnerable Road Users.

Actions:

a. Enhance PR process and procedures to prioritize and protect vulnerable road users in any decision made in the project development process for all project types.
b. Conduct Walk/Bike Road Safety Audits on all the High Crash Location and VRU corridors.
c. Consider VRUs when developing traffic signal coordination plans and applications to keep wait times within reasonable limits. Where feasible and during non-peak times allow VRU calls to interrupt coordination.
d. Investigate potential grant efforts to install solar system street lighting and develop a program.

Post-Crash Care

Strategy 1: Improve EMS response through education and coordination.

Actions:

a. Research process of toll fine for government issued vehicles and suggest a different seal or mechanism that allows them to pass through tolls without being fined.
b. Continue improving coordination of EMS (municipal and state) through the Traffic Incident Managements (TIM) meetings.

Figure 73 FHWA Safe System Approach - Safe Roads Recommendation *Source: FHWA* *Zero Deaths and Safe System | FHWA (dot.gov)*

Figure 74 FHWA Safe System Approach - Safe Roads Kinetic Energy Recommendation *Source: FHWA* *Zero Deaths and Safe System | FHWA (dot.gov)*

Proven Safety Countermeasures

As part of Safe Roads strategy 1, it was recommended to include proven safety countermeasures in safety and all local and state projects as appropriate. Additionally, to FHWA Proven Safety Countermeasures, FHWA developed the Pedestrian Safety Guide and Countermeasures Selection System (PEDSAFE). This online tool provides engineering, education and enforcement treatments related to the latest information available for improving pedestrian safety. This tool can be found at: Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org). More so, National Highway Traffic Safety Administration (NHTSA) developed "*A Highway Safety Countermeasure Guide for State Highway Safety Offices*" – Countermeasures That Work guide. This guide provides science-based traffic safety countermeasures for safety problems, including pedestrian and bicycle safety. The guide can be found at: Countermeasures That Work | NHTSA

The following images present examples of eight (8) FHWA Proven Safety Countermeasures that could be considered:

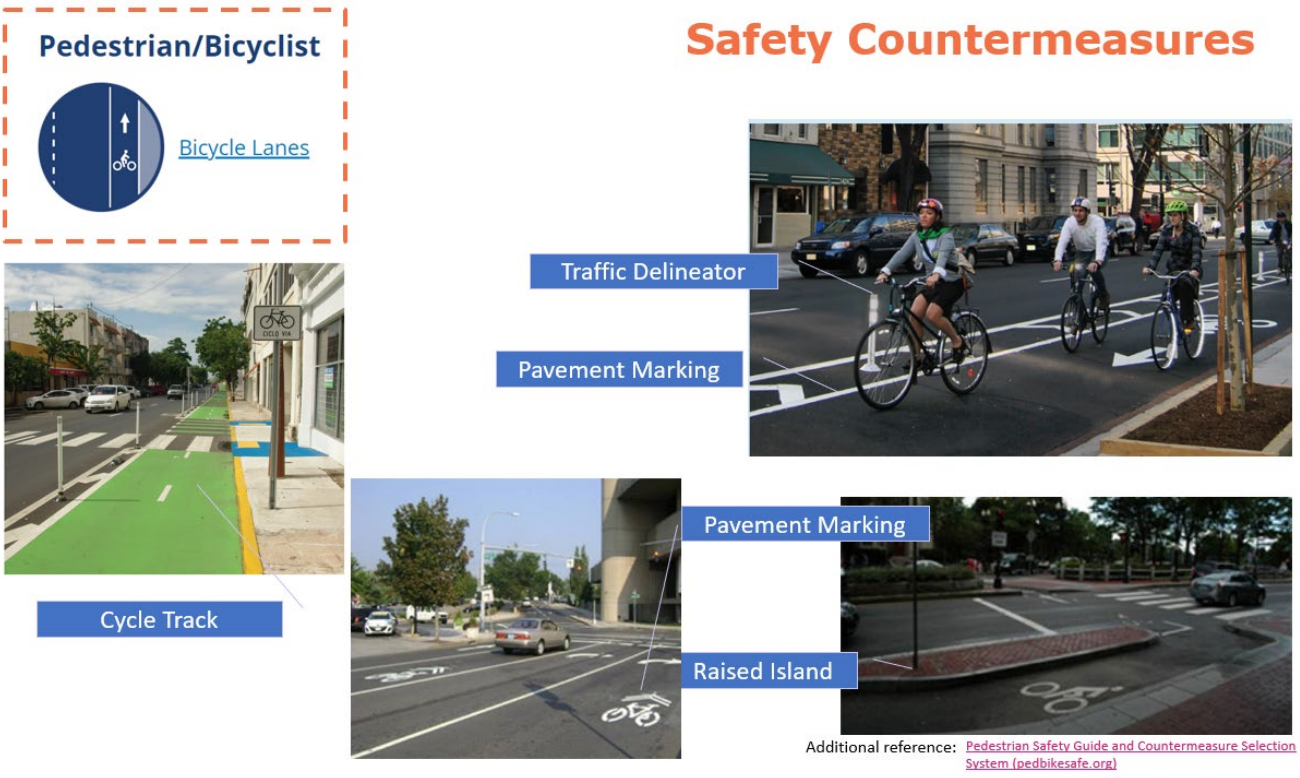


Figure 75 Bicycle Lane Proven Safety Countermeasures Examples

Figure 76 Crosswalk Visibility Enhancements Proven Safety Countermeasures Examples

Figure 77 Leading Pedestrian Interval Proven Safety Countermeasures Examples

Figure 78 Median and Refugee Island Proven Safety Countermeasures Examples

Figure 79 PHB and RRFBs Proven Safety Countermeasures Examples

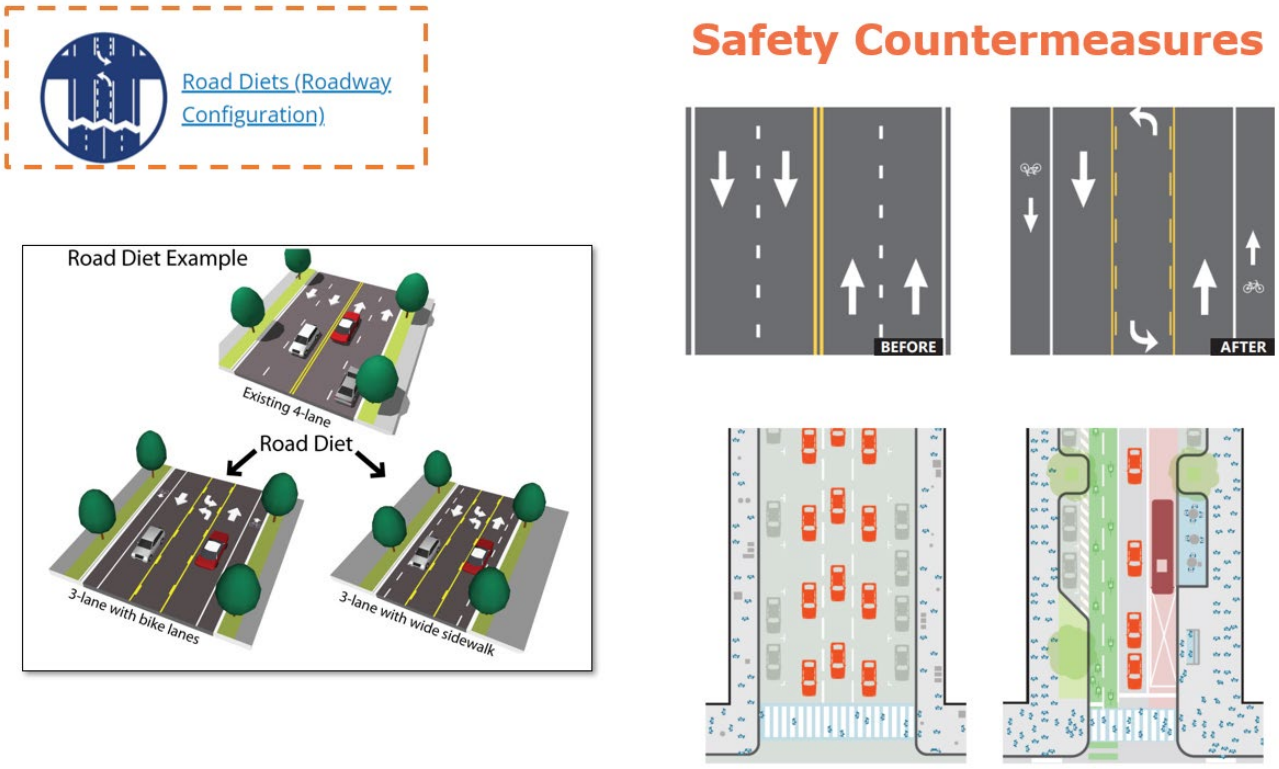
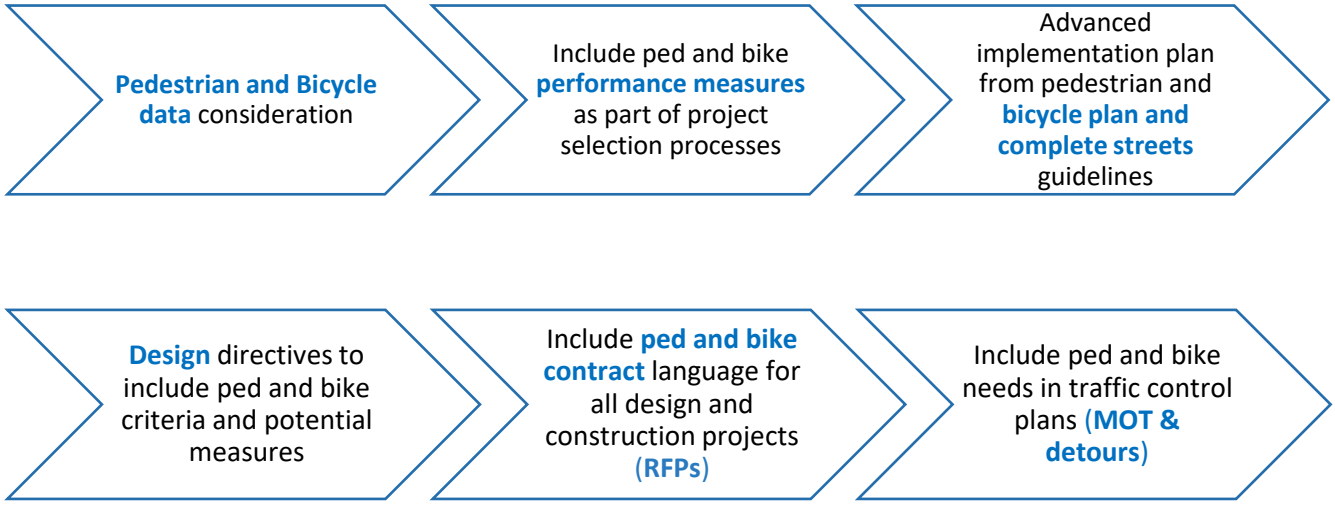


Figure 80 Roadway Configuration Proven Safety Countermeasures Examples

Figure 81 Walkways Proven Safety Countermeasures Examples

Project Development

Safety should be incorporated into every transportation project. Funding prioritization for transportation projects should be evaluated by a data-driven safety framework from programming all the way to planning, engineering, operations, and maintenance phases. All transportation projects should incorporate safety analysis when retrofitting or modifying existing transportation infrastructure. Bicycle and pedestrian considerations should be a full component of Puerto Rico project planning and development.



- Pedestrian and bicycle data should be required in Traffic Impact Analysis (TIA) as well as traffic operation reports. Similarly, VRU should be included in the annual data collection efforts related to HPMS and the PRHTA Highway System Office.
- Performance measures in the selection of projects for funding.
- Consider, check, and cross reference PR Complete Streets Plan & Design Guidelines and the Comprehensive Bicycle and Pedestrian Plan for Puerto Rico for projects that are in the programming phase. Context-sensitive solutions, land uses consideration and community needs should be part of the process when analyzing what type of infrastructure improvements, the project will implement.
- Include and/or modify current design directives to include VRU criteria, safety countermeasures and potential infrastructure retrofitting for all transportation projects. Develop a checklist and it should be a requirement for all projects to consider these elements.
- Include VRU and complete streets language in all contract documents for design and construction.
- Include VRU needs in temporary traffic control plans in substantive ways that keep their modes.

of travel open, convenient, and useful, including ADA-compliant detours. Provide advance warning of closures for opportunities to seek alternative routes. Develop and require traffic control plans, measures, and techniques that mitigate or eliminate risks and enhance compliance. Require all of those who need to be on the streets to be properly trained and certified in temporary traffic control.

Systemic Approach

As High-Risk roadway features were identified as Arterial (principal and minor), Multilane, Speed limit equal to and more than 35 mph, VRU safety measures considerations in all projects that falls within these characteristics should be considered.

Roadways with transit route(s), transit stations and bus stops should be analyzed and retrofitted to consider VRU infrastructure.

Finally, Traffic Signals System Management Center (TSSMC) corridors since they are operated and monitored by the traffic management center, projects to update cabinets, signals, pavement markings should also consider pedestrian push buttons, adjust, and provide proper time for VRU to cross, mark crosswalks as well as repair sidewalks, curb ramps and contemplate mid-block crossing.

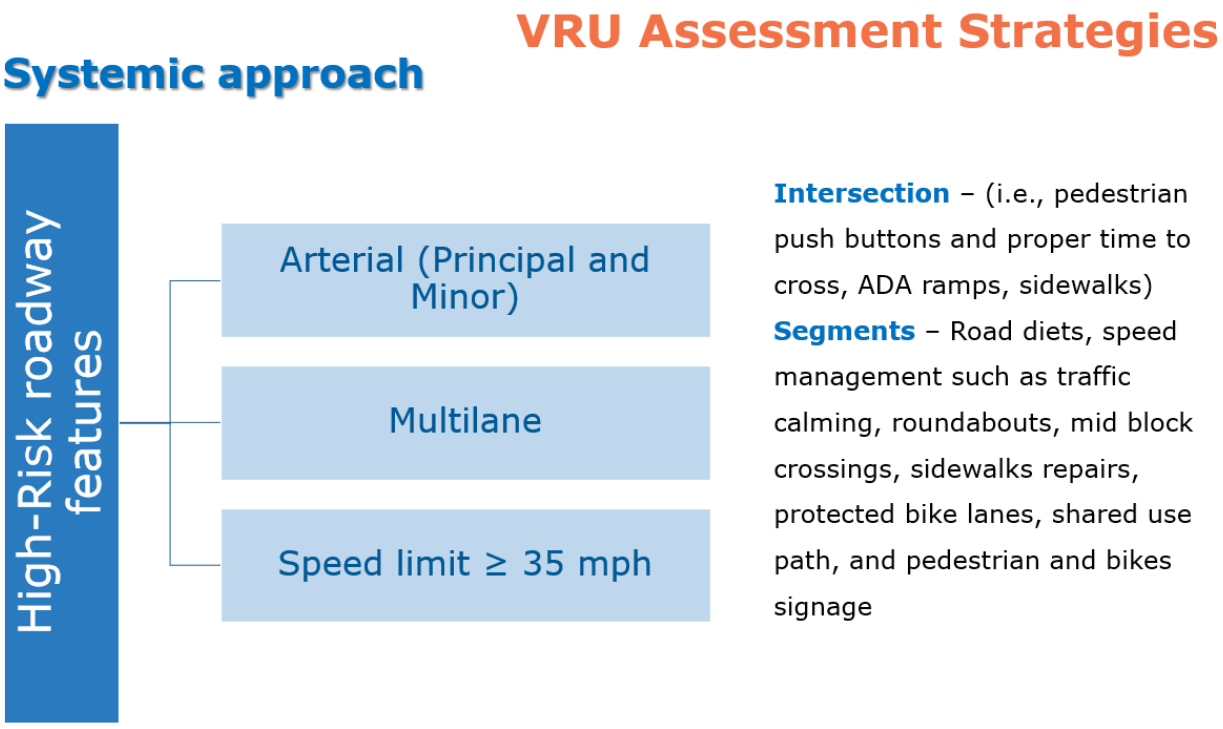


Figure 82 Systemic Approach Considerations

Potential Projects

Roadway segment and intersection map and tables were developed for each municipality identified as high-risk areas. Each table included the roadway name, from and to, segment length, and VRU Severity (Fatality Count and Serious Injury Count). Further analysis took into consideration the high-risk characteristic for each of the roads identified for each municipality. This provided a prioritization method and five (5) projects by region were selected. Table 8 in the following section identifies high-risk areas with the potential first-tier projects to consider.

As shown in Figure 83, following the identification of roadway project an evaluation of site conditions and/or road safety audit should be performed to identify countermeasures. After funding availability, project programming should be performed for designing and constructing the improvements.

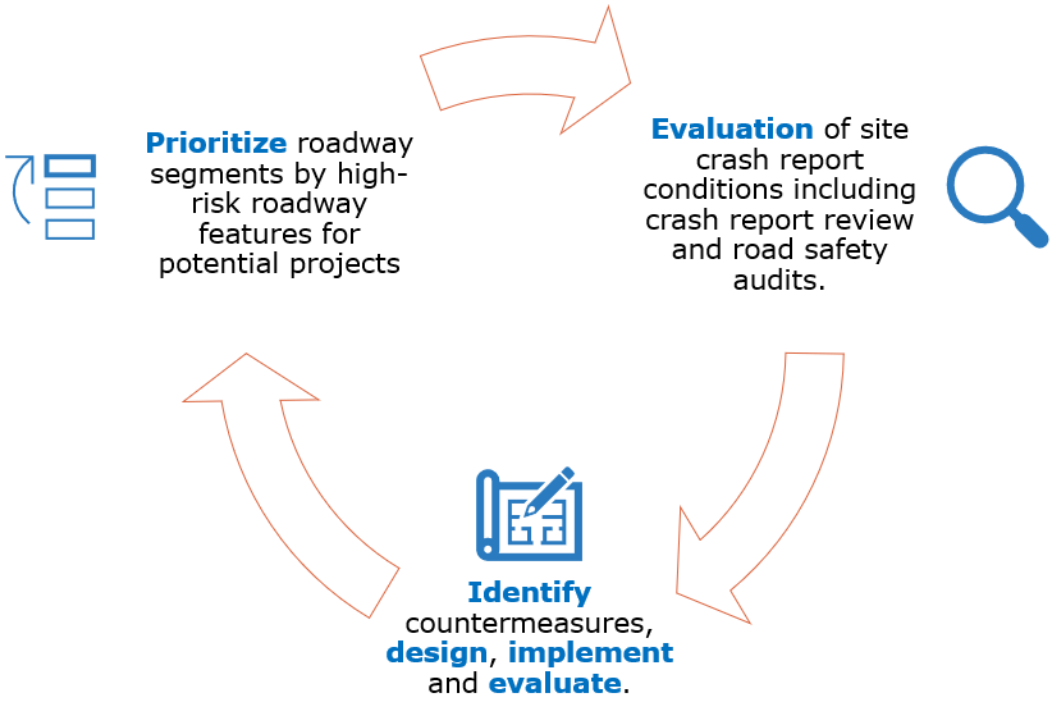


Figure 83 Process Diagram for Roadway Identified as Potential Projects

High Risk Areas and Characteristics

The VRU Safety Assessment contains the high-risk areas identified in Puerto Rico. The appendices contain maps and tables for each municipality identified as high-risk in each region. The user can also benefit from the list of recommendations presented in the Program of Projects or Strategies section, to identify which ones are applicable to its agency. This report will guide Puerto Rico to a better understanding of the locations that need more attention from the 4E's perspective. In addition, a GIS data platform with the information used for this assessment was developed for safety stakeholders and municipalities identified as high-risk areas. The interactive map includes database layers as well as the corridors identified for each municipality. This could provide partners agencies with information about corridors that could be addressed with different funding and parallel efforts.

Table 8 presents a summary of the top roads by PRHTA regions, municipality, and their high-risk characteristic.

Table 8 Top Roads by PRHTA regions, Municipality and High-Risk Characteristics

	Municipality	Route	From KM	To KM	Length KM	High-Risk Characteristics (VRU Crashes, Arterial, Multilane, Speed Limit)
Metro	Carolina	PR-3	6.6	10.6	4.0	VRU Crash, Arterial, Multilane, Bus Route Corridor
	San Juan	PR-35	0	1.7	1.7	VRU Crash, Arterial, Bus Route and TSSCM Corridor
	San Juan	PR-3	0.0	5.7	5.7	VRU Crash, Arterial, Multilane, Speed, Bus Route Corridor
	Bayamón	PR-2	10.4	11.3	1.1	VRU Crash, Arterial, Multilane, Speed, Bus, and Transit Route
	San Juan	PR-1	17.5	21.3	3.8	VRU Crash, Arterial, Multilane, Speed, TSSCM Corridor
North	Arecibo	PR-10	63.8	66.6	2.8	VRU Crash, Arterial, Multilane, Speed
	Toa Baja	PR-2	16.4	22.9	6.5	VRU Crash, Arterial, Multilane, Speed
	Hatillo	PR-130	0.5	4.9	4.4	VRU Crash, Arterial, Speed
	Hatillo	PR-130	8.5	11.8	3.3	VRU Crash, Arterial
	Toa Baja	PR-867	0.7	7.8	7.1	VRU Crash, Arterial, Speed
South	Ponce	PR-1	118.2	122.4	4.2	VRU Crash, Arterial, Speed
	Juana Díaz	PR-14	3.5	4	0.5	VRU Crash, Arterial, Multilane, Speed
	Villalba	PR-149	55.4	61.1	5.7	VRU Crash, Arterial, Speed
	Cayey	PR-1	55.5	56.6	1.1	VRU Crash, Arterial, Multilane
	Juana Díaz	PR-149	63	64.6	1.6	VRU Crash, Arterial, Multilane
East	Rio Grande	PR-3	23.1	24.4	1.3	VRU Crash, Arterial, Multilane, TSSCM Corridor
	Maunabo	PR-760	0.0	1.6	1.6	VRU Crash, Arterial
	Caguas	PR-32	2.6	3.0	0.4	VRU Crash, Arterial, Multilane
	Loíza	PR-187	22.7	24.6	1.9	VRU Crash, Arterial
	San Lorenzo	PR-9931	0.0	1.0	1.0	VRU Crash, Arterial, Speed
West	Aguadilla	PR-107	0.0	4.0	4.0	VRU Crash, Arterial, Multilane
	Rincón	PR-115	9.1	13.7	4.6	VRU Crash, Arterial, Multilane
	Quebradillas	PR-2	96.2	100.9	4.7	VRU Crash, Multilane, Speed, TSSCM Corridor
	Añasco	PR-2 & Int PR-2@PR-402	142.8	146.1	3.3	VRU Crash, Multilane, Speed, TSSCM Corridor
	Mayagüez	PR-2	155.0	157.4	2.4	VRU Crash, Multilane, Speed, TSSCM Corridor

Appendices

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Appendix A Consultation Meetings Attendance

SHSP
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8	Roberto Puello Brenes	roberto.puello@ponce.pr.gov	787-259-2260	Municipio de Ponce	[signature]
9	Angel Albino Robles	angel_albino@pucpr.edu	(787) 568-0574	Pont. Univ. Católica PR PFXII	[signature]
10	Joshua Collado Lugo	joshua_collado@pucpr.edu	787-232-3723	PUCPR - Proyecto FIESTA XII	[signature]
11	Jose L. Plata	jplata@juanadiaz.pr.gov	787 800 8742	Mun. Juana Diaz	[signature]
12	IDELISA B. LÓPEZ				[signature]
13	RAMÓN HERNÁNDEZ TORRES	alcaldejd@juanadiaz.pr.gov			[signature]
14	Domingo Núñez Feliz	dnunez@juanadiaz.pr.gov	787-371-5142	Policía Municipal	[signature]
15	Angel L. Feliciano Sánchez	feliciano-angel@ponce.pr.gov	787 672 6256	Director OMME	[signature]
16	Javier Requena Mercado	jerequena@policia.pr.gov	787 674-0226	Dir. Dtto. Juana Díaz	[signature]

Trabajando juntos...Salvamos más vidas.

AUTORIDAD DE CARRETERAS Y TRANSPORTACIÓN

Autoridad de Carreteras y Transportación
Plan Estratégico de Seguridad Vial (SHSP)
Reunión de grupos consultivos -- Región Sur
Fecha: 8 de septiembre de 2023

SHSP STRATEGIC HIGHWAY SAFETY PLAN

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18	Kellymar Flores	kfloresramirez@pupr.edu	787-902-5253	OMME Coamo	[signature]
19	Leniel J. Alvarado Martinez	AlvaradoLeniel33@gmail.com	939 343 5776	OMME Coamo	[signature]
20	Wilfredo R. Cordero Cruz	wilfredo.cordero@metricpr.com	787-299-2170	SHSP/Metric	[signature]
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22	Ashley A. Vargas	ashley.vargas@metricpr.com	787-459-5085	SHSP/Metric	[signature]
23	Khamila Caraballo Aviles	khamicaraballo@gmail.com	939-456-5580		
24					
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32					

Appendix B Consultation Meeting Presentations

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

PUERTO RICO
HIGHWAYS &
TRANSPORTATION
AUTHORITY

New SHSP 2024-2028 & Vulnerable Road Users Assessment

Meeting East Region
August 29, 2023

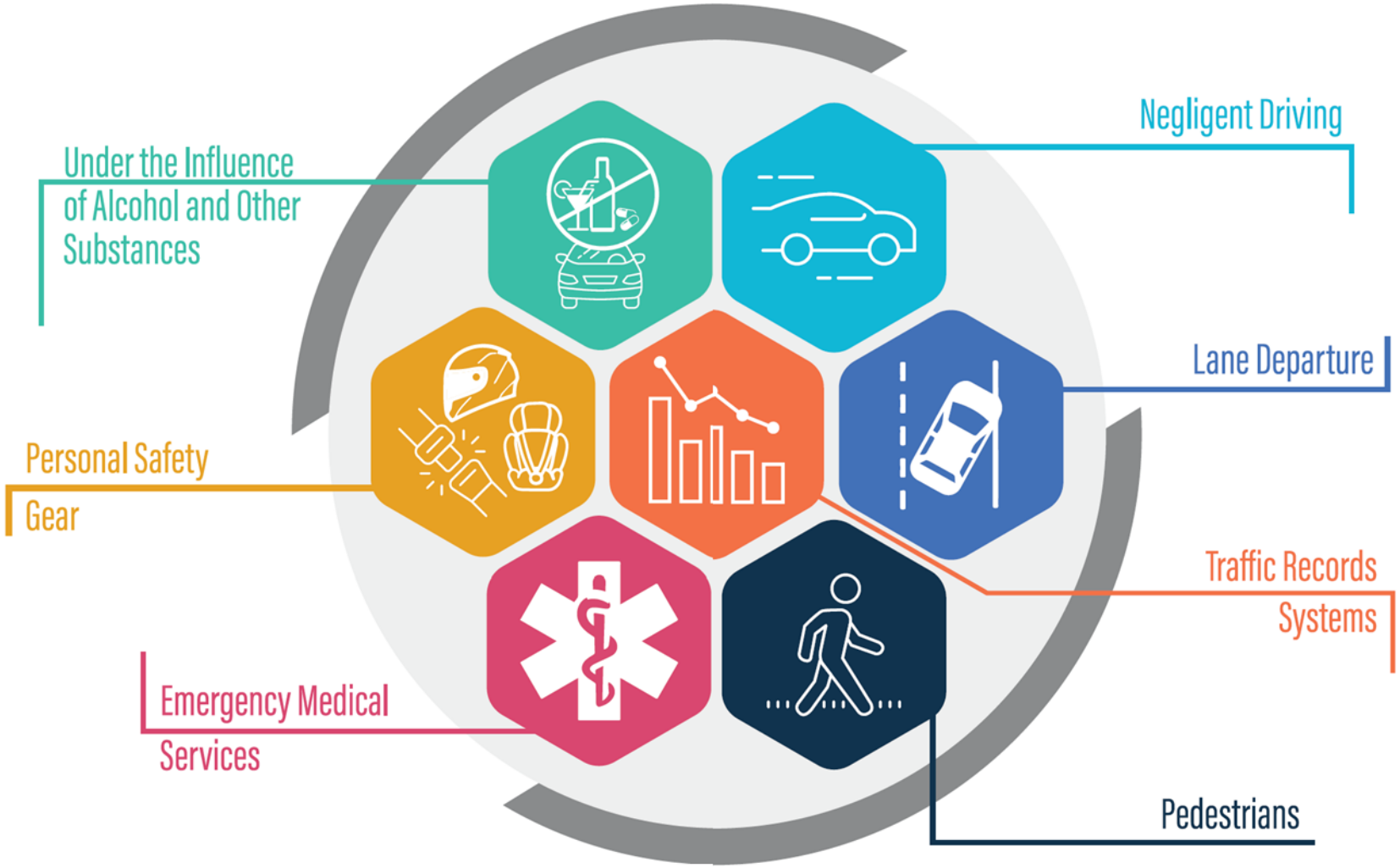
SHSP
STRATEGIC HIGHWAY SAFETY PLAN

1

SHSP 2024-2028
Overview

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Current 2019-2023 Emphasis Areas



New Emphasis Areas (2024-2028)

High Priority Areas

- Vulnerable Road Users
- Speed Management
- Impaired Driving
- Occupant Protection
- Lane Departure
- Communication Integration

Focus Areas

- Traffic Records Systems
- Motorcyclists
- Aging Drivers (65+)
- Legislations & Procedures

The Safe System Approach

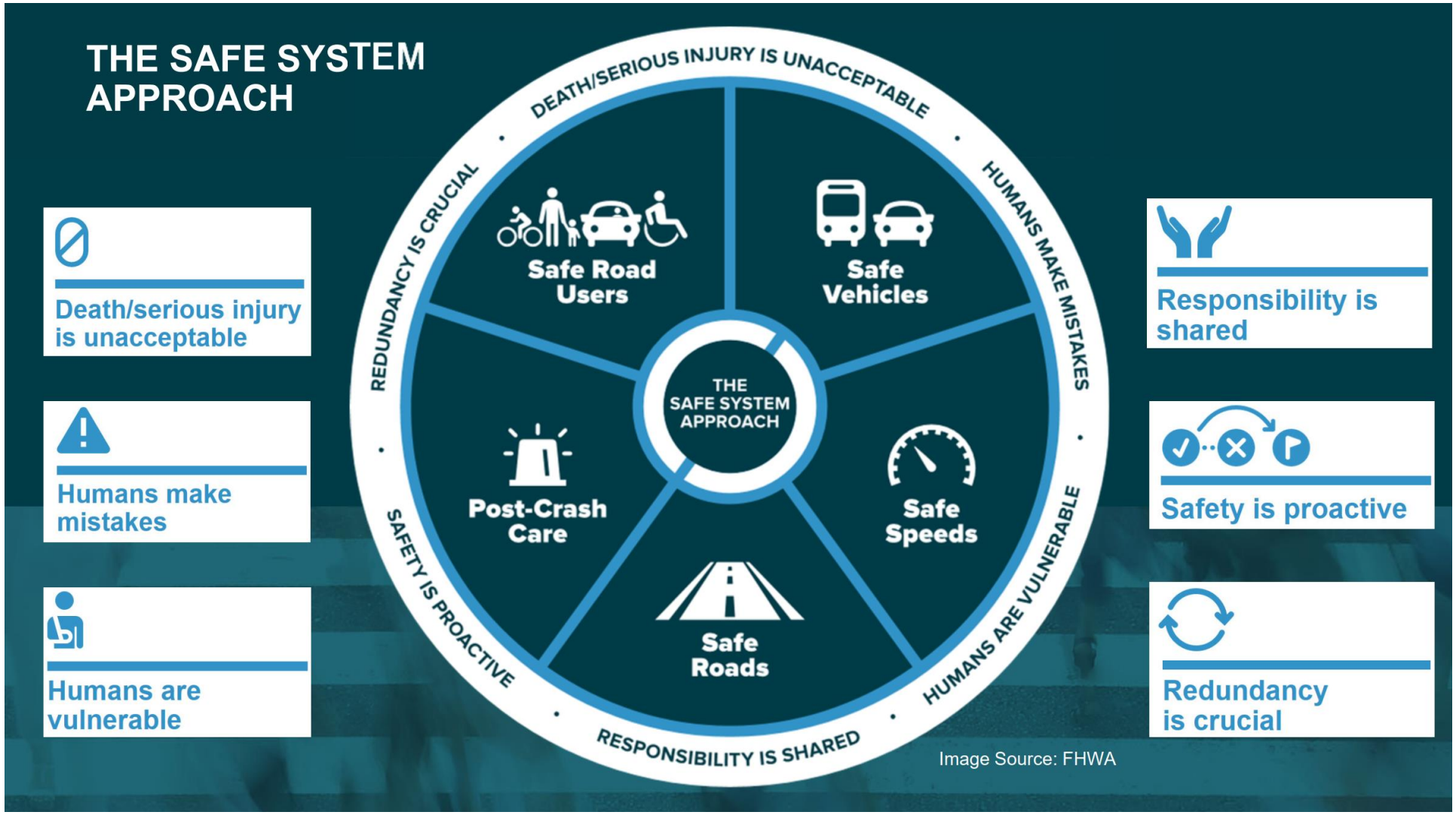
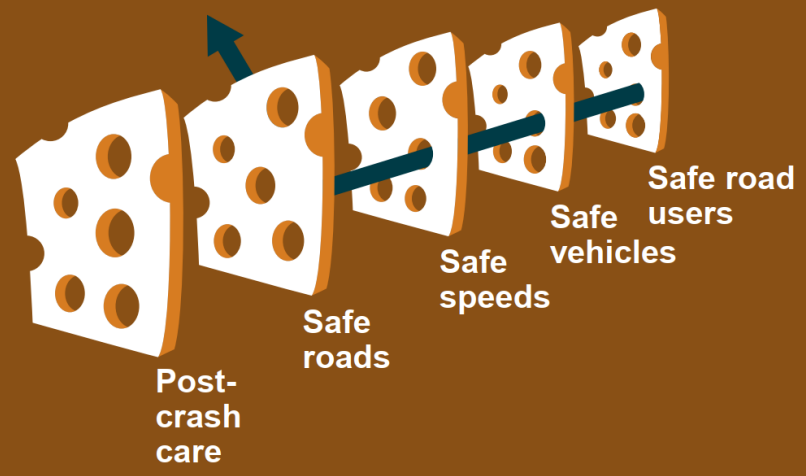


Image Source: FHWA

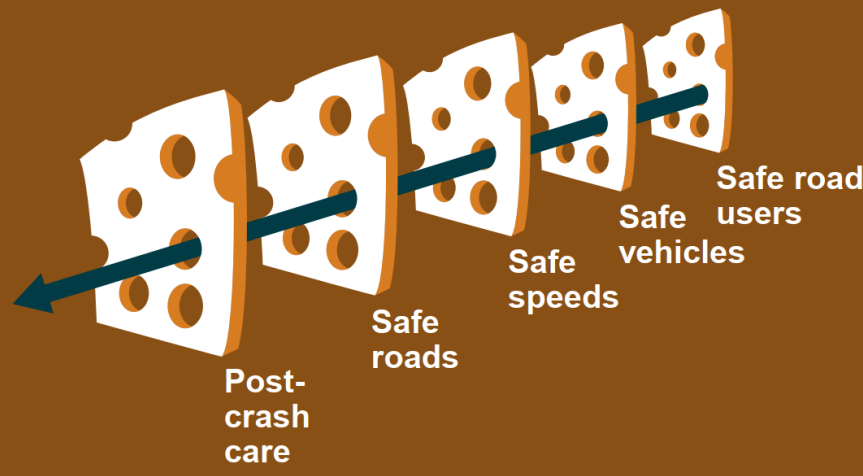
The Safe System Approach (Cont.)

THE 5 SAFE SYSTEM ELEMENTS CREATE REDUNDANCY

The "Swiss Cheese Model" of redundancy creates layers of protection



Death and serious injuries only happen when all layers fail



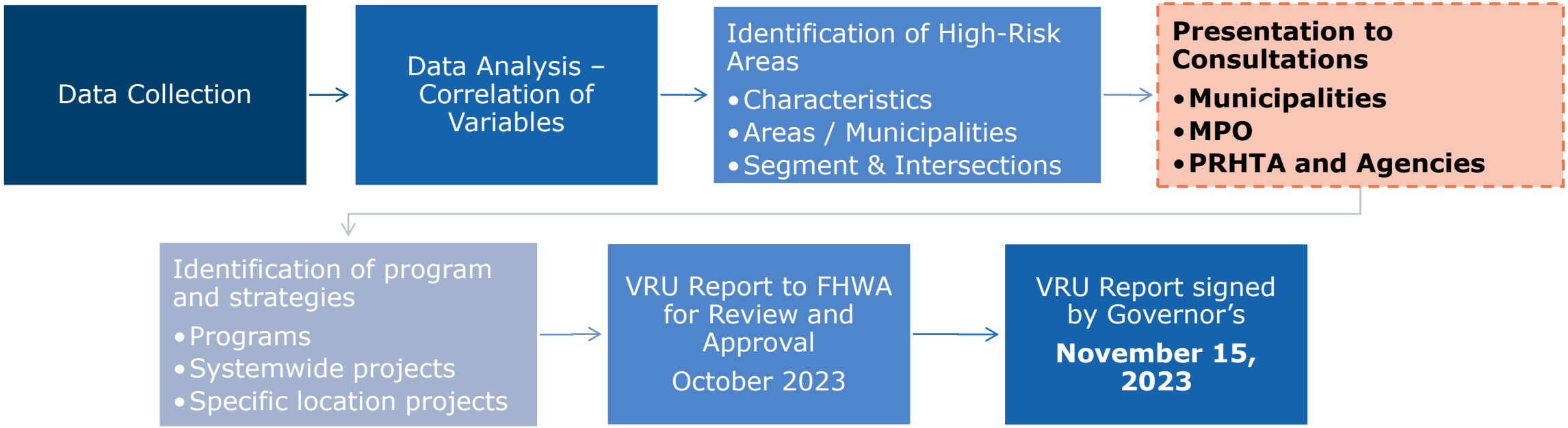
Source: FHWA

2

VRU Assessment:
Development Process

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Development Process



PR VRU Assessment Data

Data Base

Crash Data (Observatorio de Seguridad Vial OSV)	2019 to 2022
	Fatal and Severe Injury
	Pedestrian and Bikes
	Age of Victim
	Time of Day
	Month
	Location
	Intersection vs Non intersection
Highway Performance Monitoring System (HPMS)	Functional Classification
	Speed
	Annual Average Daily Traffic (AADT)
	Number of Lanes
	Kilometers of road by area

PR VRU Assessment Data (Cont.)

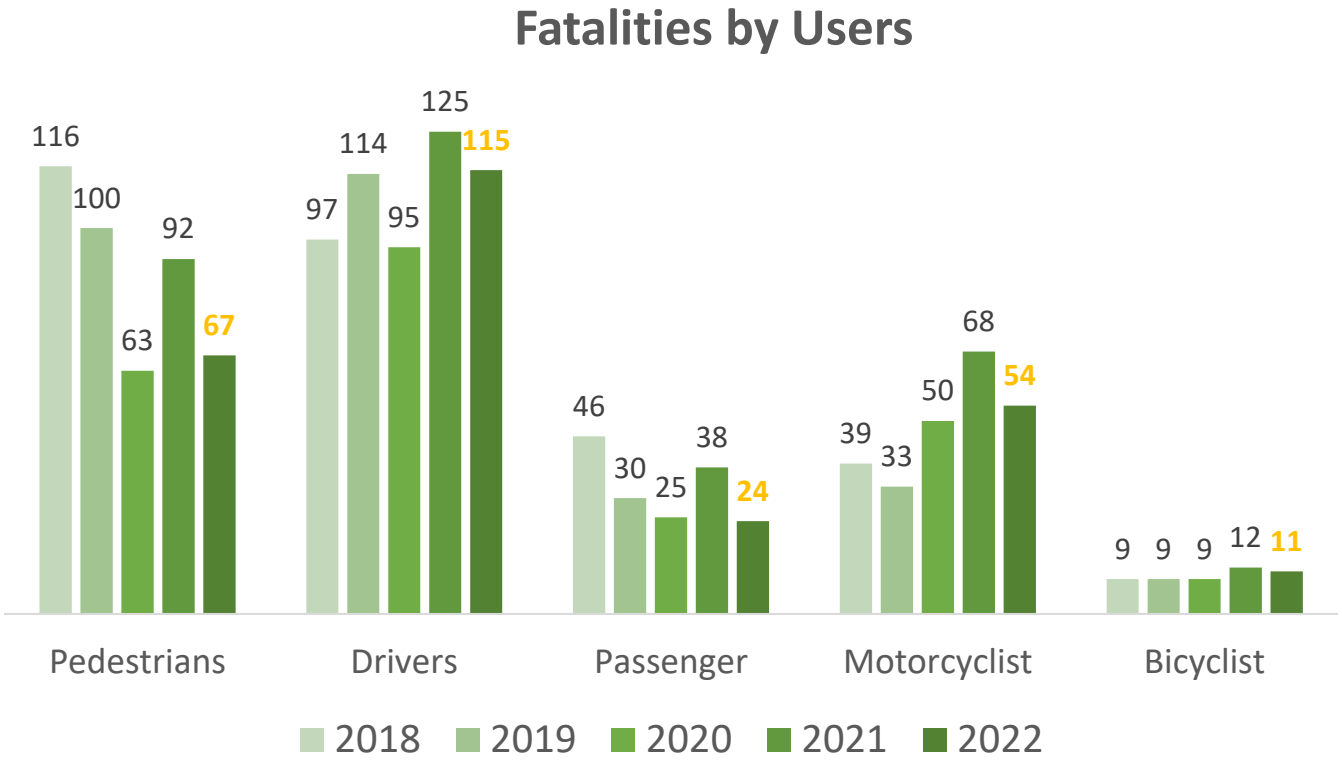
Data Base		
	Geographic Area	Urban vs Rural
		PRHTA Regional Areas
		DTPW Areas
		Municipalities
	Transit	Bus routes (AMA) and stop locations
		Transit route (TU) and stop locations
	Census	Population
		Ethnicity and Race
		Income
		Zero Car Households
		Disability

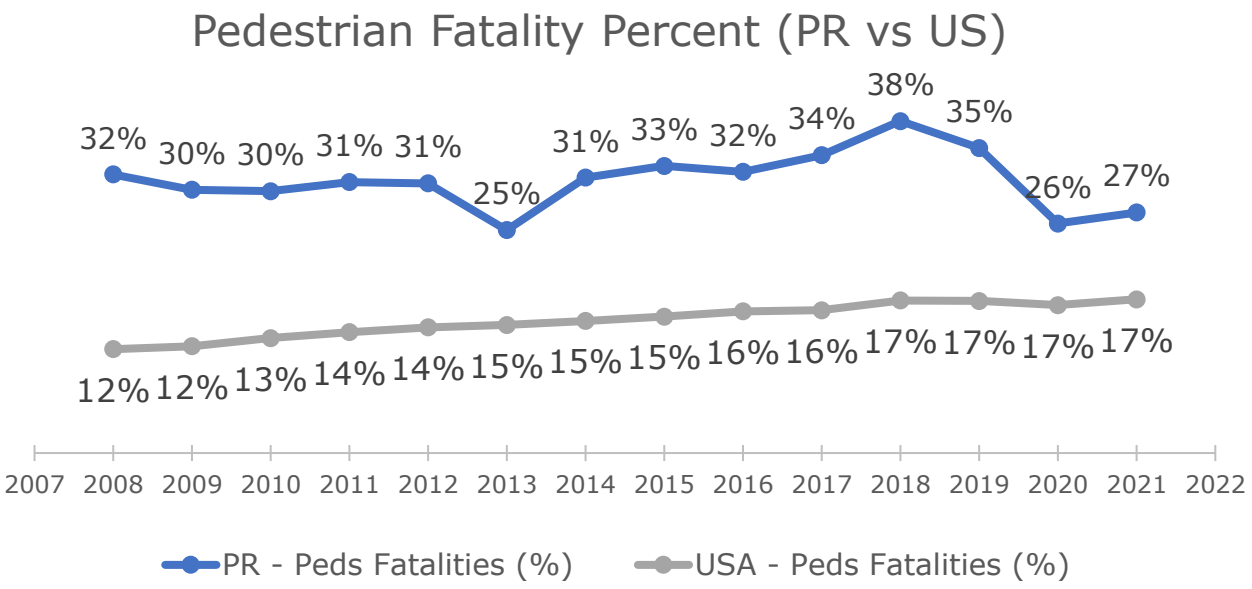
3

VRU Assessment:
Preliminary Results

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

PR Fatalities by Users

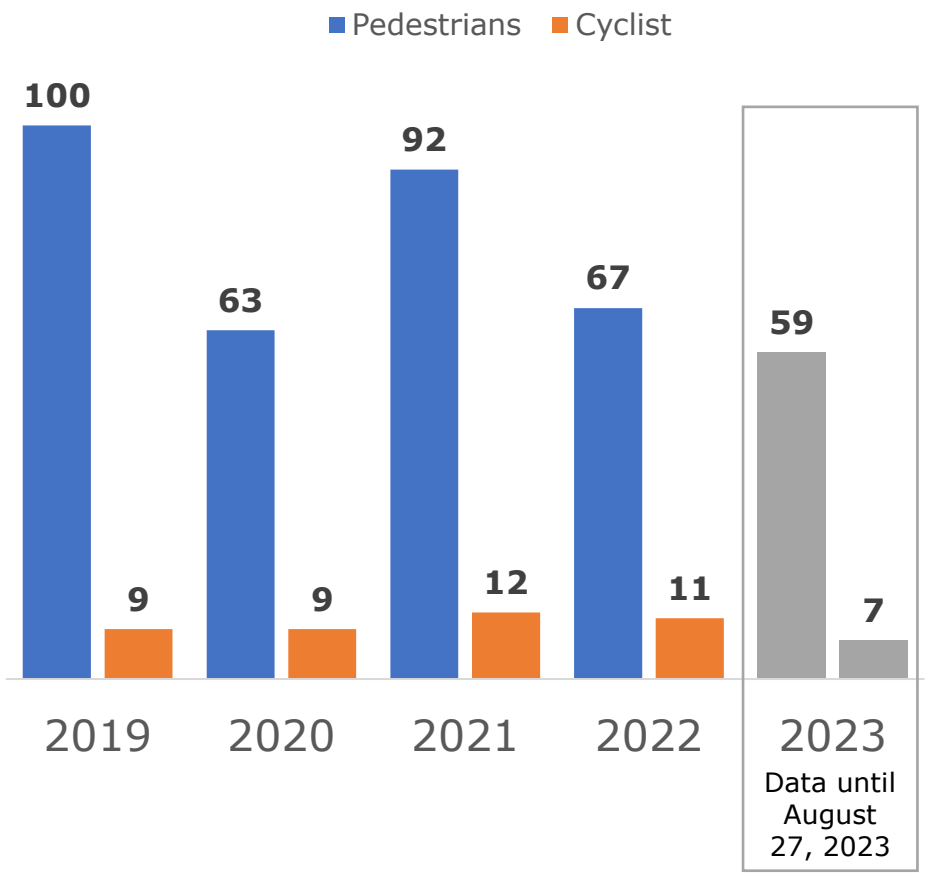




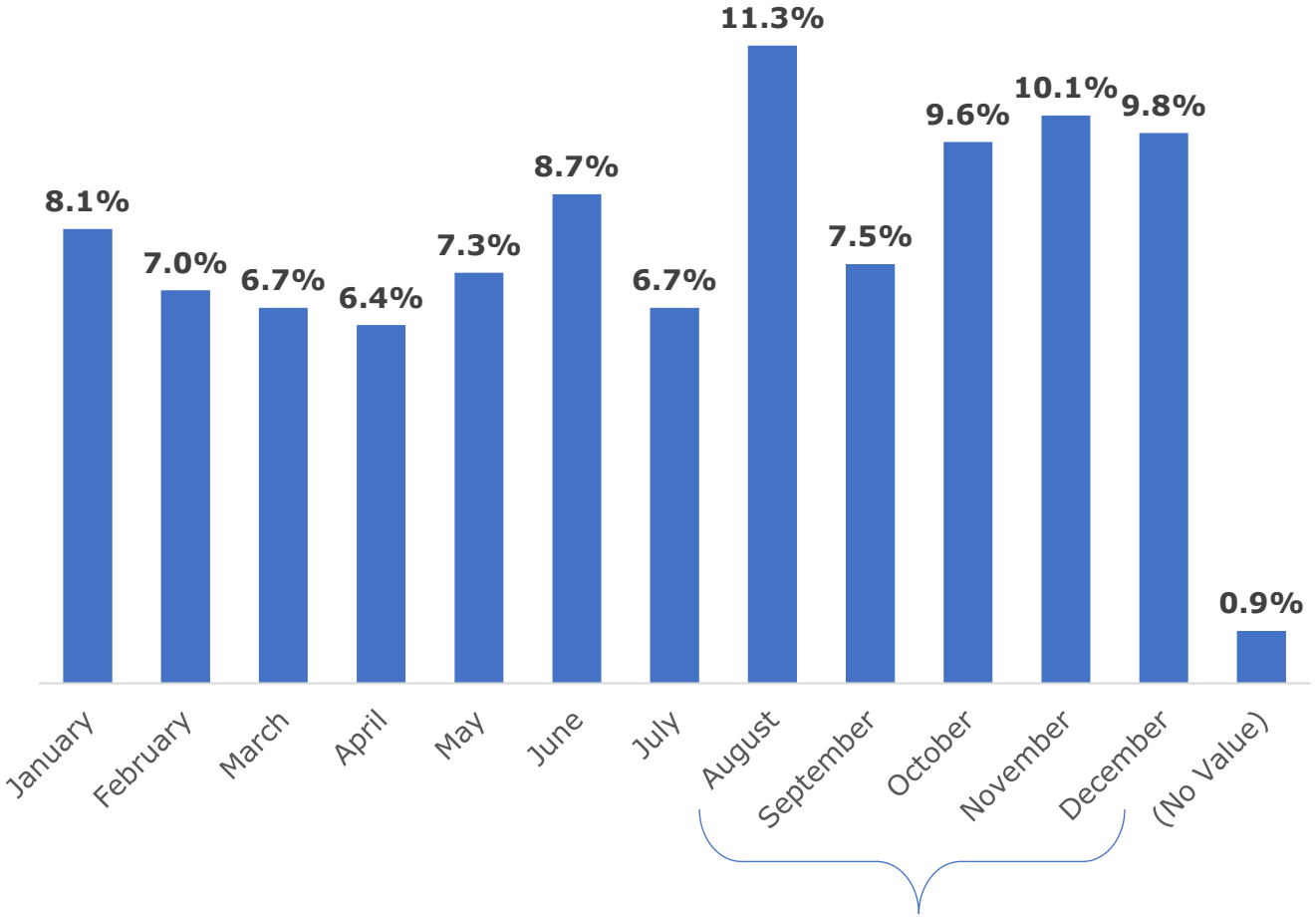
PR VRU Data Results

Fatal & Severe

VRU Fatalities by Year



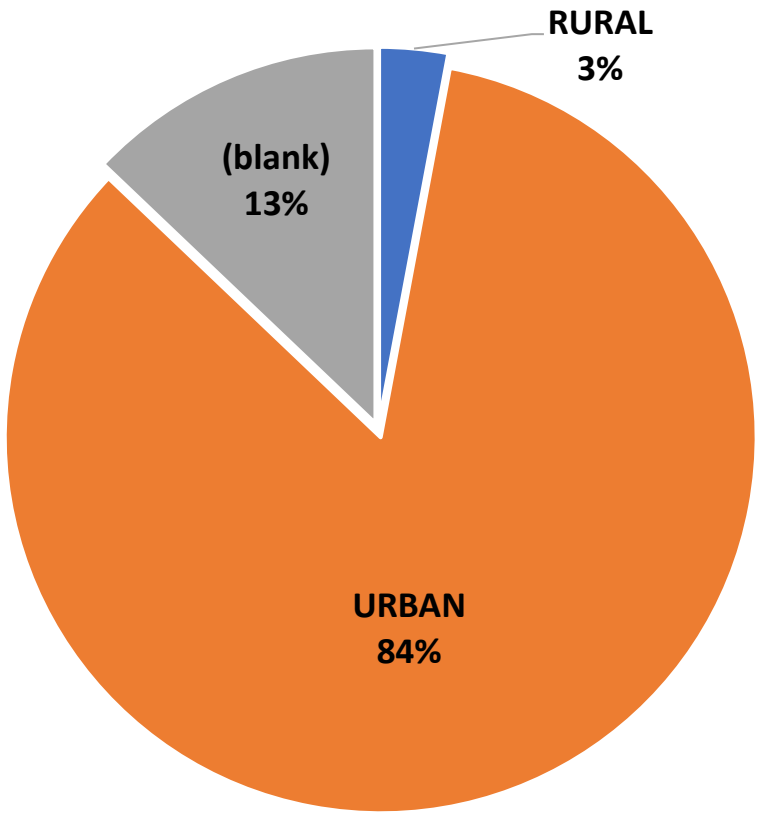
VRU Crash Data by Month



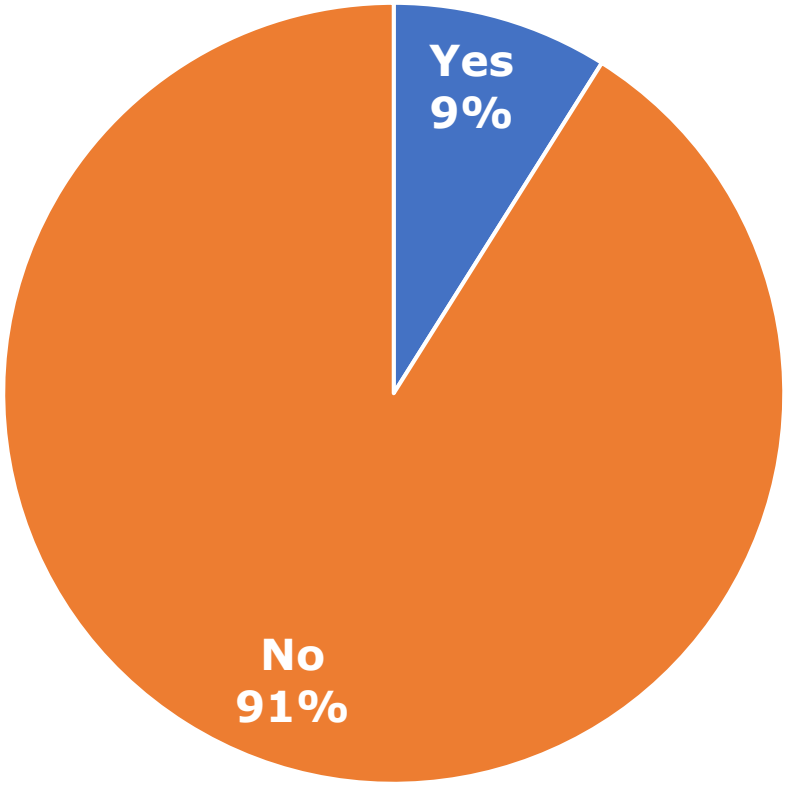
August to December
48.3%

Urban vs Rural and Intersection

VRU Crashes Urban vs Rural

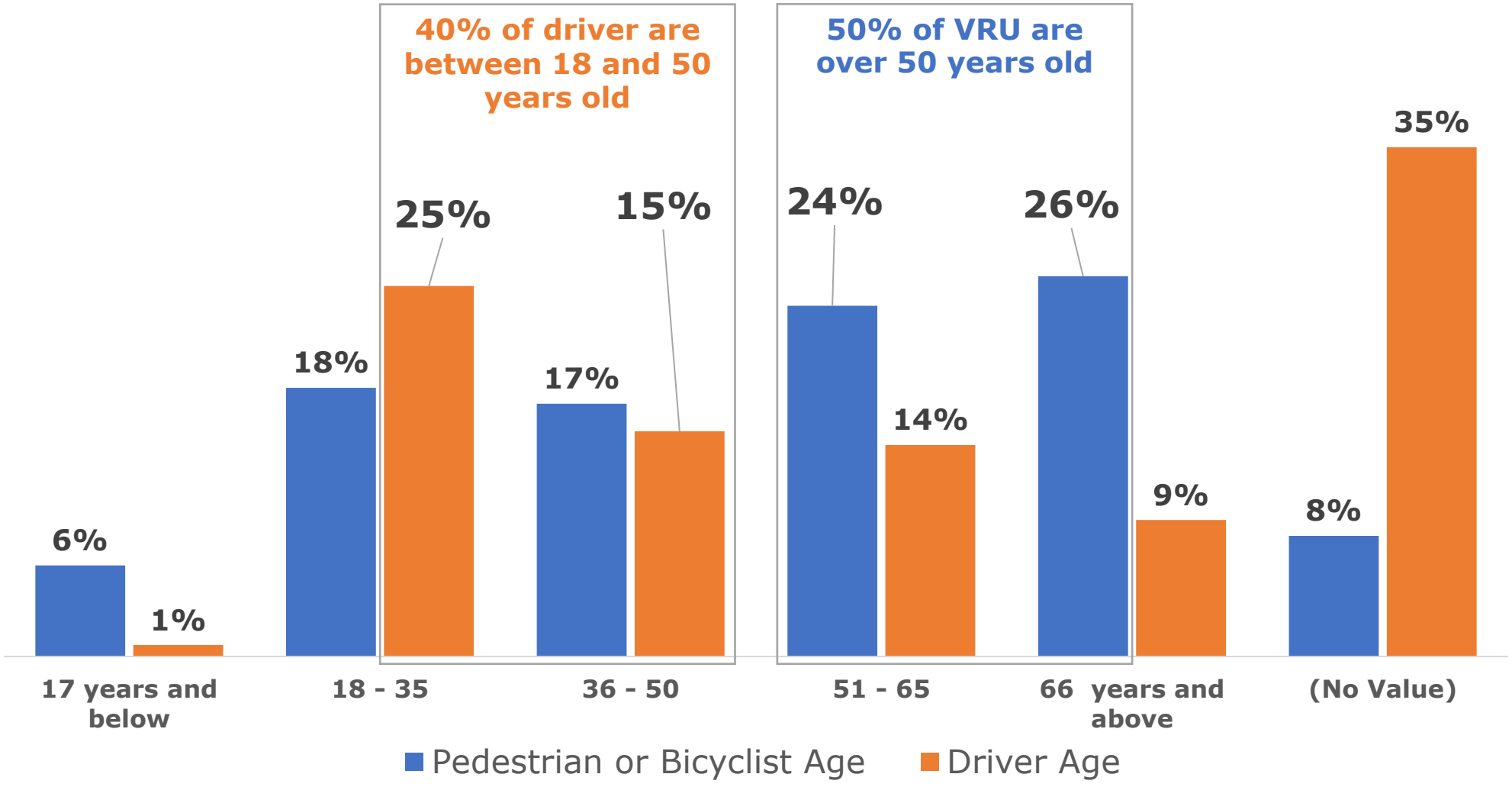


Intersection Related Crashes

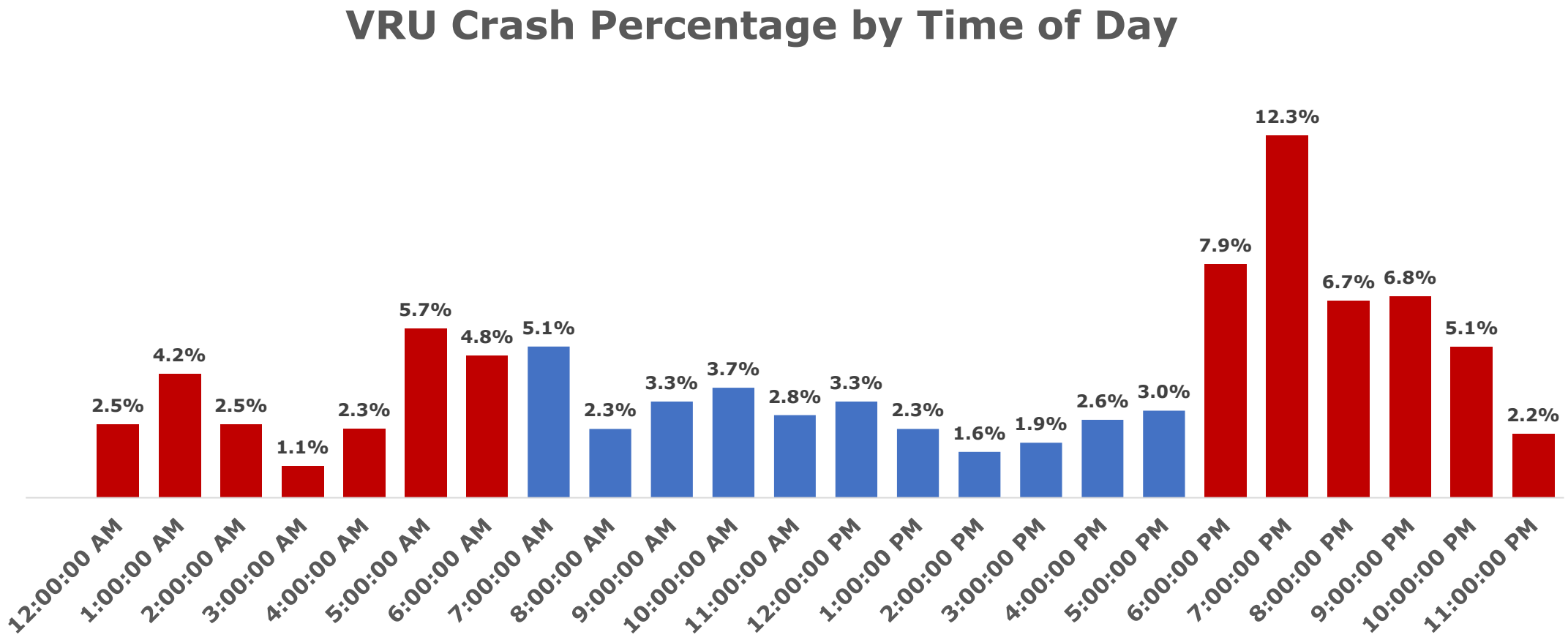


VRU Age vs. Driver Age

Fatal & Severe



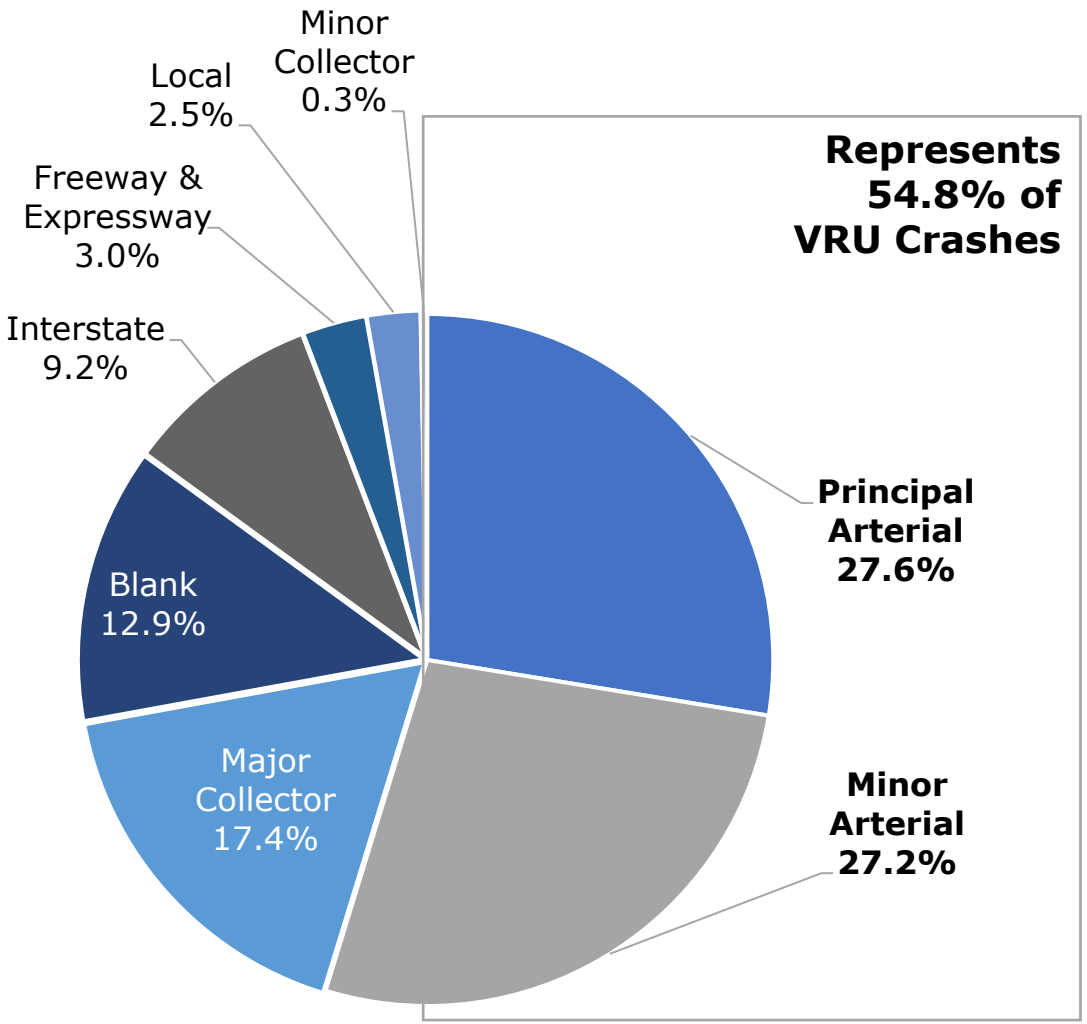
Time of Day



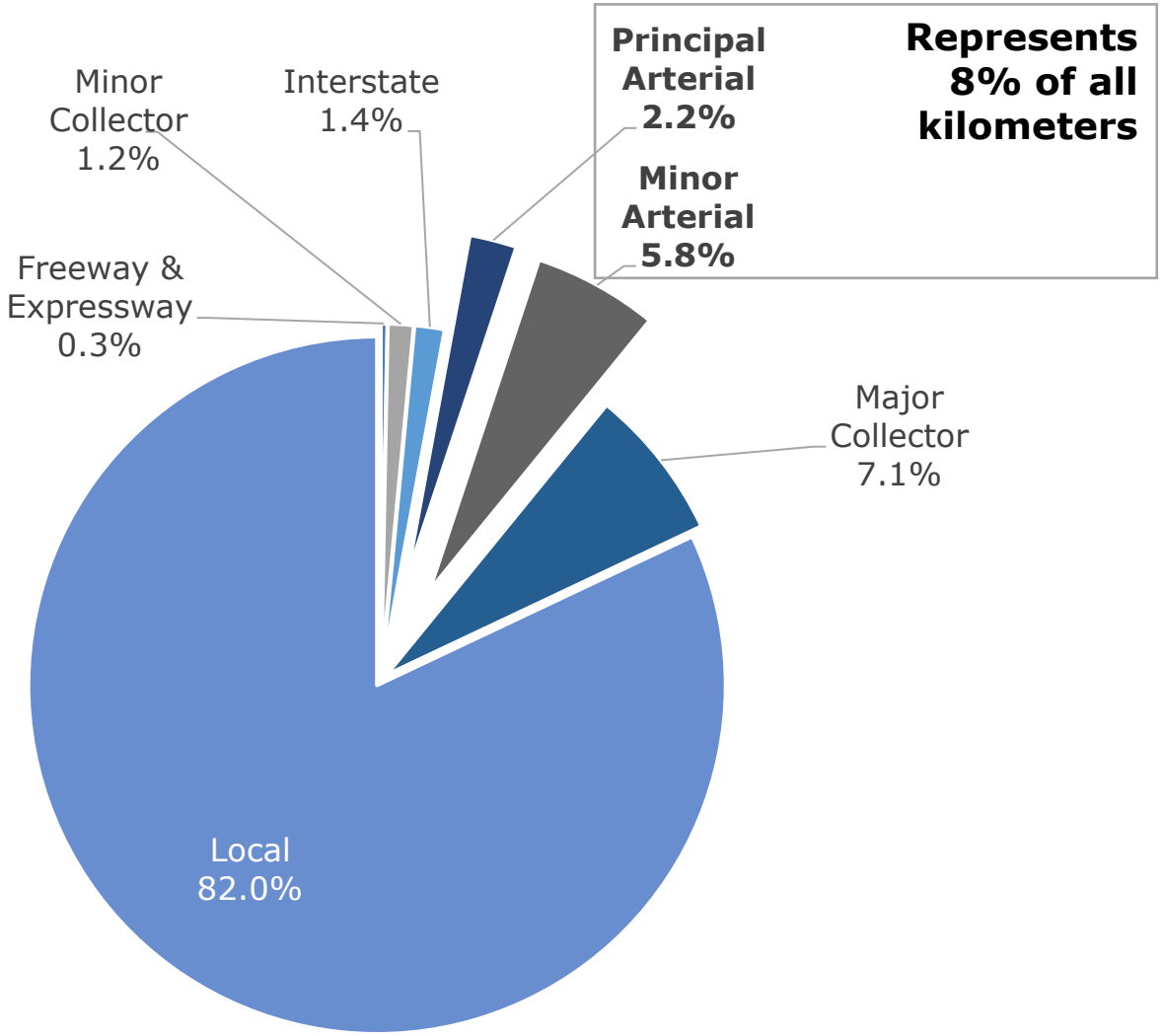
59% of VRU Fatal and Severe occurred from 6:00pm to 6:00am (i.e., nighttime conditions)

Roadway Functional Classification

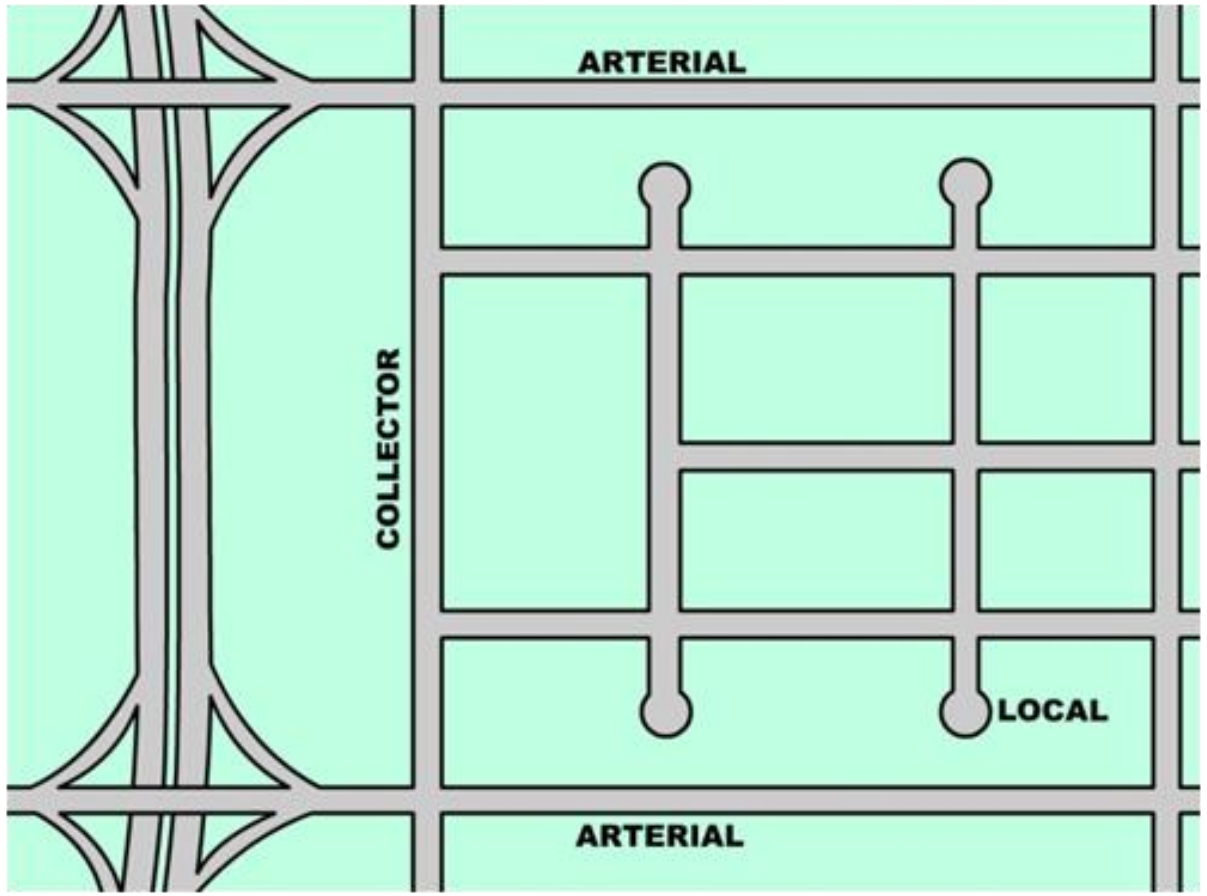
VRU Crash Percentage vs Functional Classification



Kilometers % vs Functional Classification



Roadway Functional Classification



Principal and Minor Arterials:

- Mid-high volume roads
- 2 or more lanes
- Major intersections some with signal controlled
- Direct vehicular access to properties from the road
- Some sidewalk presence
- No cycling infrastructure

Roadway Functional Classification

PR 1 – Caguas Source: PR Complete Streets Plan and Design Guidelines

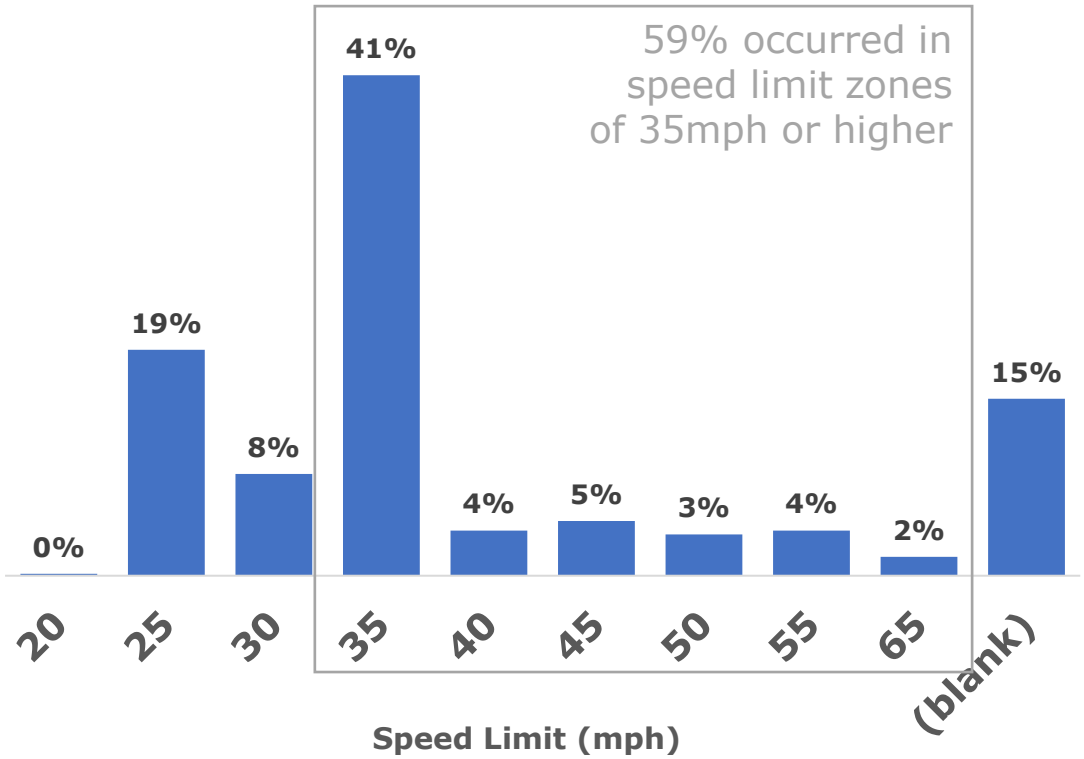
PR 3 – Rio Grande Source: Google Maps

PR 183 – San Lorenzo Source: Google Maps

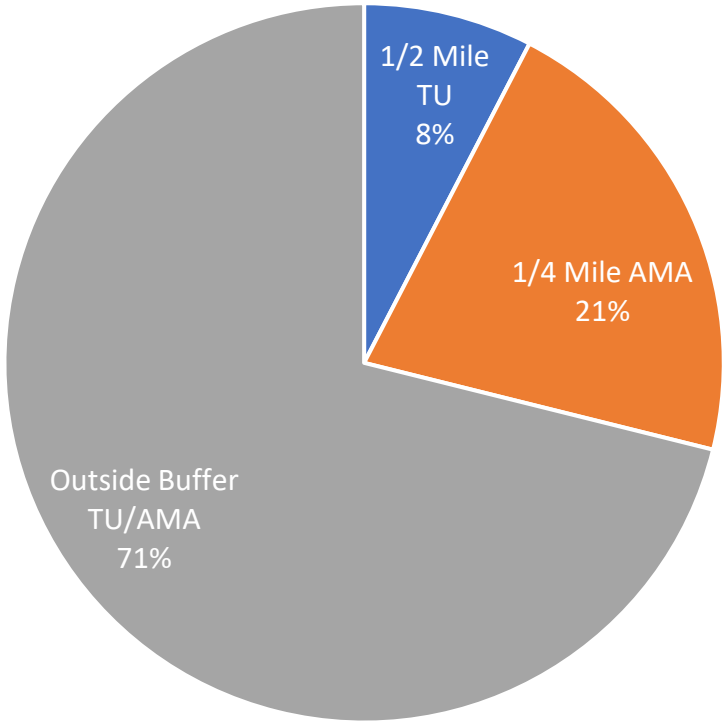
PR 987 – Fajardo Source: Google Maps

Speed Limit and Transit

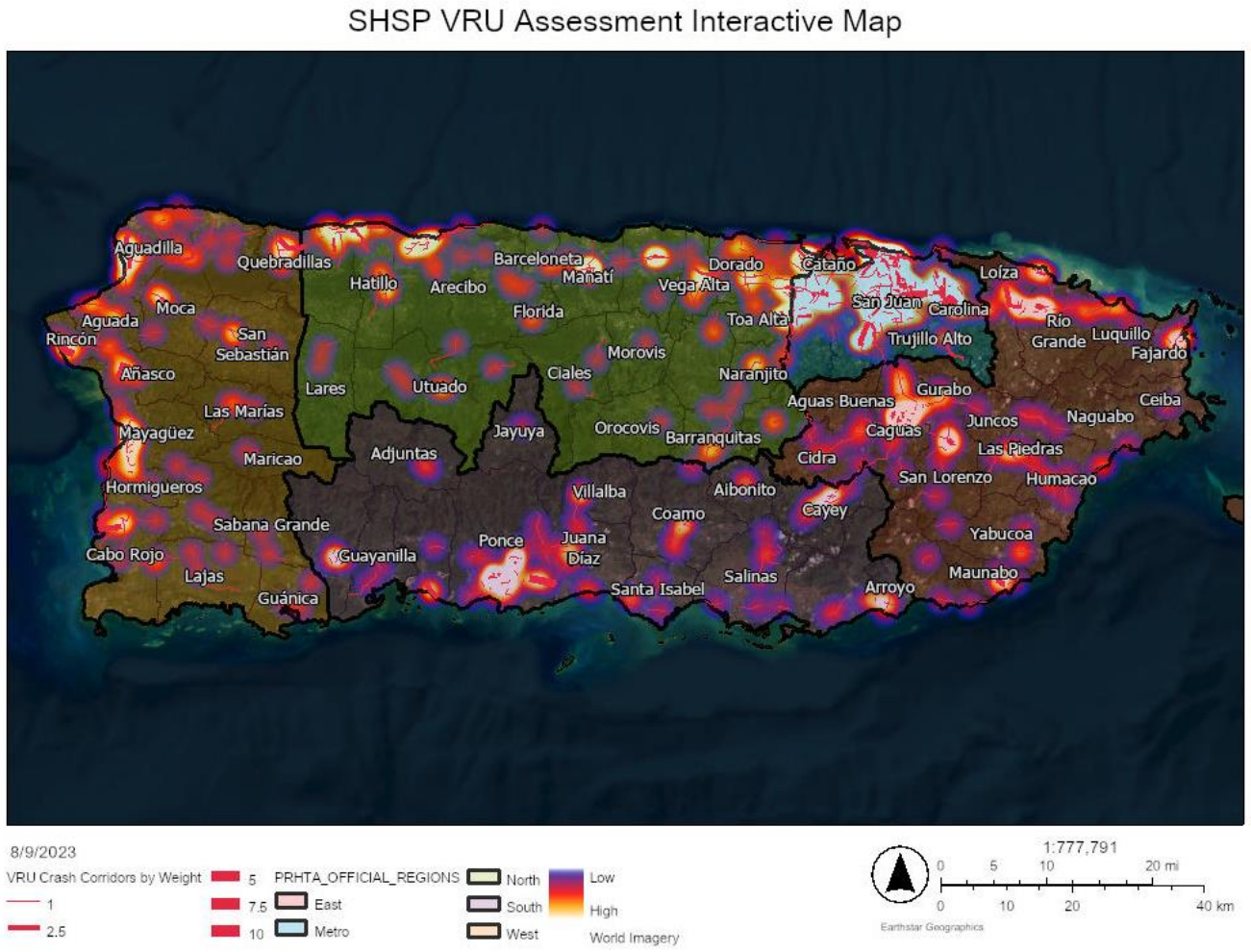
VRU Crash Percentage by Speed Limit



VRU Crashes and Transit Stops



VRU High-Risk Areas



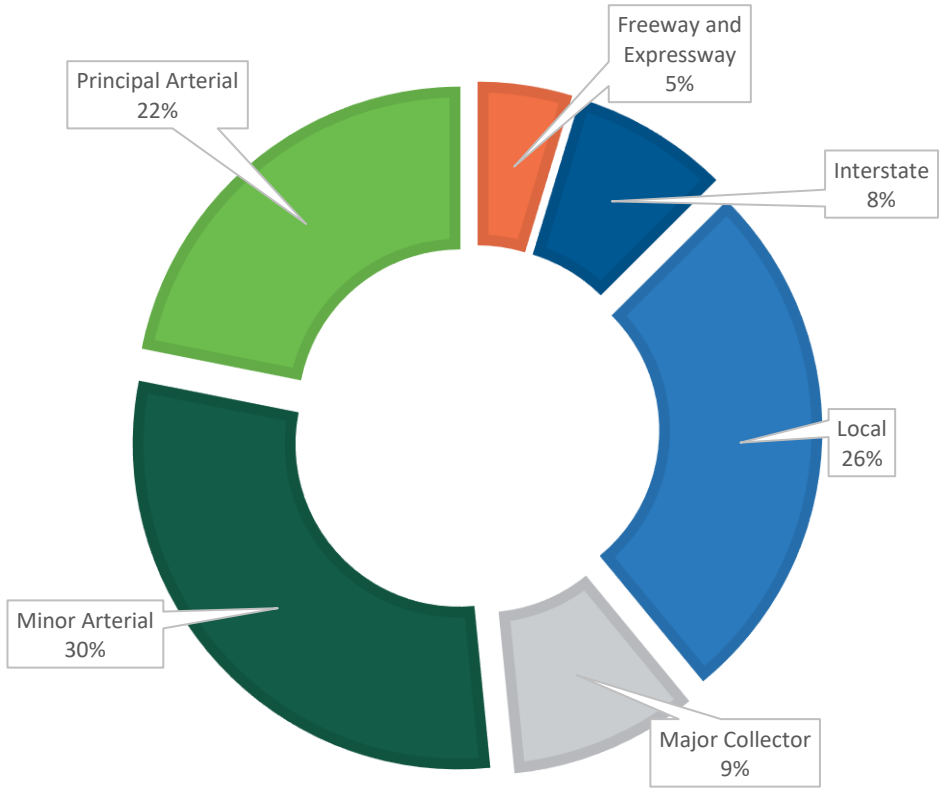
Areas

- By PRHTA Region
- Population
- Kilometers
- Hundred Million Vehicle Miles Travel

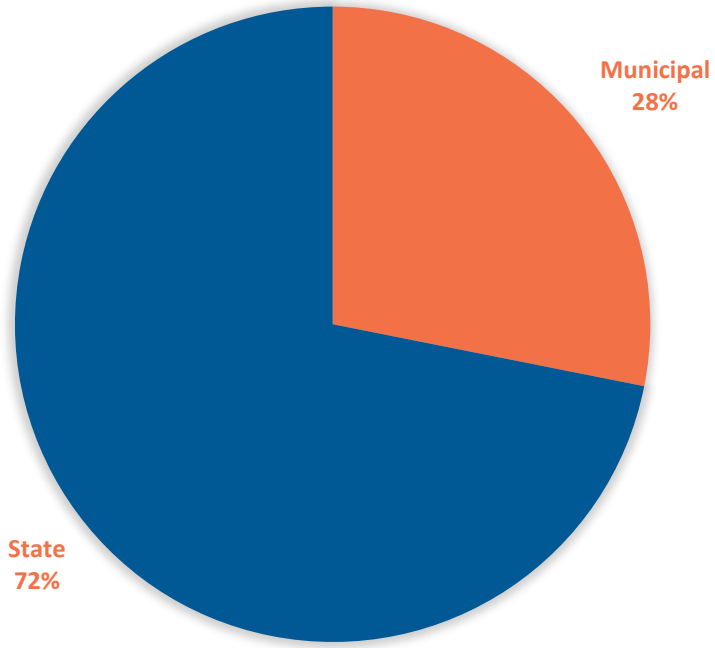
SHSP VRU Assessment Interactive Map (arcgis.com)

VRU East Region

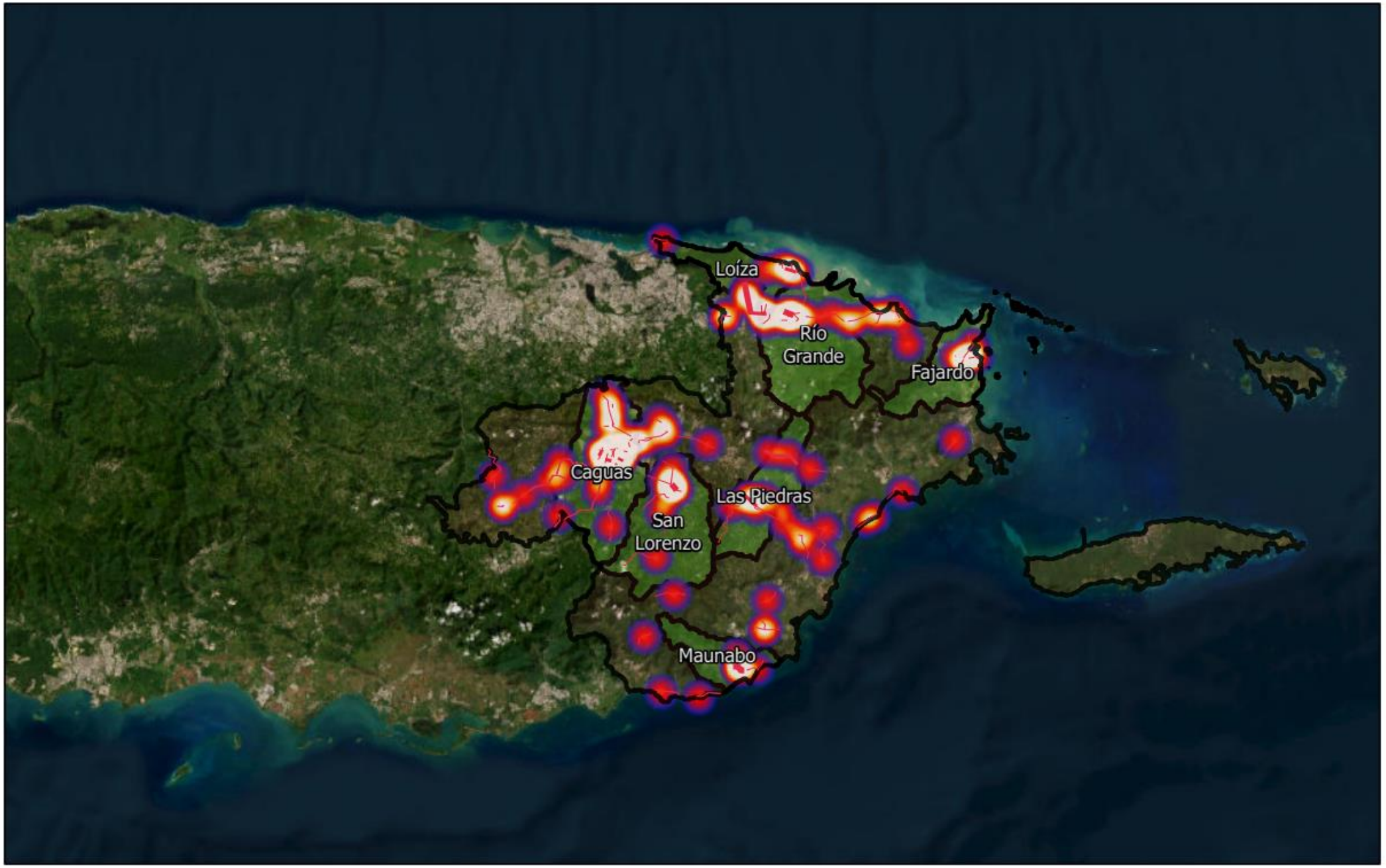
PRHTA REGION EAST FUNCTIONAL CLASSIFICATION



PRHTA EAST REGION JURISDICTION



SHSP VRU Assessment Interactive Map

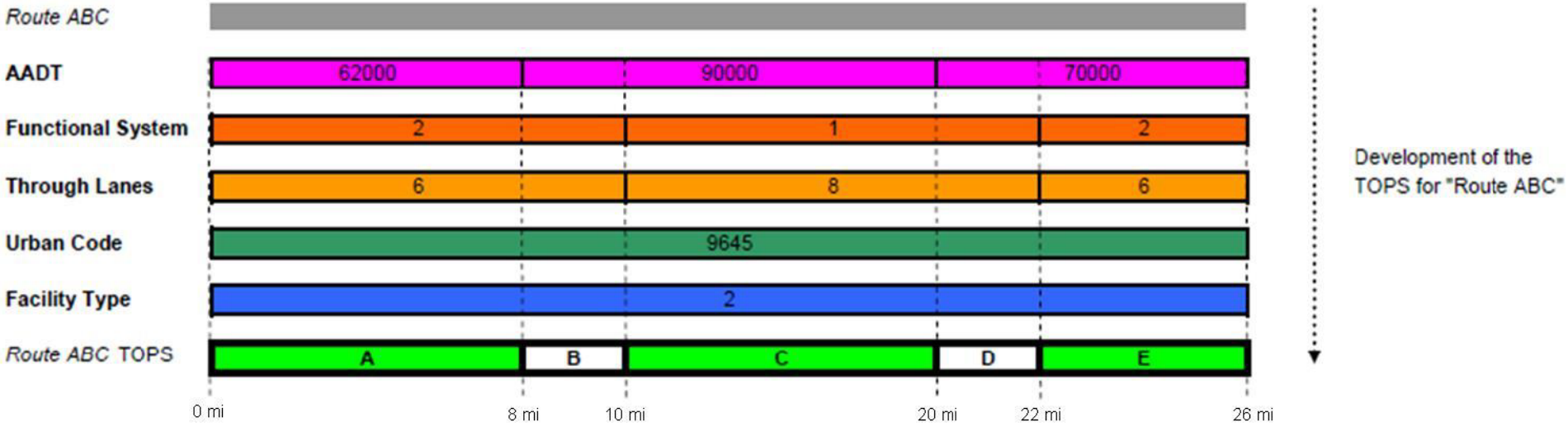


VRU East Region

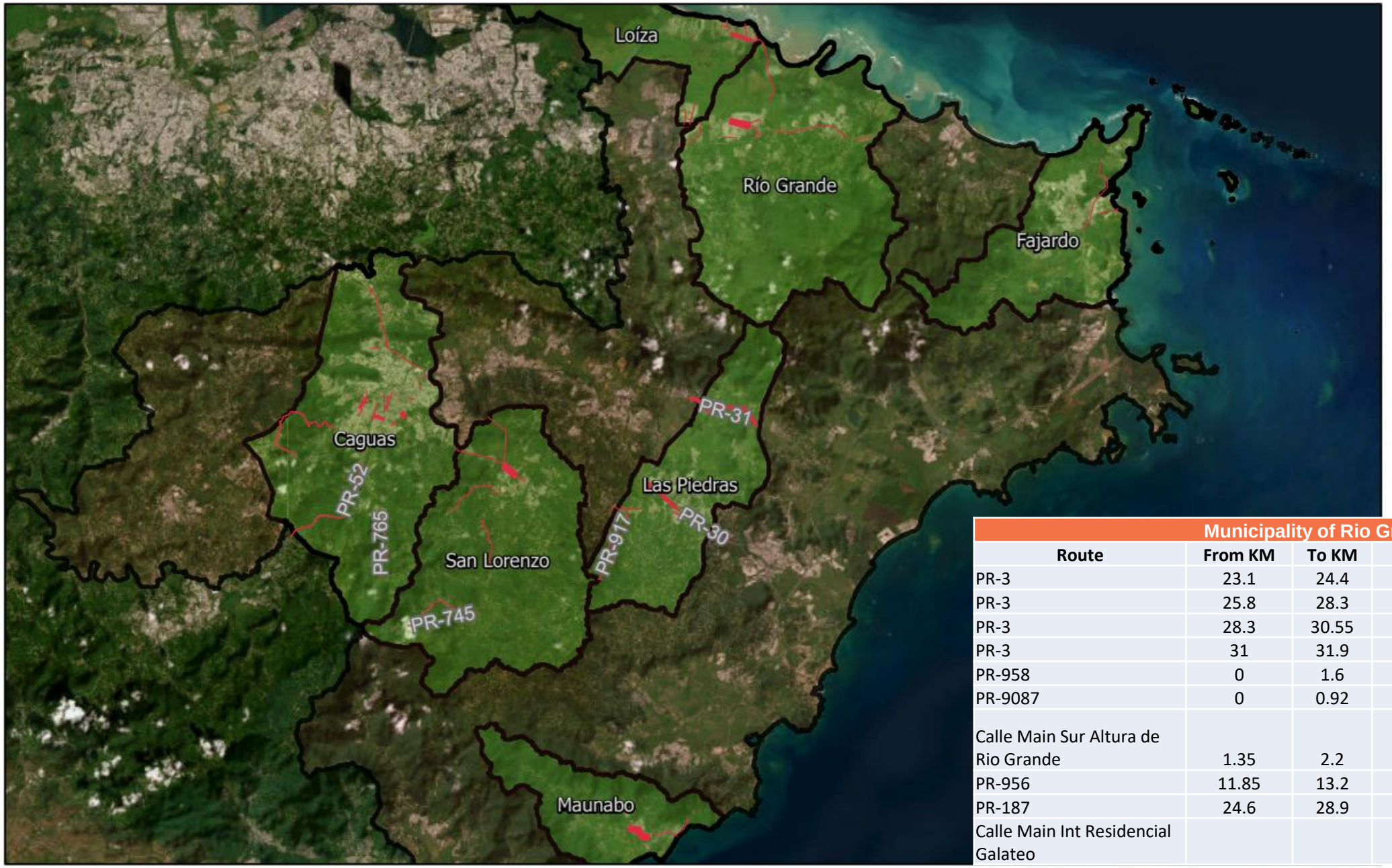
SHSP VRU Assessment Interactive Map (arcgis.com)

VRU Corridor Selection - HPMS

Figure 6.1 TOPS Development Process



SHSP VRU Assessment Interactive Map



VRU East Region

[SHSP VRU Assessment Interactive Map (arcgis.com)]

Municipality of Rio Grande					
Route	From KM	To KM	Length KM	Fatal	Severe
PR-3	23.1	24.4	1.30	2	1
PR-3	25.8	28.3	2.50		1
PR-3	28.3	30.55	2.25	1	
PR-3	31	31.9	0.90	1	
PR-958	0	1.6	1.60		1
PR-9087	0	0.92	0.92		1
Calle Main Sur Altura de Rio Grande	1.35	2.2	0.76	1	
PR-956	11.85	13.2	1.34		1
PR-187	24.6	28.9	4.30		1
Calle Main Int Residencial Galateo			0.14		1

4

VRU Assessment: Strategies, Implementation Examples and Potential Projects

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Safety Countermeasures

Pedestrian/Bicyclist

Bicycle Lanes

Crosswalk Visibility Enhancements

Leading Pedestrian Interval

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

Pedestrian Hybrid Beacons

Rectangular Rapid Flashing Beacons (RRFB)

Road Diets (Roadway Configuration)

Walkways

Additional reference: Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org)

Safe System Approach

SAFE ROADS: AVOIDING CRASHES

Elements of the Safe System Approach

Avoiding crashes involves:

Separating users in space

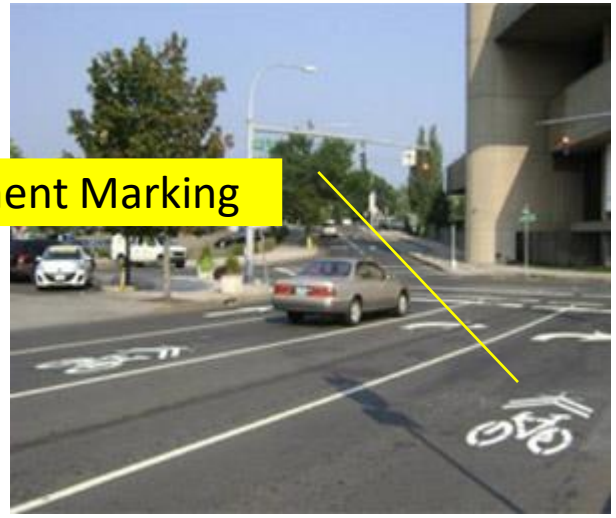
Separating users in time

Increasing attentiveness and awareness

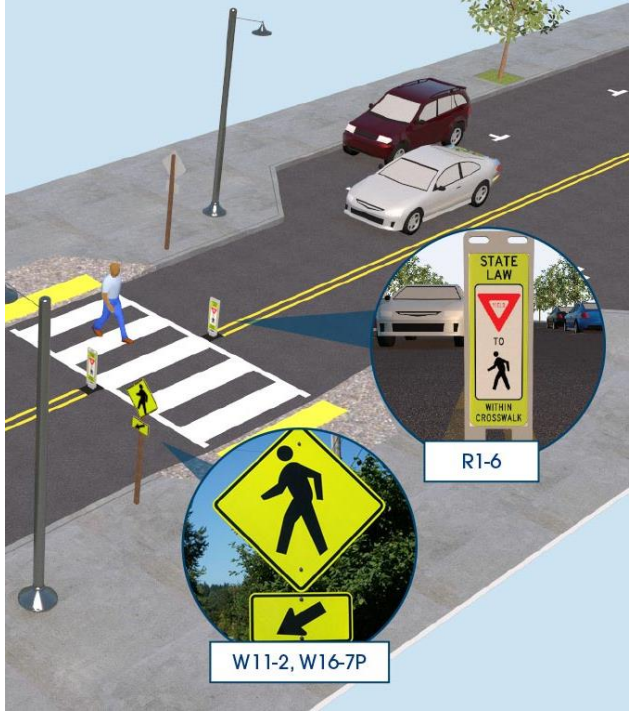
Source for all images: Fehr & Peers

Bike Lanes

Example #1



Is this part of the project for the safety of VRUs?

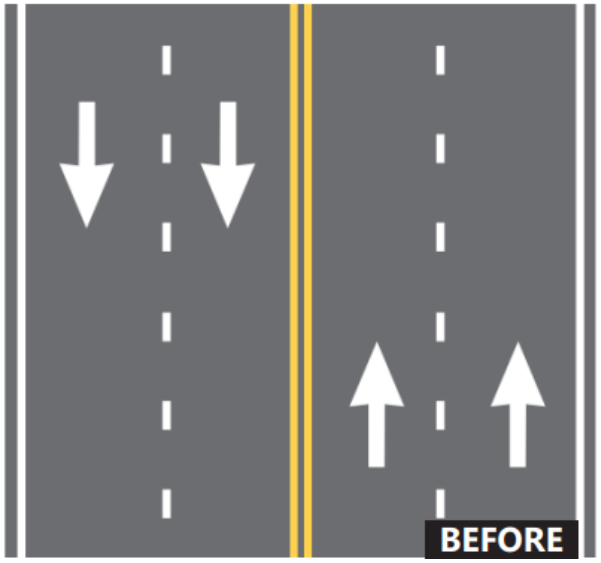


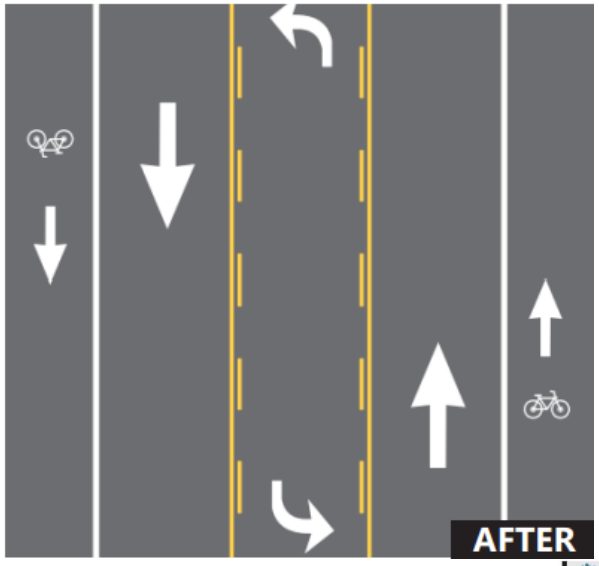
Example # 2

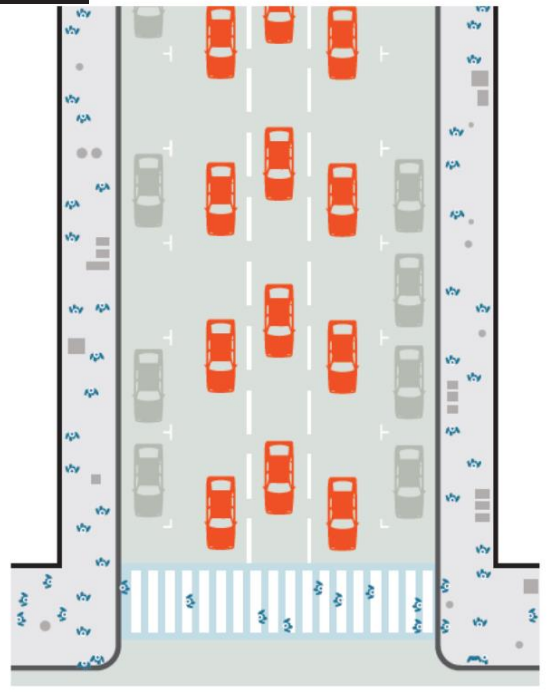
Pedestrian Crossings & Walkways

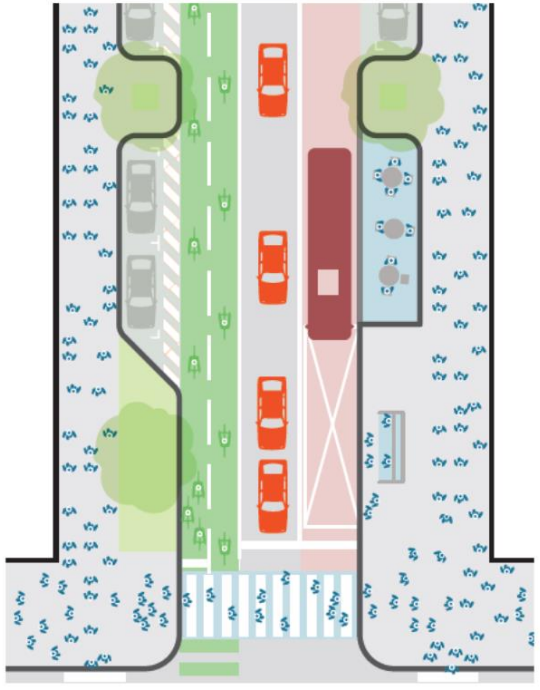
Road Diet

Example #3









Traffic Signals APS and Peds Signals

Example #4

Safe System Approach

SAFE ROADS: CRASH KINETIC ENERGY

Elements of the Safe System Approach

Managing crash kinetic energy involves:

Source: Fehr & Peers

Managing speed


Source: City of Carmel, IN

Managing crash angles

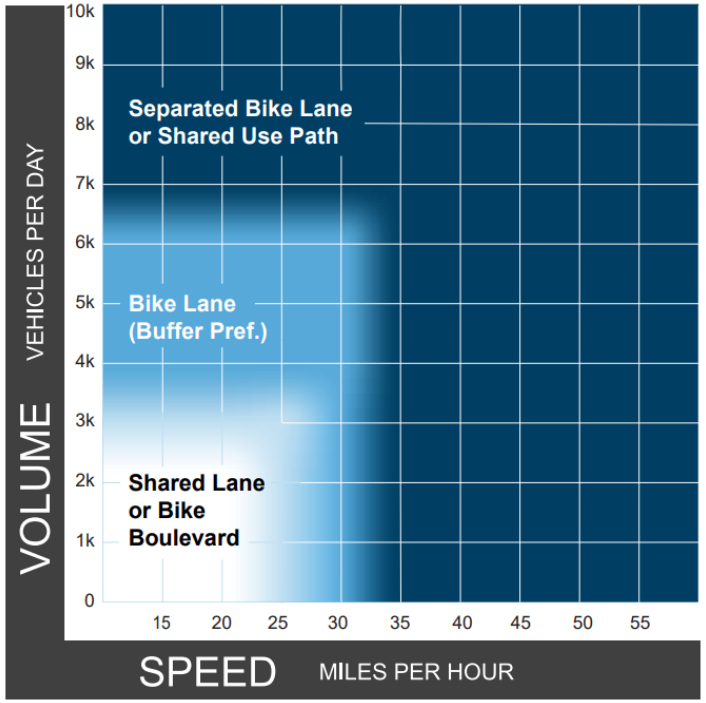

Source: FHWA

Managing crash energy distribution

VRU Assessment Strategies

Guiding principles design

- PR Complete Street Plan and Design Guidelines (Adopted MPO 2018 – PRHTA Website)
- PR Bicycle and Pedestrian Plan (Adopted MPO 2018 – PRHTA Website)
  - Consider safe bikeway accommodations on all transportation projects specially in urban areas.
  - Optimize bike lane widths and separation from travel lanes for safety.



Source: FHWA bikeway selection guide

Complete Street Vision

Successful urban roads should provide reliable major routes through cities with vibrant, safe, secure and well maintained urban environments, and make shops and services easily accessible. Urban Streets Complete Street vision includes:

- Maintain automobile priority but improve provisions for other modes;
- Reduce width of travel lanes where appropriate;
- Comfortable and sheltered waiting areas for transit users;
- Comfortable sidewalk width of 1.5 - 2.1 meters /5-7 feet;
- Crossings to match wider pedestrian network, including at mid-block where appropriate;
- Buffered, separated or off-road bikeways (Class I, II or IV – for Class definitons see Bikeways, Section 3 Part B);
- High quality landscape character;
- Provide shade trees along sidewalks and bikeways; and
- Provide street lighting that relates to pedestrians and cyclists.

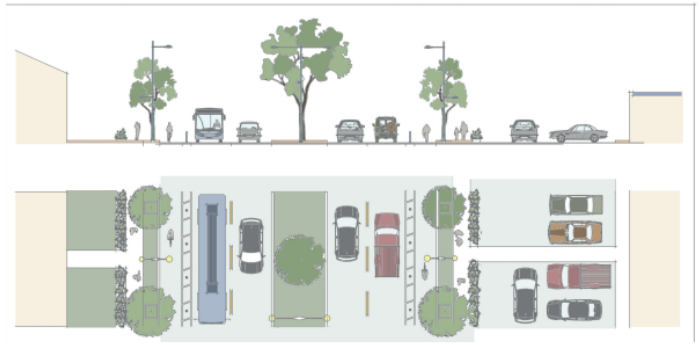
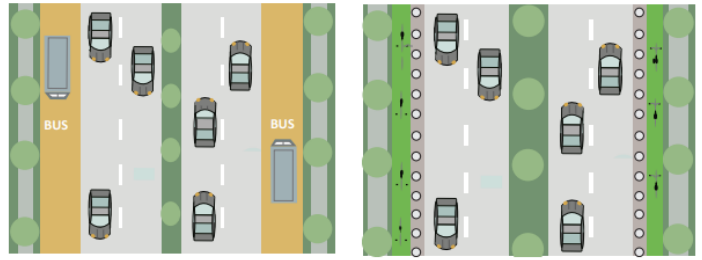


Figure 2.5: Urban Road Complete Street Vision

Source: SDG



Transit priority

Non-motorized priority

Source: PR Complete Streets Plan & Design Guidelines

VRU Assessment Strategies

Project Development

Bicycle and pedestrian considerations a full component of Puerto Rico project planning and development.

- Pedestrian and Bicycle data consideration
- Include ped and bike performance measures as part of project selection processes
- Advanced implementation plan from pedestrian and bicycle plan and complete streets guidelines
- Design directives to include ped and bike criteria and potential measures
- Include ped and bike contract language for all design and construction projects
- Include ped and bike needs in traffic control plans (MOT & detours)

Systemic approach

High-Risk roadway features – Arterial (Principal and minor), Multilane, Speed limit > 35 mph

- Intersection – (i.e., pedestrian push buttons and proper time to cross, ADA ramps, sidewalks)
- Segments – Road diets, speed management such as traffic calming, roundabouts, mid block crossings, sidewalks repairs, protected bike lanes, shared use path, and pedestrian and bikes signage

VRU Potential Projects

Systematic Safety Project Selection by Region	PRHTA Region:	Next Steps:
• Based on High-VRU Fatal and Severe Crash Location • Per Capita / Population • HMVMT • KM of road • Above average ranking	• **East** – Loiza, Rio Grande, Maunabo, Caguas, San Lorenzo, Las Piedras and Fajardo • **Metro** – San Juan, Bayamon, Carolina, and Cataño • **North** – Hatillo, Toa Baja, Vega Alta, Arecibo, Camuy, Manatí, and Dorado • **West** – Aguadilla, Rincon, Quebradillas, Añasco, and Mayaguez • **South** – Ponce, Arroyo, Juana Diaz, Cayey, Villalba and Coamo	• Identification of Roadway by the high-roadway features for potential projects • Evaluation of site crash report conditions including crash report review and road safety audits. • Identify countermeasures, design, implement and evaluate.

The Safe System Approach

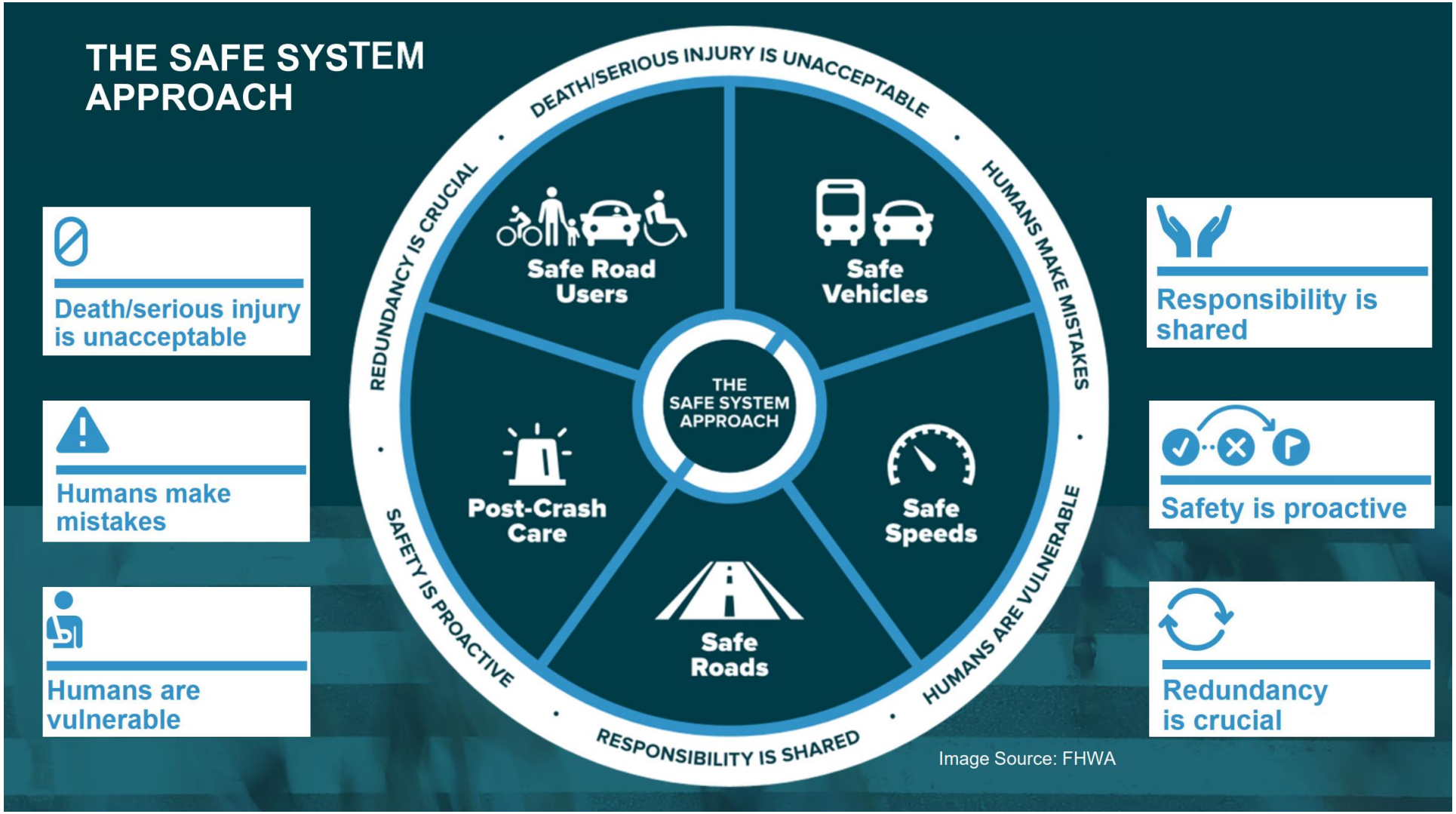


Image Source: FHWA

Responsibility is Shared

15 MINUTES BREAK

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Encuesta - Grupos consultivos en seguridad vial (Región Este)

Thank You!

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

PUERTO RICO
HIGHWAYS &
TRANSPORTATION
AUTHORITY

New SHSP 2024-2028 & Vulnerable Road Users Assessment

Meeting West Region
September 1, 2023

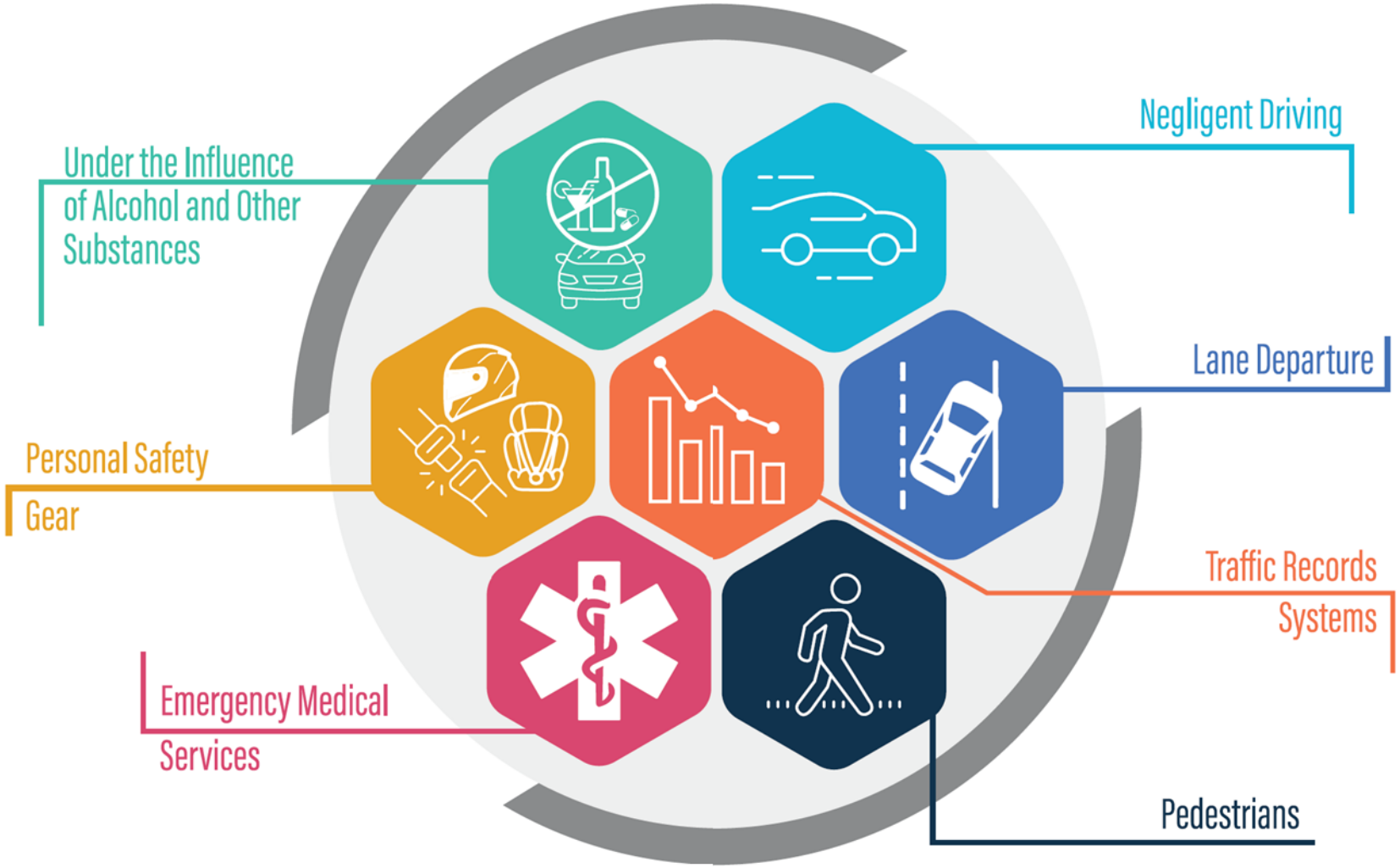
SHSP
STRATEGIC HIGHWAY SAFETY PLAN

1

SHSP 2024-2028
Overview

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Current 2019-2023 Emphasis Areas



New Emphasis Areas (2024-2028)

High Priority Areas

- Vulnerable Road Users
- Speed Management
- Impaired Driving
- Occupant Protection
- Lane Departure
- Communication Integration

Focus Areas

- Traffic Records Systems
- Motorcyclists
- Aging Drivers (65+)
- Legislations & Procedures

The Safe System Approach

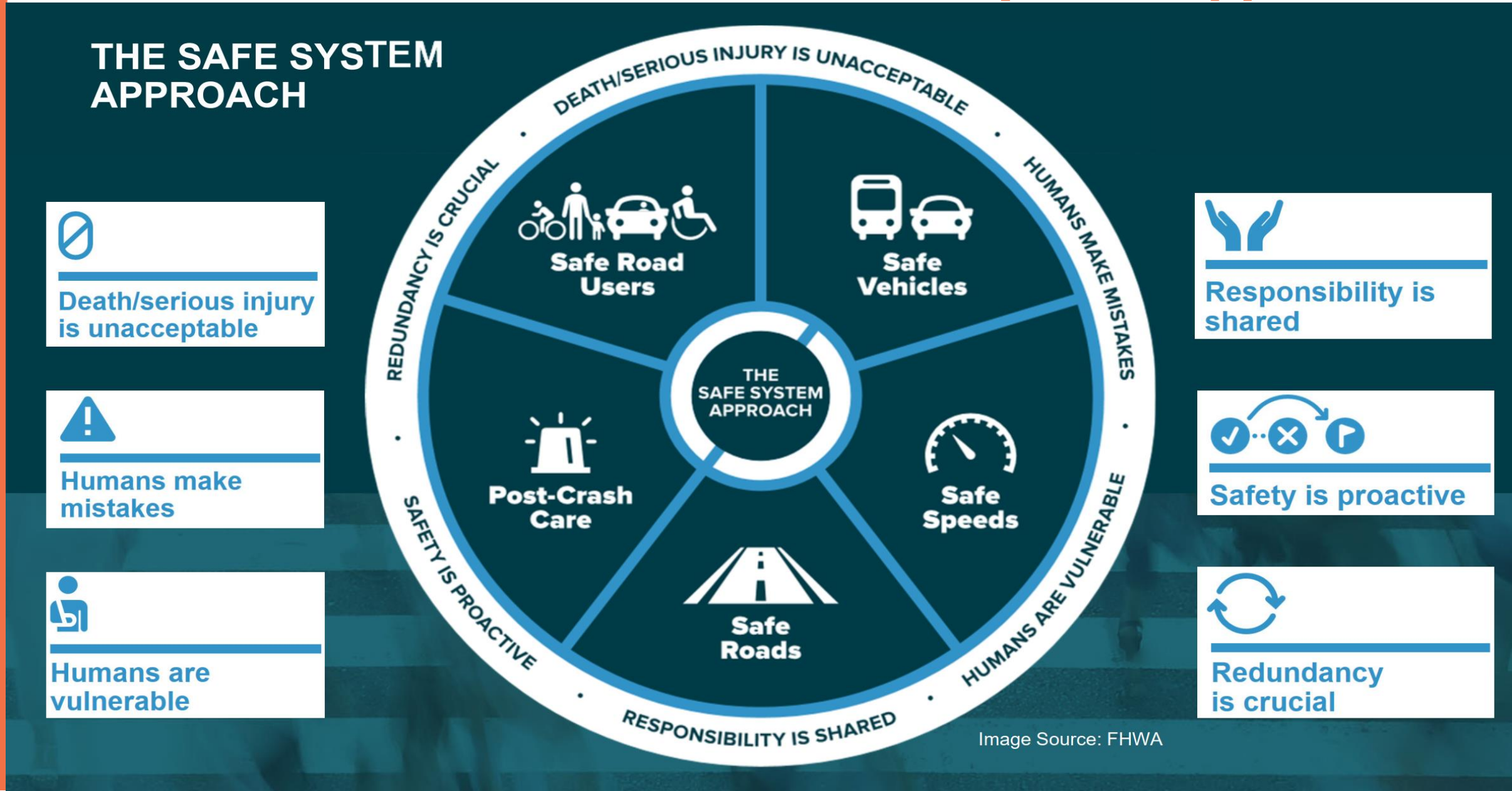
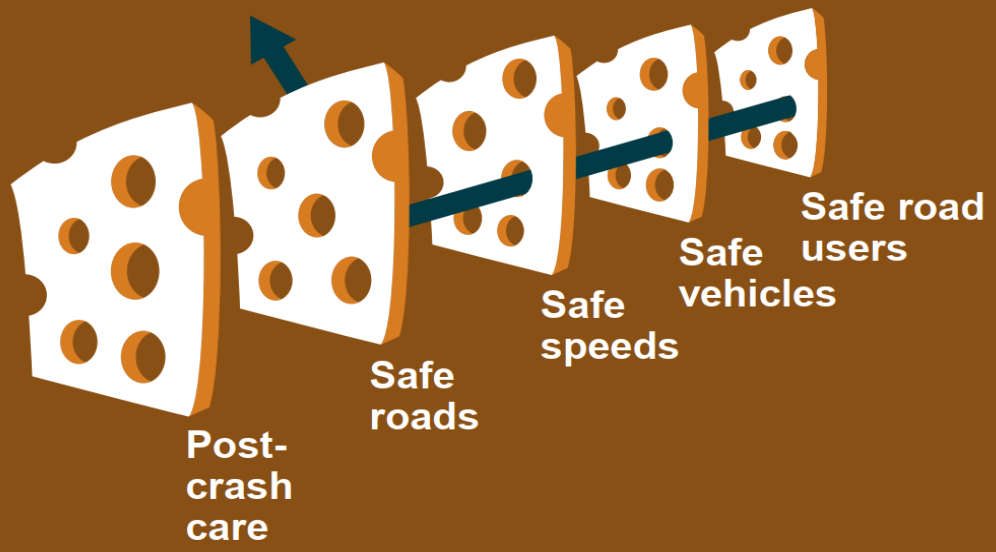


Image Source: FHWA

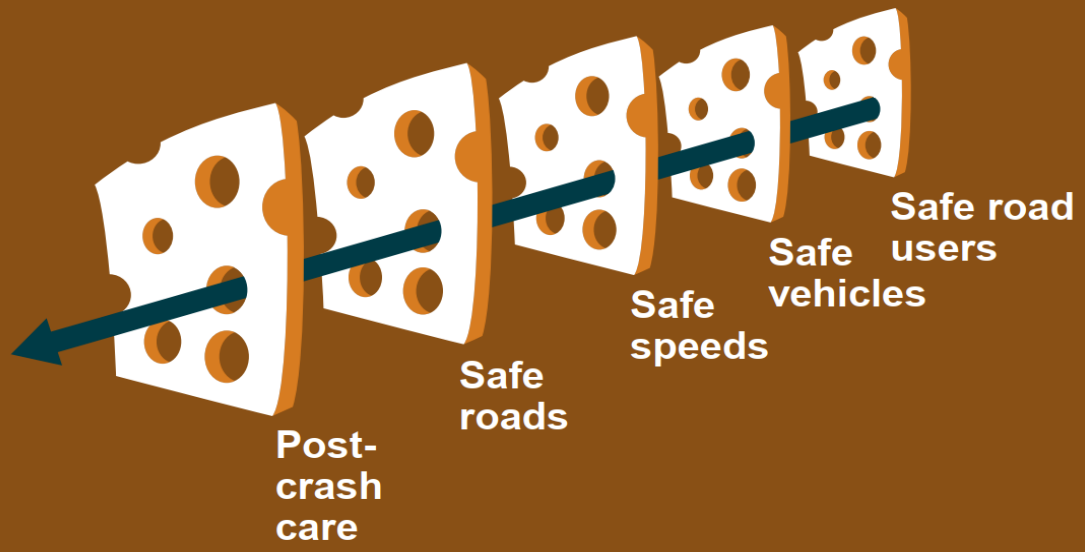
The Safe System Approach (Cont.)

THE 5 SAFE SYSTEM ELEMENTS CREATE REDUNDANCY

The "Swiss Cheese Model" of redundancy creates layers of protection



Death and serious injuries only happen when all layers fail



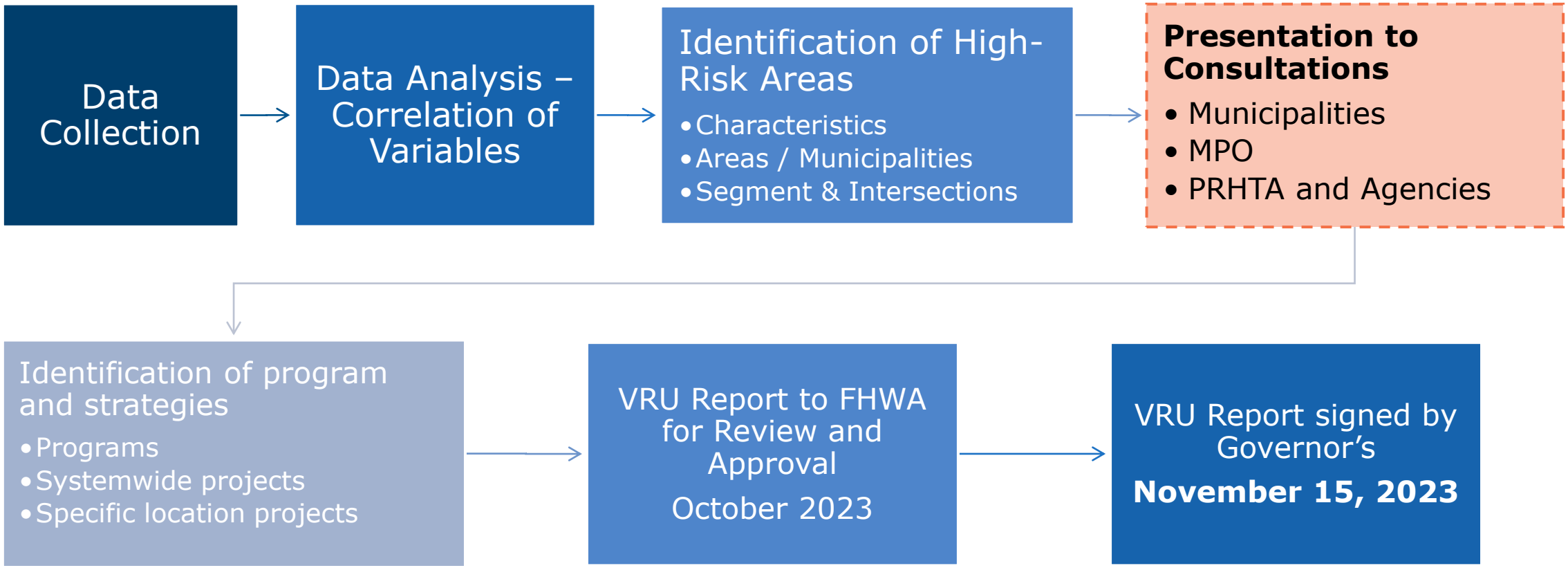
Source: FHWA

2

VRU Assessment:
Development Process

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Development Process



PR VRU Assessment Data

Data Base

Crash Data (Observatorio de Seguridad Vial OSV)

- 2019 to 2022
- Fatal and Severe Injury
- Pedestrian and Bikes
- Age of Victim
- Time of Day
- Month
- Location
- Intersection vs Non intersection

Highway Performance Monitoring System (HPMS)

- Functional Classification
- Speed
- Annual Average Daily Traffic (AADT)
- Number of Lanes
- Kilometers of road by area

PR VRU Assessment Data (Cont.)

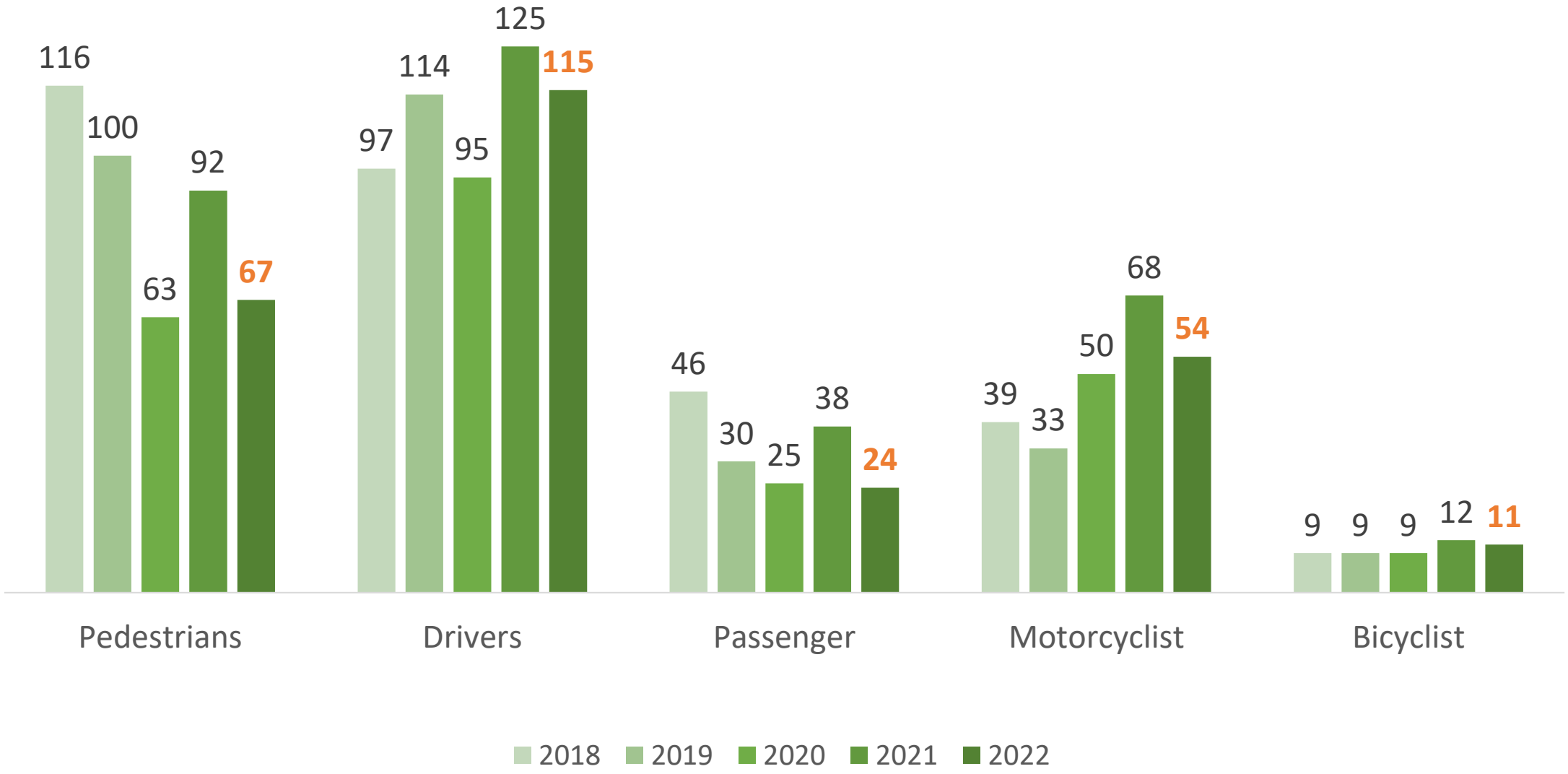
Data Base		
	Geographic Area 	Urban vs Rural
		PRHTA Regional Areas
		DTPW Areas
		Municipalities
	Transit 	Bus routes (AMA) and stop locations
		Transit route (TU) and stop locations
	Census 	Population
		Ethnicity and Race
		Income
		Zero Car Households
		Disability

3

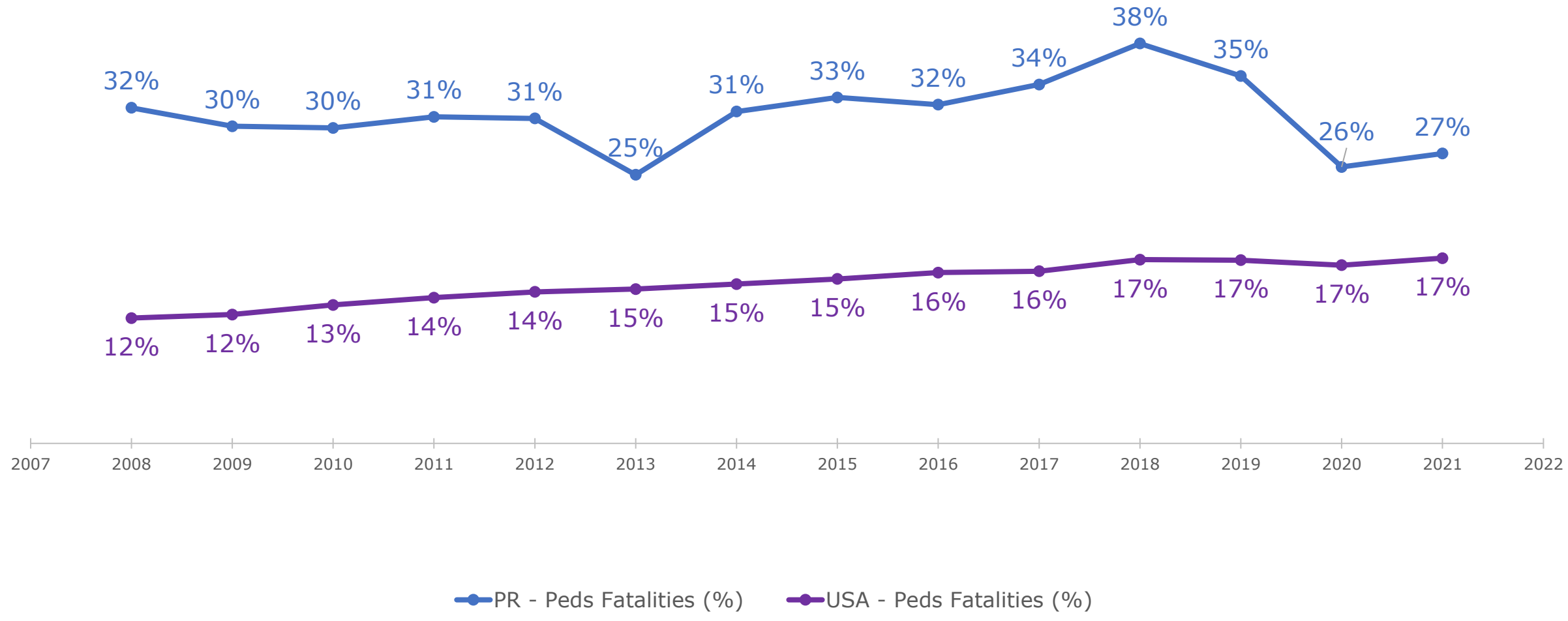
VRU Assessment:
Preliminary Results

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

PR Fatalities by Users



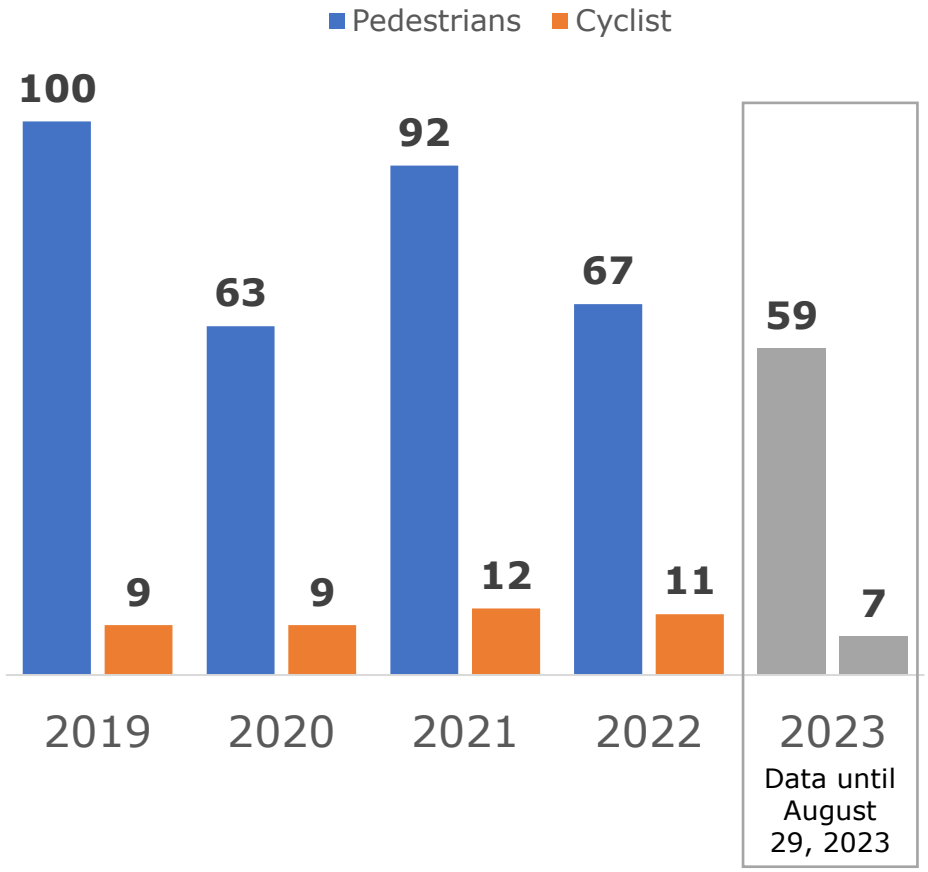
Pedestrian Fatality Percent (PR vs US)



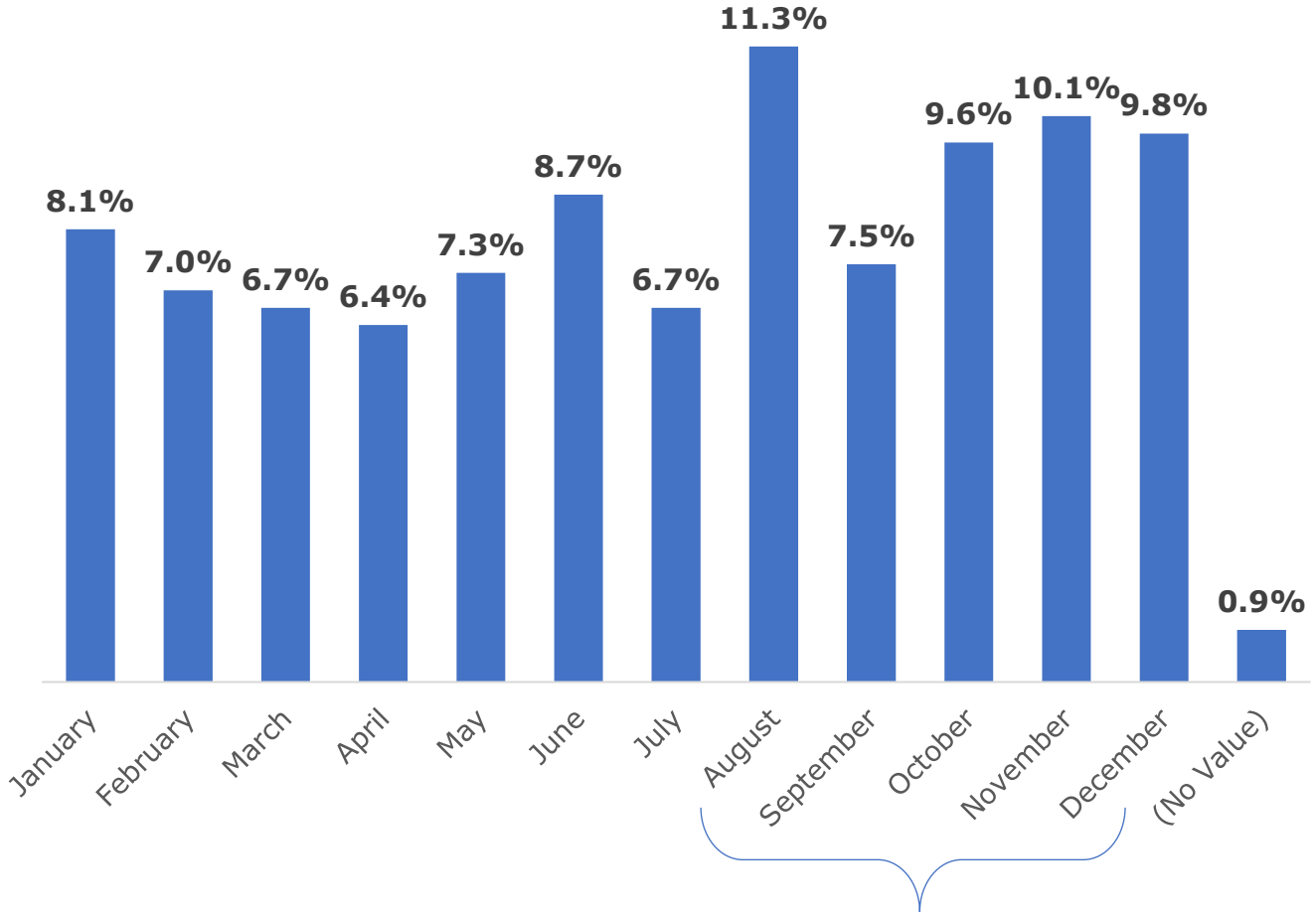
PR VRU Data Results

Fatal & Severe

VRU Fatalities by Year



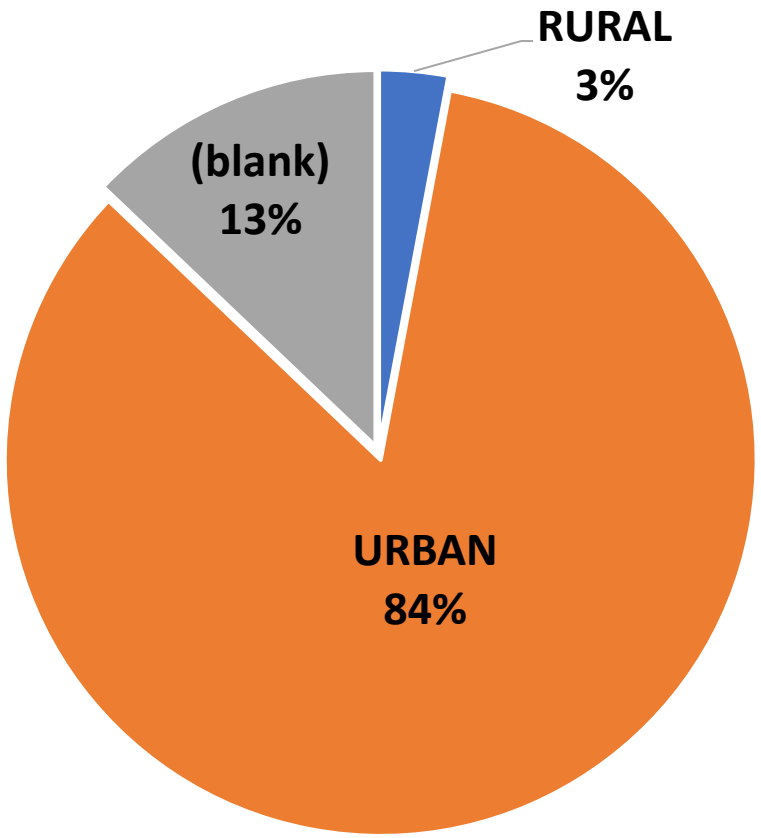
VRU Crash Data by Month



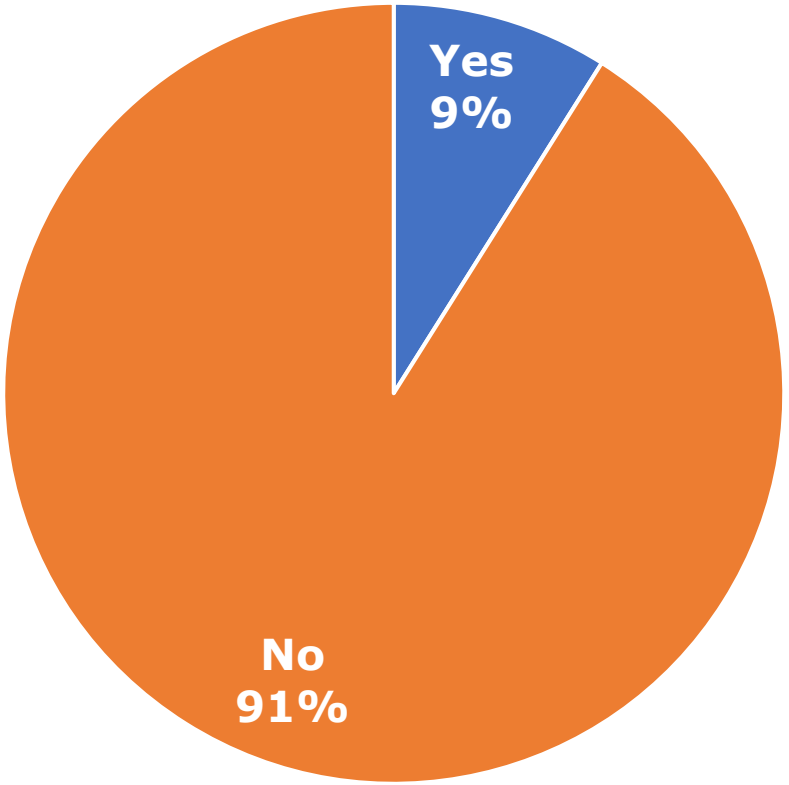
August to December 48.3%

Urban vs Rural and Intersection

VRU Crashes Urban vs Rural

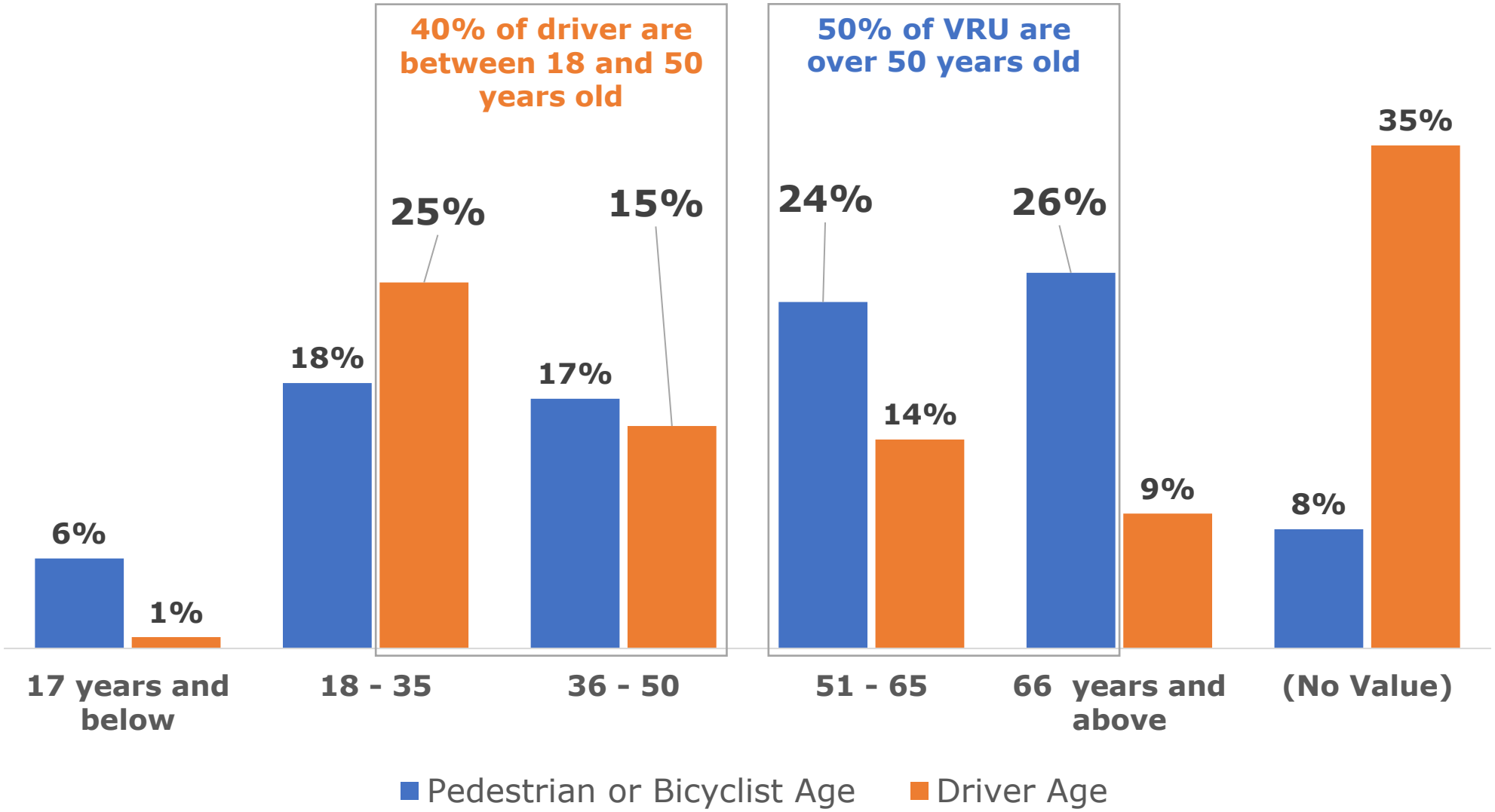


Intersection Related Crashes

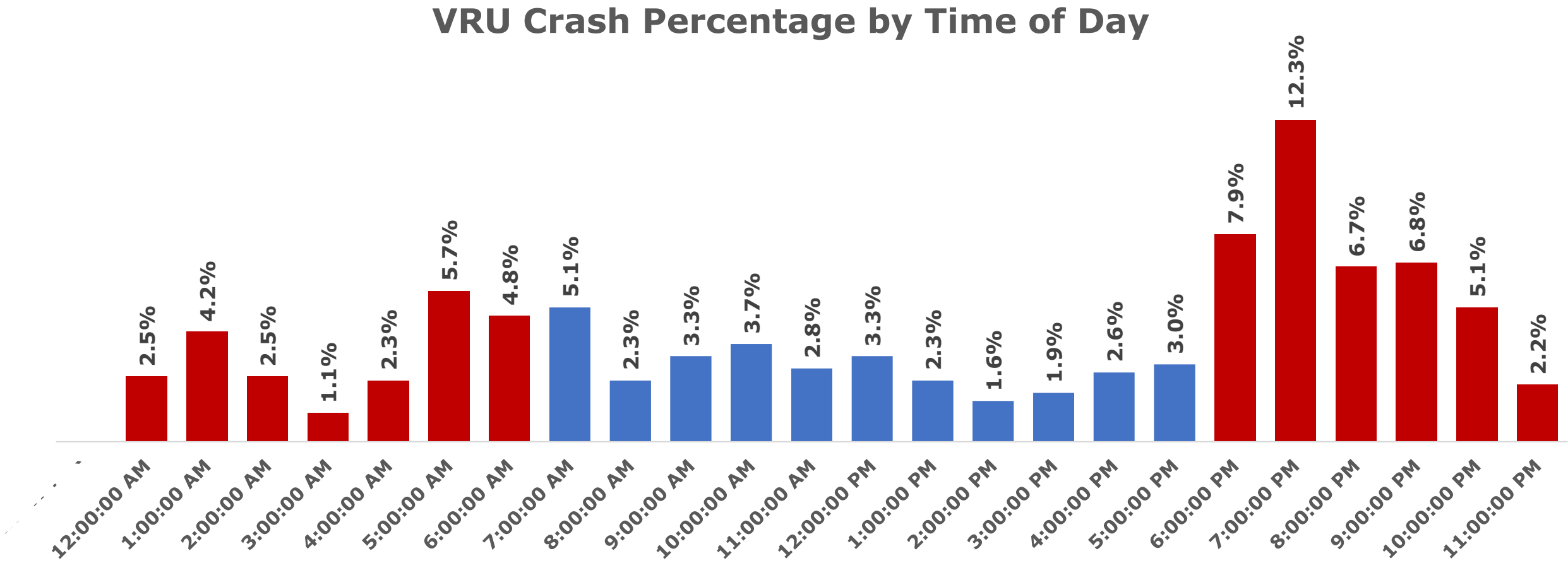


VRU Age vs. Driver Age

Fatal & Severe



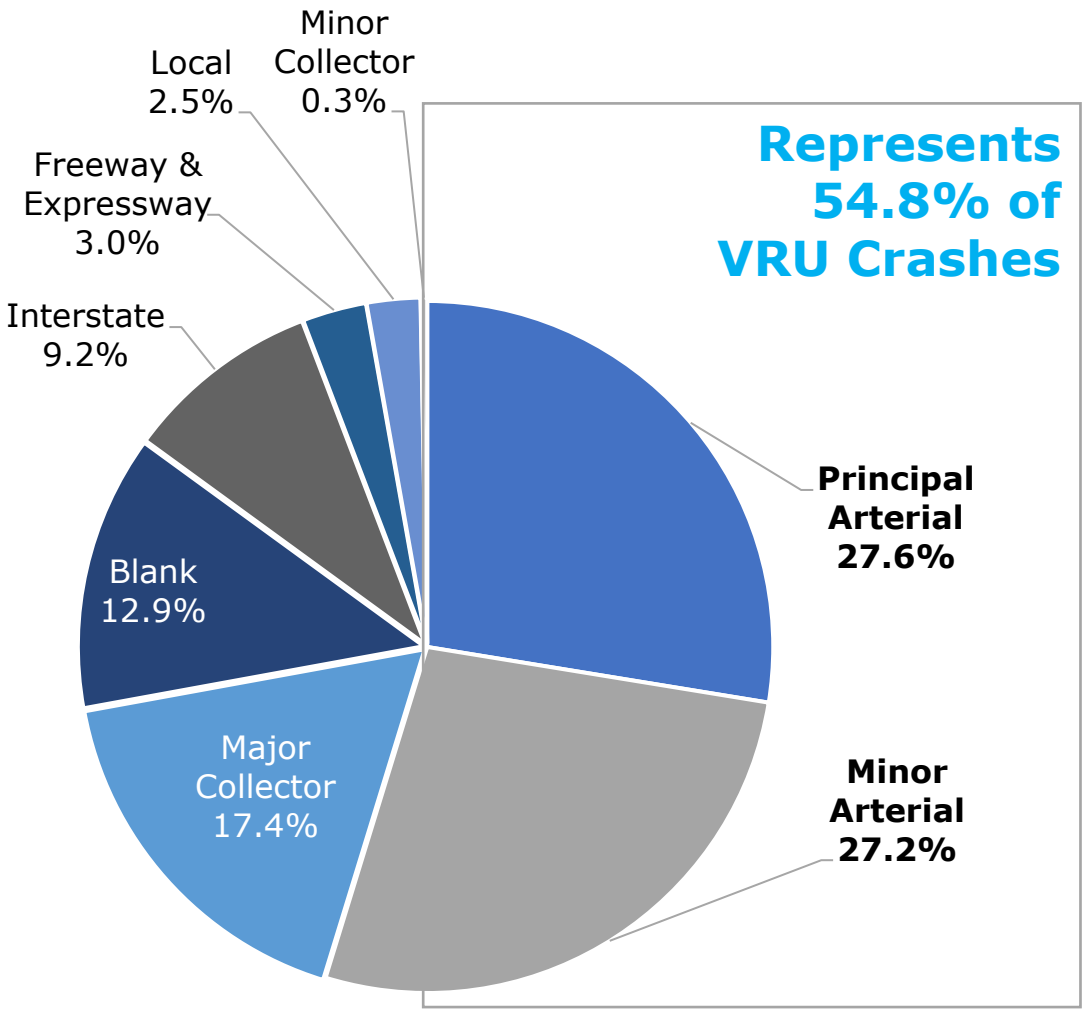
Time of Day



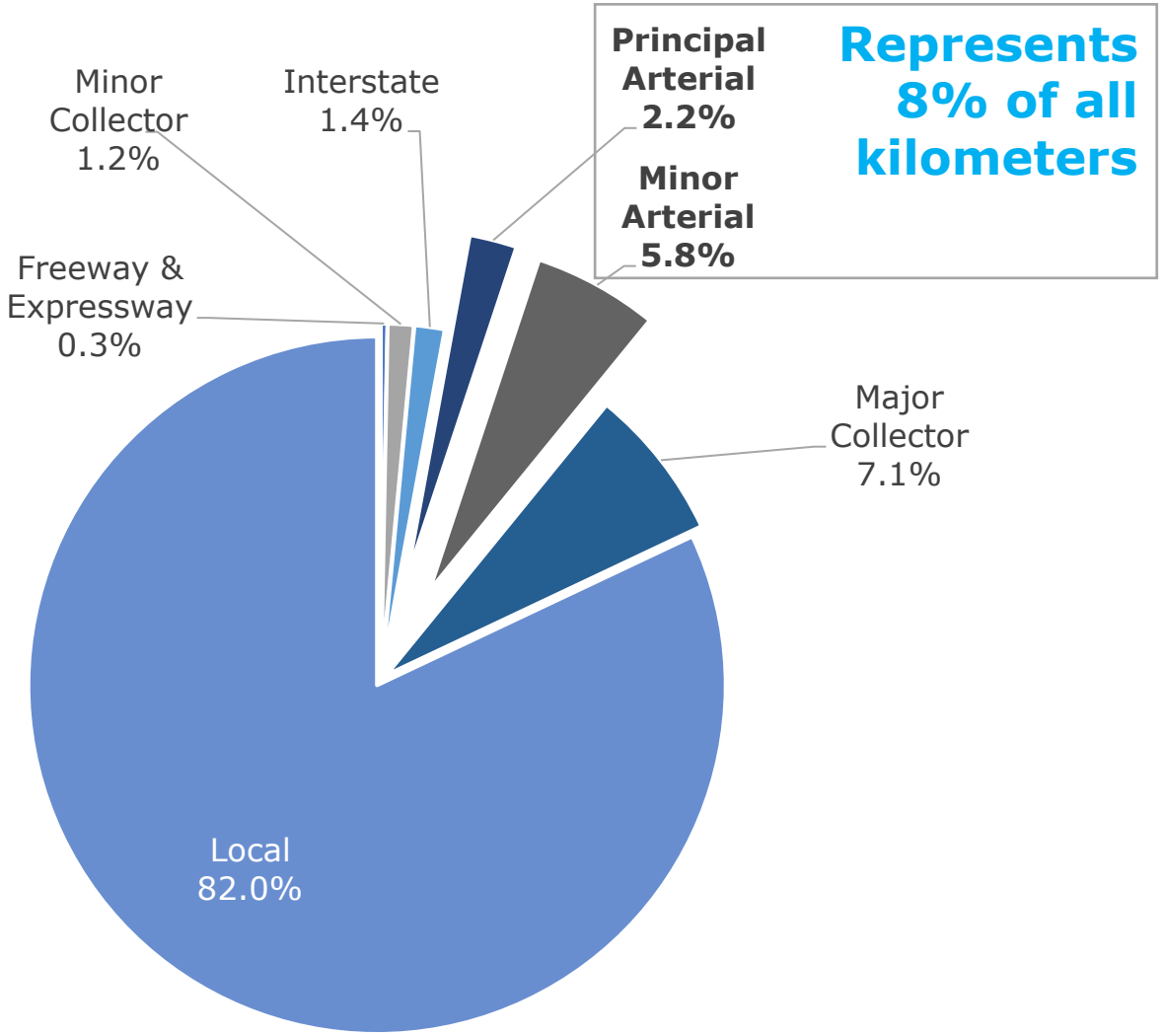
59% of VRU Fatal and Severe occurred from 6:00pm to 6:00am (i.e., nighttime conditions)

Roadway Functional Classification

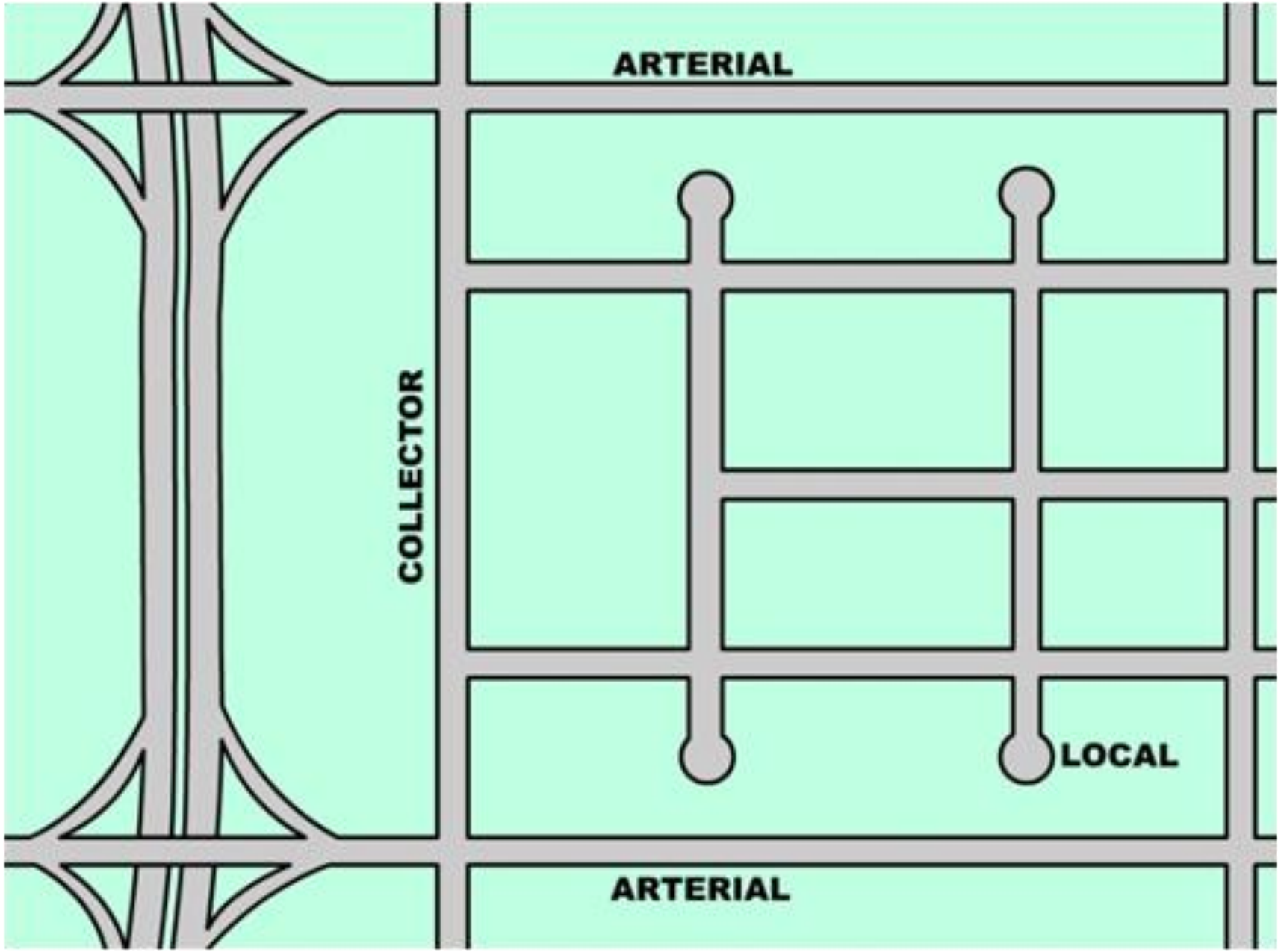
VRU Crash Percentage vs Functional Classification



Kilometers % vs Functional Classification



Roadway Functional Classification



Principal and Minor Arterials:

- Mid-high volume roads
- 2 or more lanes
- Major intersections some with signal controlled
- Direct vehicular access to properties from the road
- Some sidewalk presence
- No cycling infrastructure

Roadway Functional Classification

PR 107 – Aguadilla Source: RSA PR-107

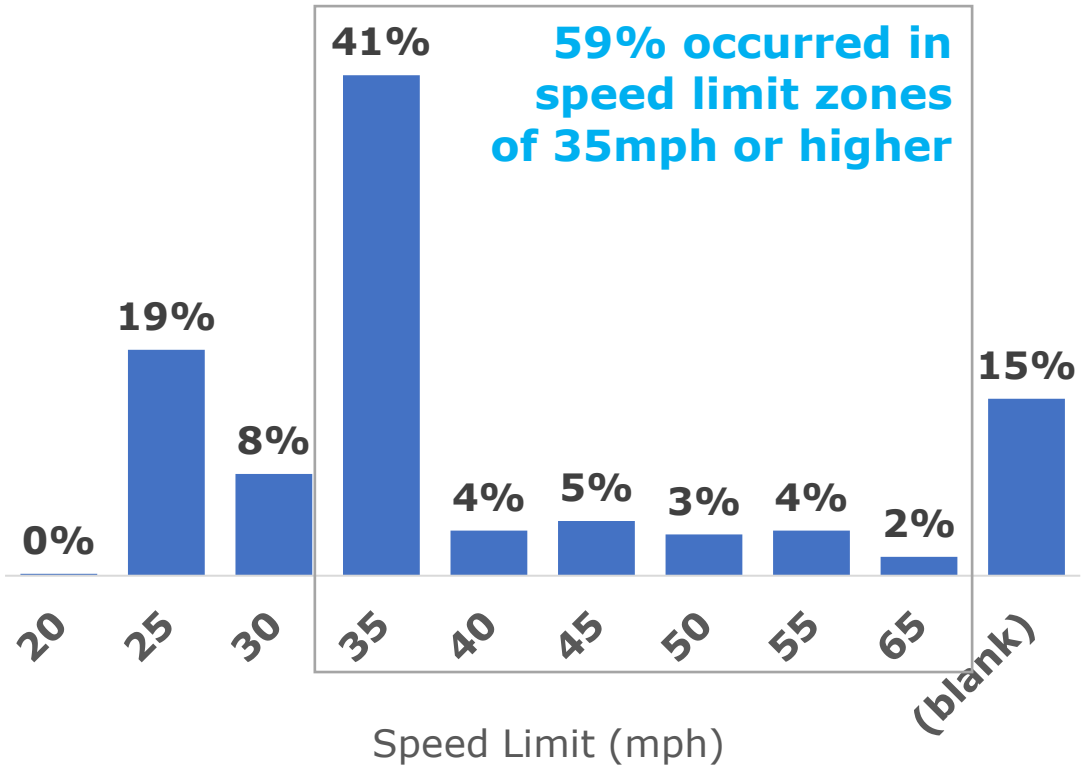
PR2R (239) – Mayagüez Source: Google Maps

PR 115 – Rincón Source: Google Maps

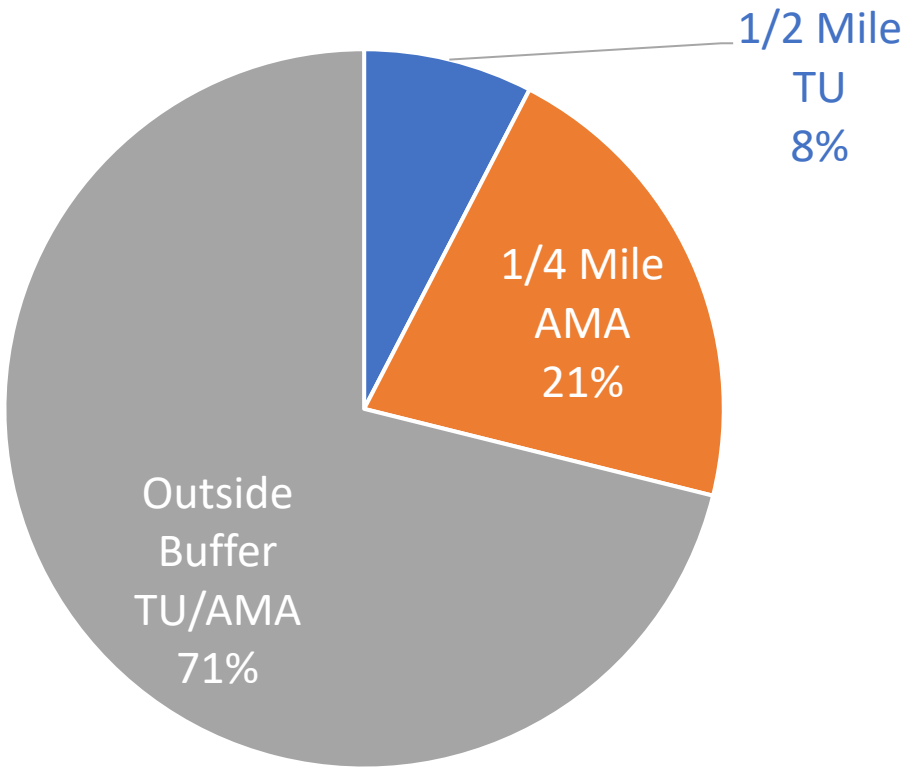
PR 402 – Añasco Source: Google Maps

Speed Limit and Transit

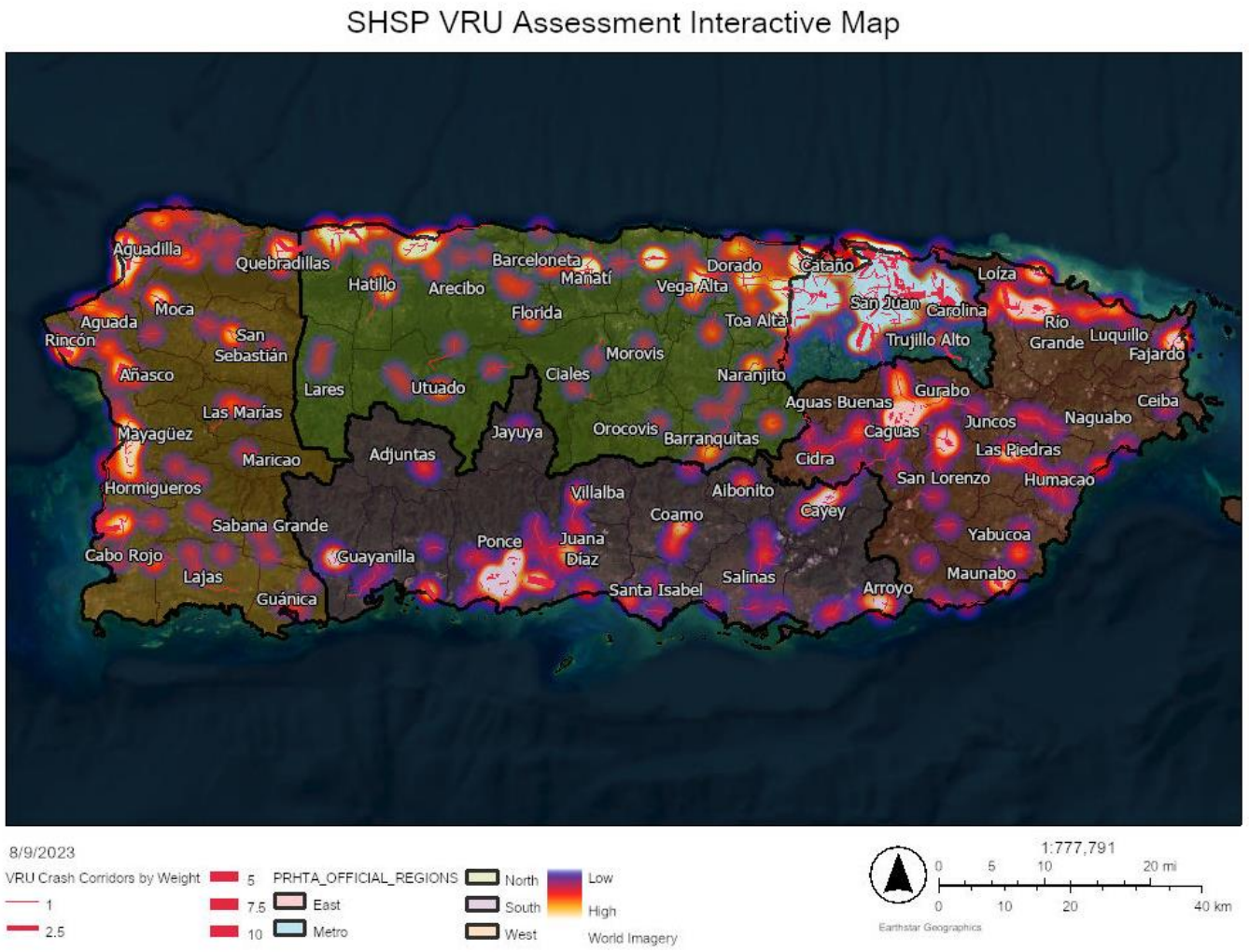
VRU Crash Percentage by Speed Limit



VRU Crashes and Transit Stops



VRU High-Risk Areas



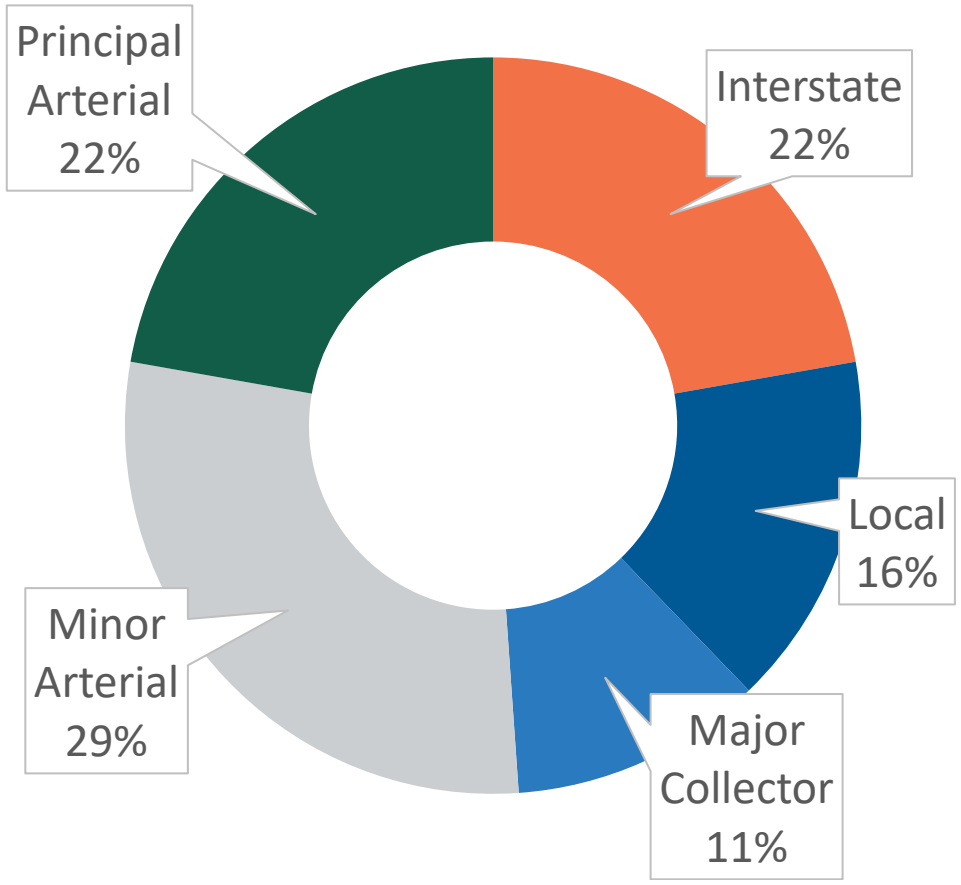
Areas

- By PRHTA Region
- Population
- Kilometers
- Hundred Million Vehicle Miles Travel

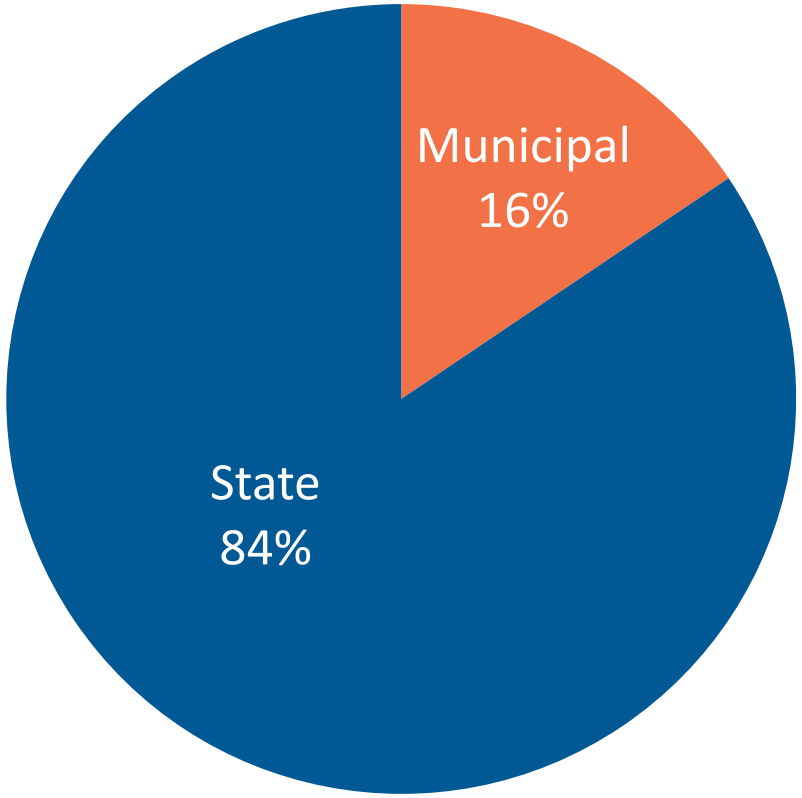
[SHSP VRU Assessment Interactive Map (arcgis.com)]

VRU West Region

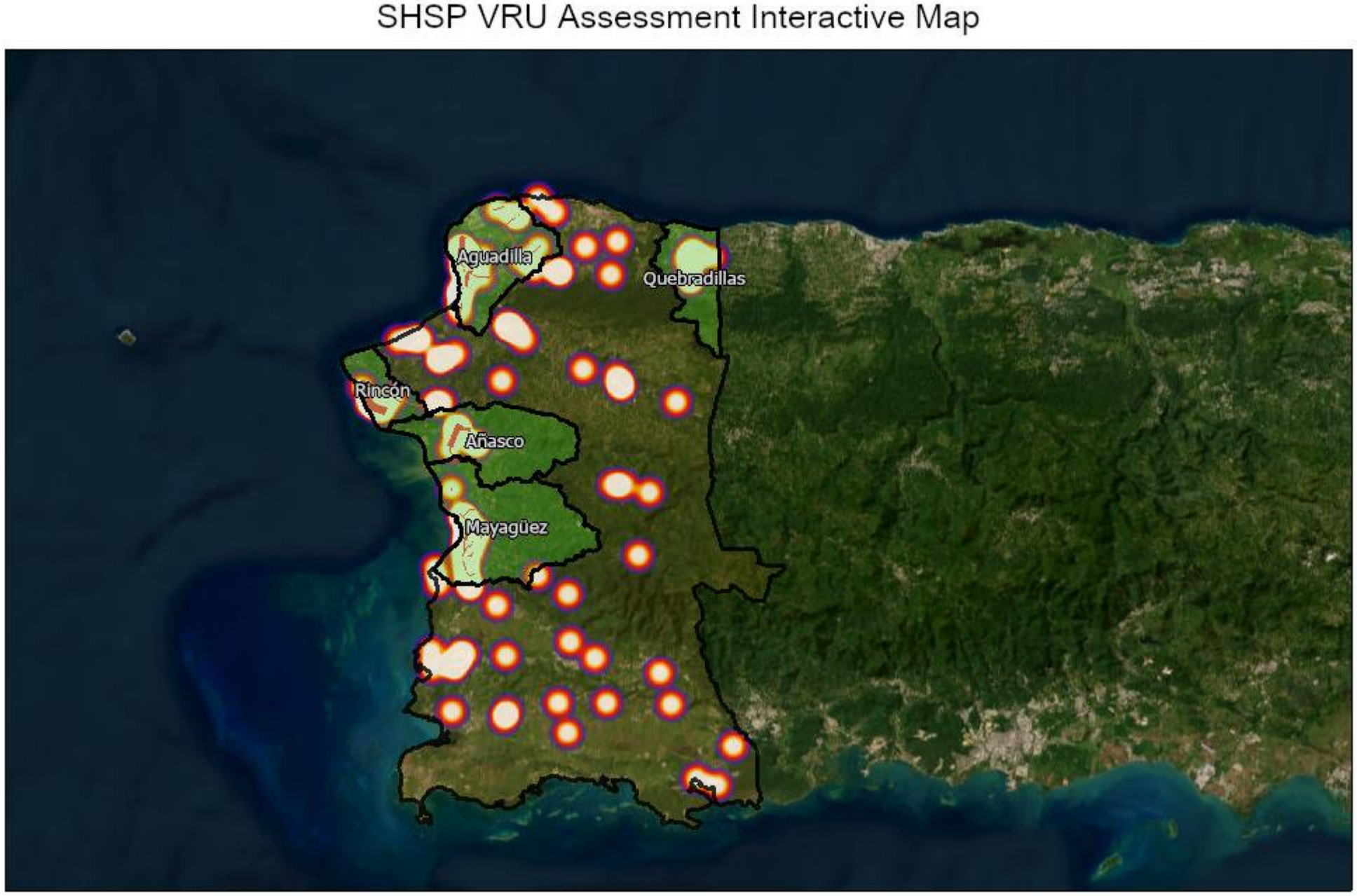
PRHTA West Region Functional Classification



PRHTA West Region Jurisdiction



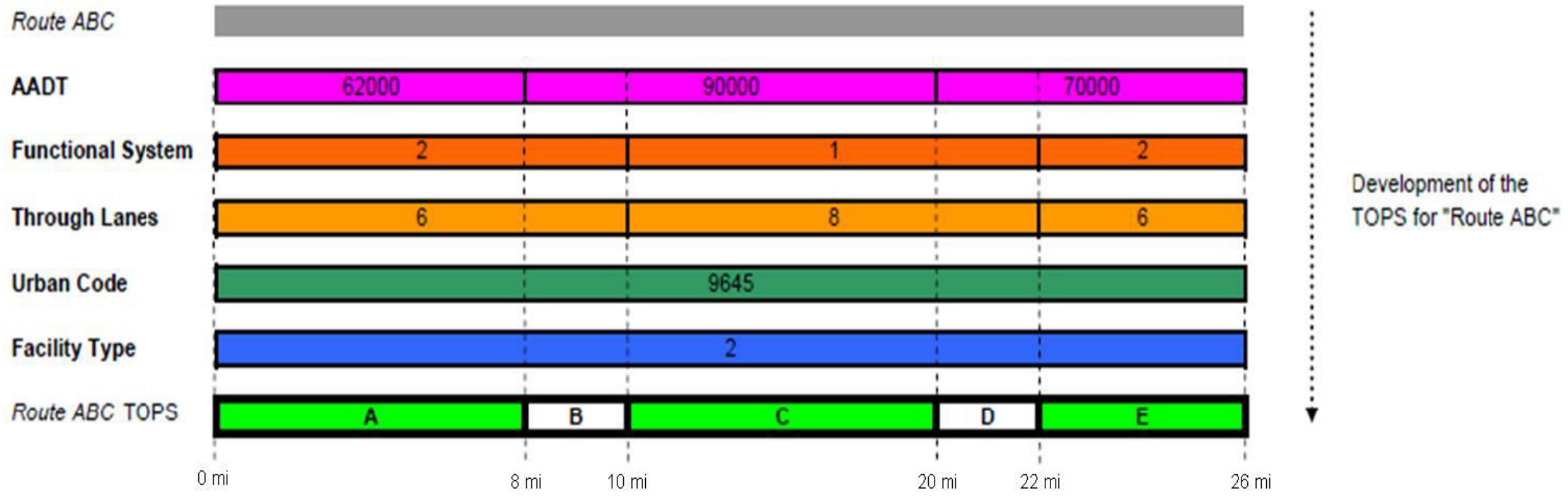
VRU West Region



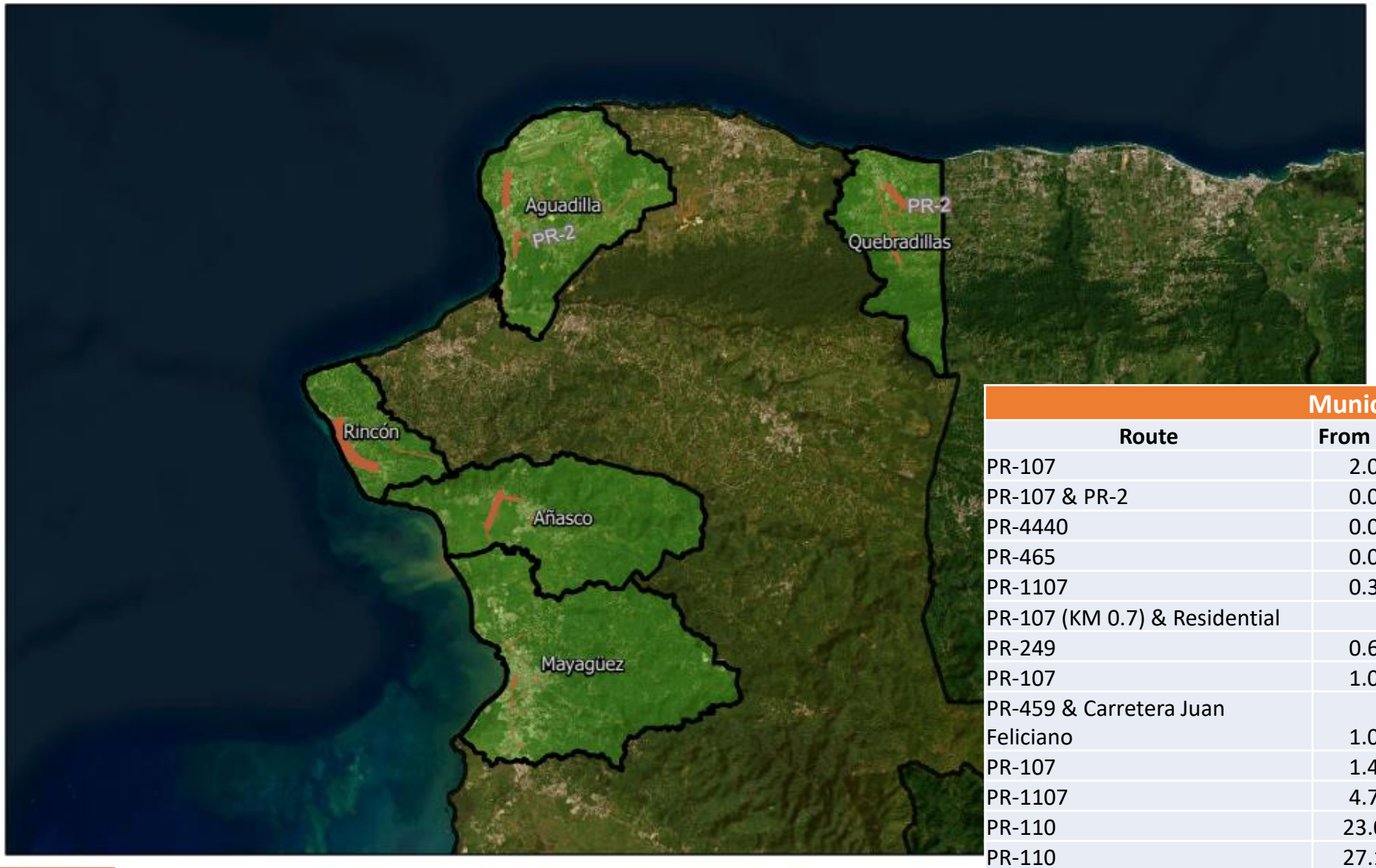
SHSP VRU Assessment Interactive Map (arcgis.com)

VRU Corridor Selection - HPMS

Figure 6.1 TOPS Development Process



SHSP VRU Assessment Interactive Map



VRU West Region

[SHSP VRU Assessment Interactive Map (arcgis.com)]

Municipality of Aguadilla					
Route	From KM	To Km	Length KM	Fatal	Severe
PR-107	2.0	4.1	2.1		3
PR-107 & PR-2	0.0	0.2	0.2	1	1
PR-4440	0.0	1.2	1.2		1
PR-465	0.0	2.5	2.5		1
PR-1107	0.3	0.6	0.3	1	
PR-107 (KM 0.7) & Residential					1
PR-249	0.6	0.9	0.2		1
PR-107	1.0	1.4	0.5	1	
PR-459 & Carretera Juan Feliciano	1.0	4.0	3.0		1
PR-107	1.4	2.0	0.5	1	
PR-1107	4.7	6.3	1.5		1
PR-110	23.0	27.1	2.9		1
PR-110	27.1	30.3	3.2		1
PR-110	30.3	32.9	1.2		1
PR-2	121.6	125.1	3.5	1	
Avenida General Ramey			0.2		1
Calle Rogelio Castro			0.2		1
PR-110	19.7	23.0	3.3		1

4

VRU Assessment: Strategies, Implementation Examples and Potential Projects

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Safe System Approach

SAFE ROADS: AVOIDING CRASHES

Elements of the Safe System Approach

Avoiding crashes involves:

Separating users in space

Separating users in time

Increasing attentiveness and awareness

Source for all images: Fehr & Peers

Safe System Approach

SAFE ROADS: CRASH KINETIC ENERGY

Elements of the Safe System Approach

Managing crash kinetic energy involves:

Source: Fehr & Peers

Managing speed


Source: City of Carmel, IN

Managing crash angles


Source: FHWA

Managing crash energy distribution

Safety Countermeasures

Pedestrian/Bicyclist

Bicycle Lanes

Crosswalk Visibility Enhancements

Leading Pedestrian Interval

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

Pedestrian Hybrid Beacons

Rectangular Rapid Flashing Beacons (RRFB)

Road Diets (Roadway Configuration)

Walkways

References: Proven Safety Countermeasures | FHWA (dot.gov)
Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org)

Safety Countermeasures

Pedestrian/Bicyclist

Bicycle Lanes

Cycle Track

Pavement Marking

Raised Island

Traffic Delineator

Pavement Marking

Additional reference: Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org)

Safety Countermeasures

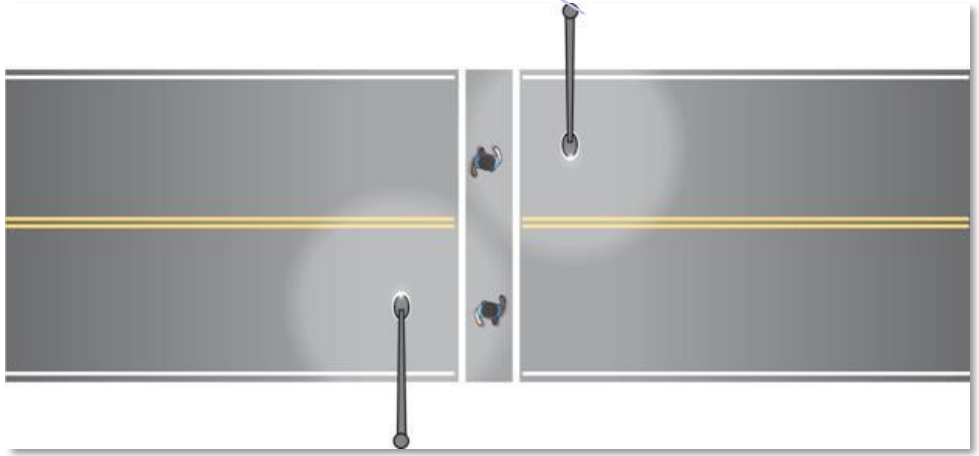
Crosswalk Visibility Enhancements

Pavement Marking

Curb Extension

Limit Parking at Intersections

Pedestrian Lighting



Signage “Stop here for pedestrians”

Safety Countermeasures

Leading Pedestrian Interval

Traffic Signals APS and Peds Signals

Safety Countermeasures

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

Safety Countermeasures

Pedestrian Hybrid Beacons

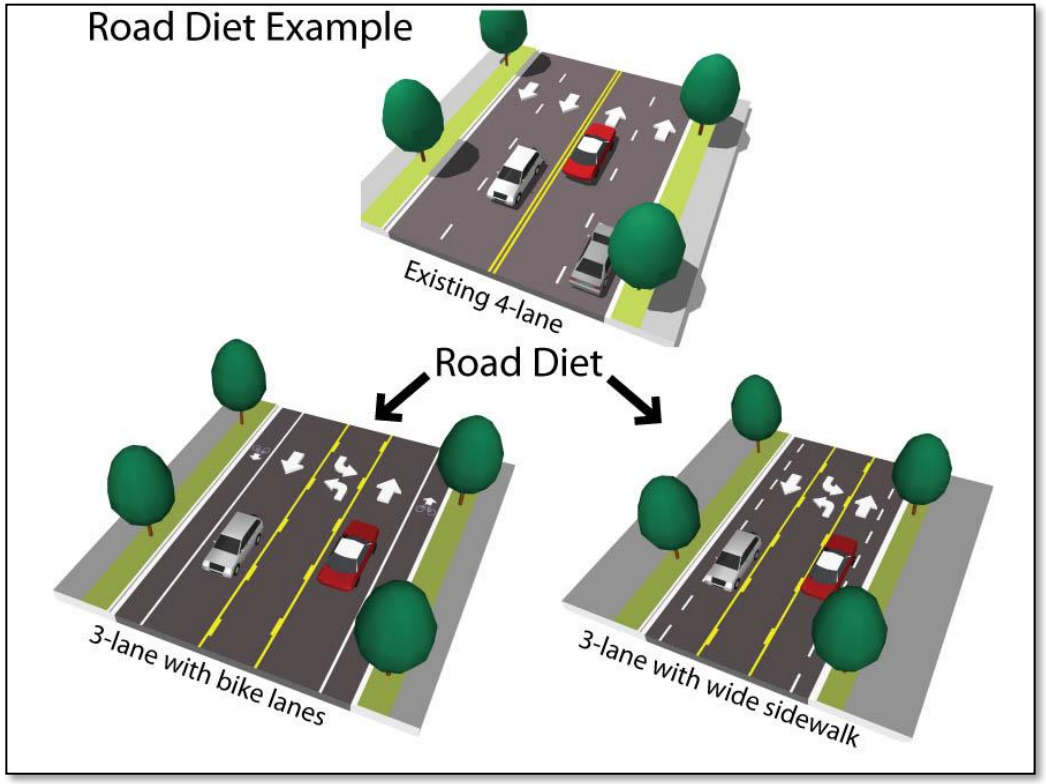
Rectangular Rapid Flashing Beacons (RRFB)

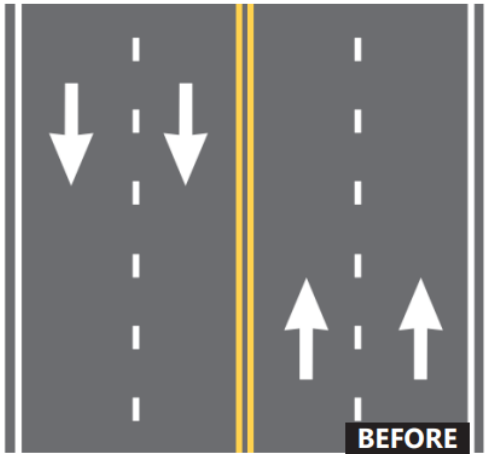
PHB

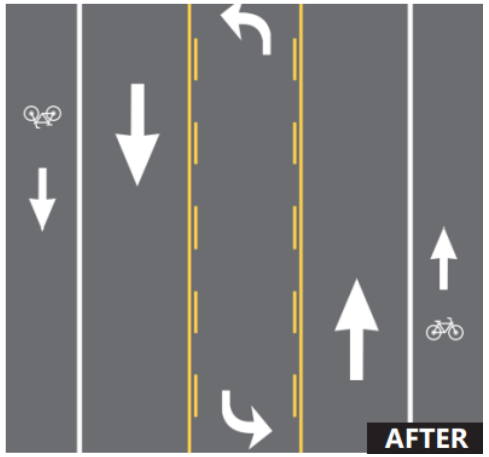
RRFB

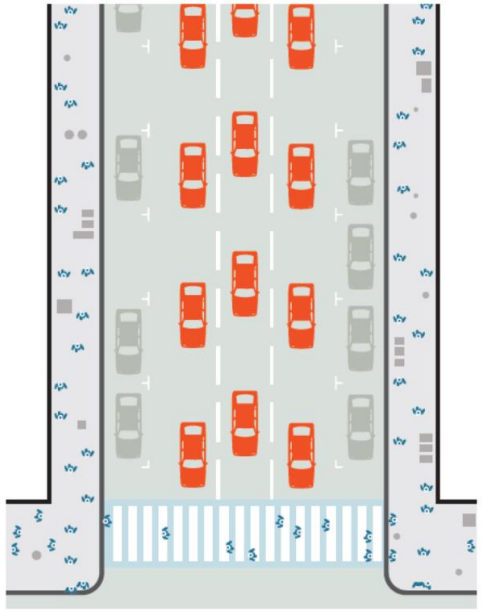
Safety Countermeasures

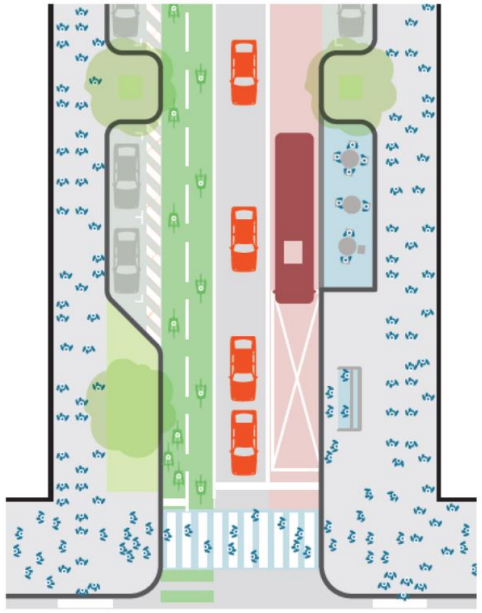
[Road Diets (Roadway Configuration)]







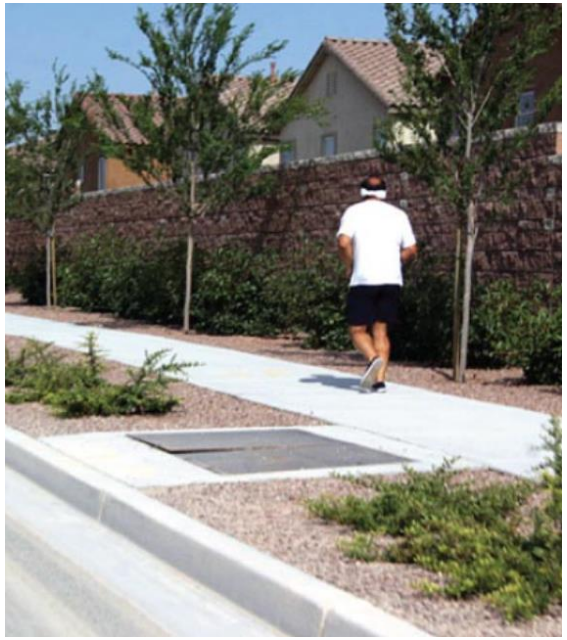


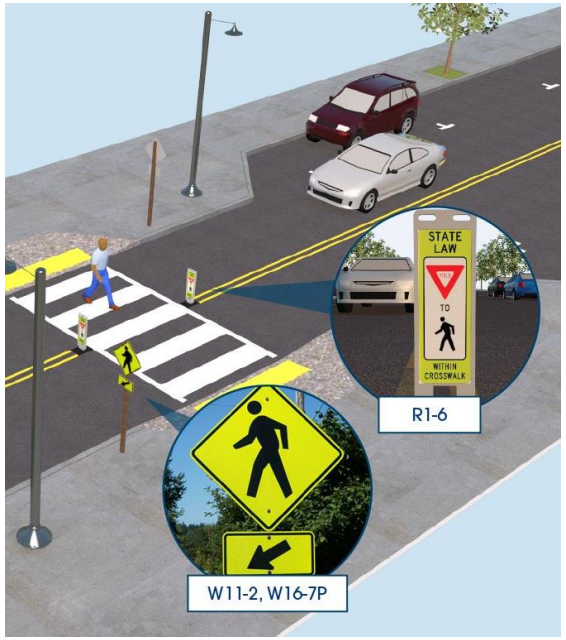


Safety Countermeasures

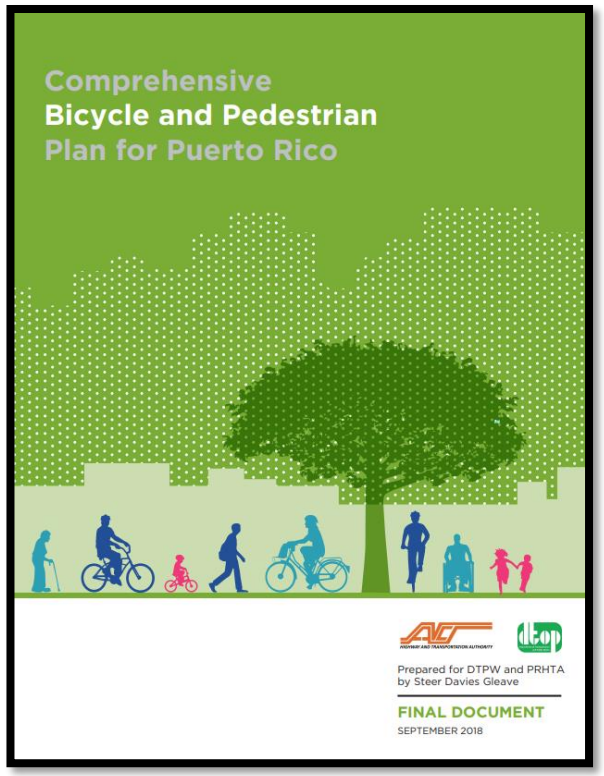
Walkways

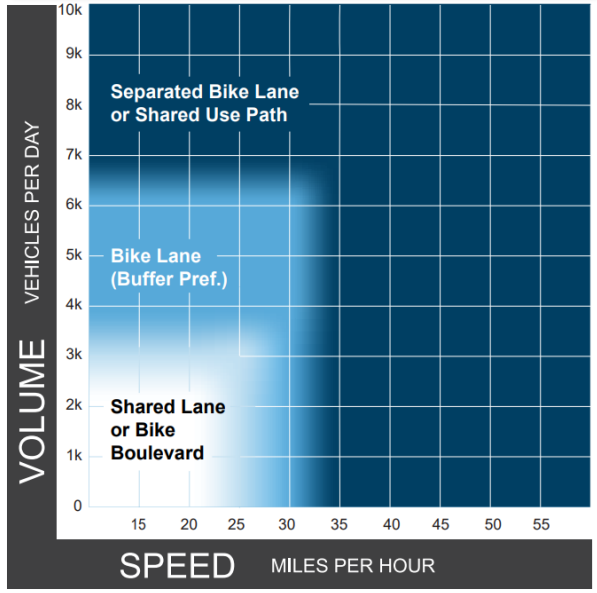
Pedestrian Crossings & Walkways



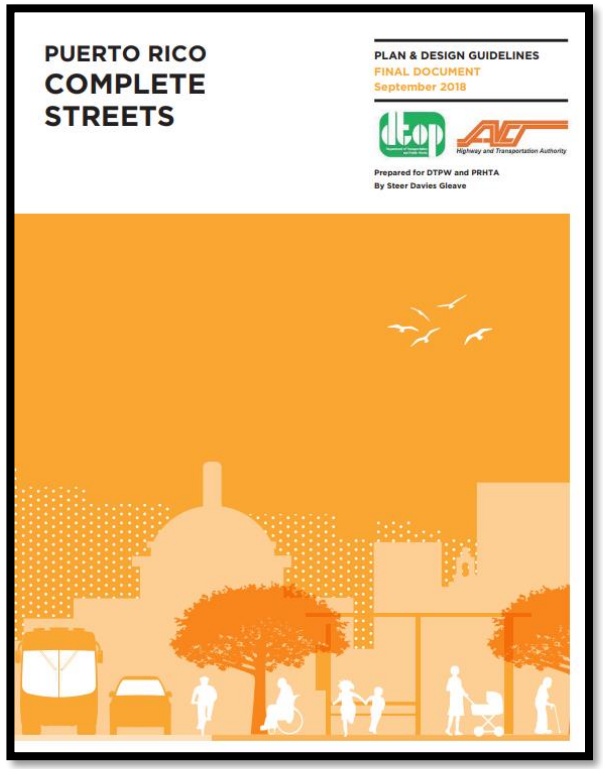


VRU Assessment Strategies





Source: FHWA bikeway selection guide



Source: PR Complete Streets Plan & Design Guidelines

Complete Street Vision

Successful urban roads should provide reliable major routes through cities with vibrant, safe, secure and well maintained urban environments, and make shops and services easily accessible. Urban Streets Complete Street vision includes:

- Maintain automobile priority but improve provisions for other modes;
- Reduce width of travel lanes where appropriate;
- Comfortable and sheltered waiting areas for transit users;
- Comfortable sidewalk width of 1.5 - 2.1 meters /5-7 feet;
- Crossings to match wider pedestrian network, including at mid-block where appropriate;
- Buffered, separated or off-road bikeways (Class I, II or IV – for Class definitons see Bikeways, Section 3 Part B);
- High quality landscape character;
- Provide shade trees along sidewalks and bikeways; and
- Provide street lighting that relates to pedestrians and cyclists.

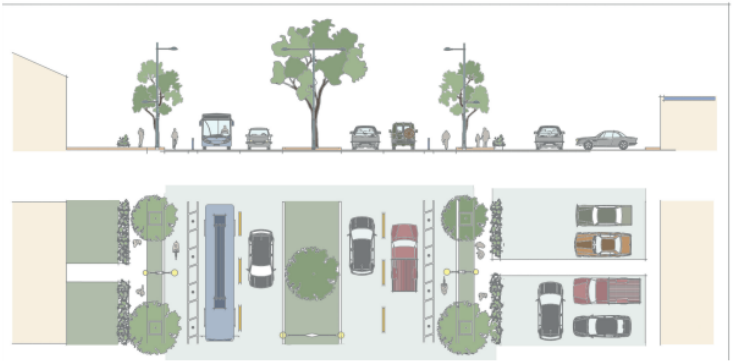
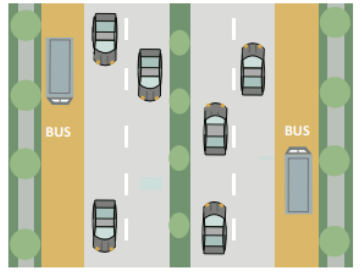
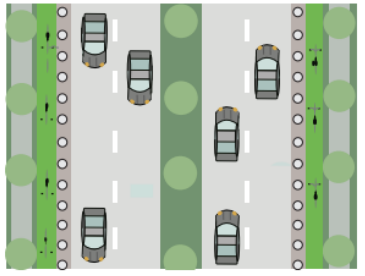


Figure 2.5: Urban Road Complete Street Vision

Source: SDG



Transit priority



Non-motorized priority

VRU Assessment Strategies

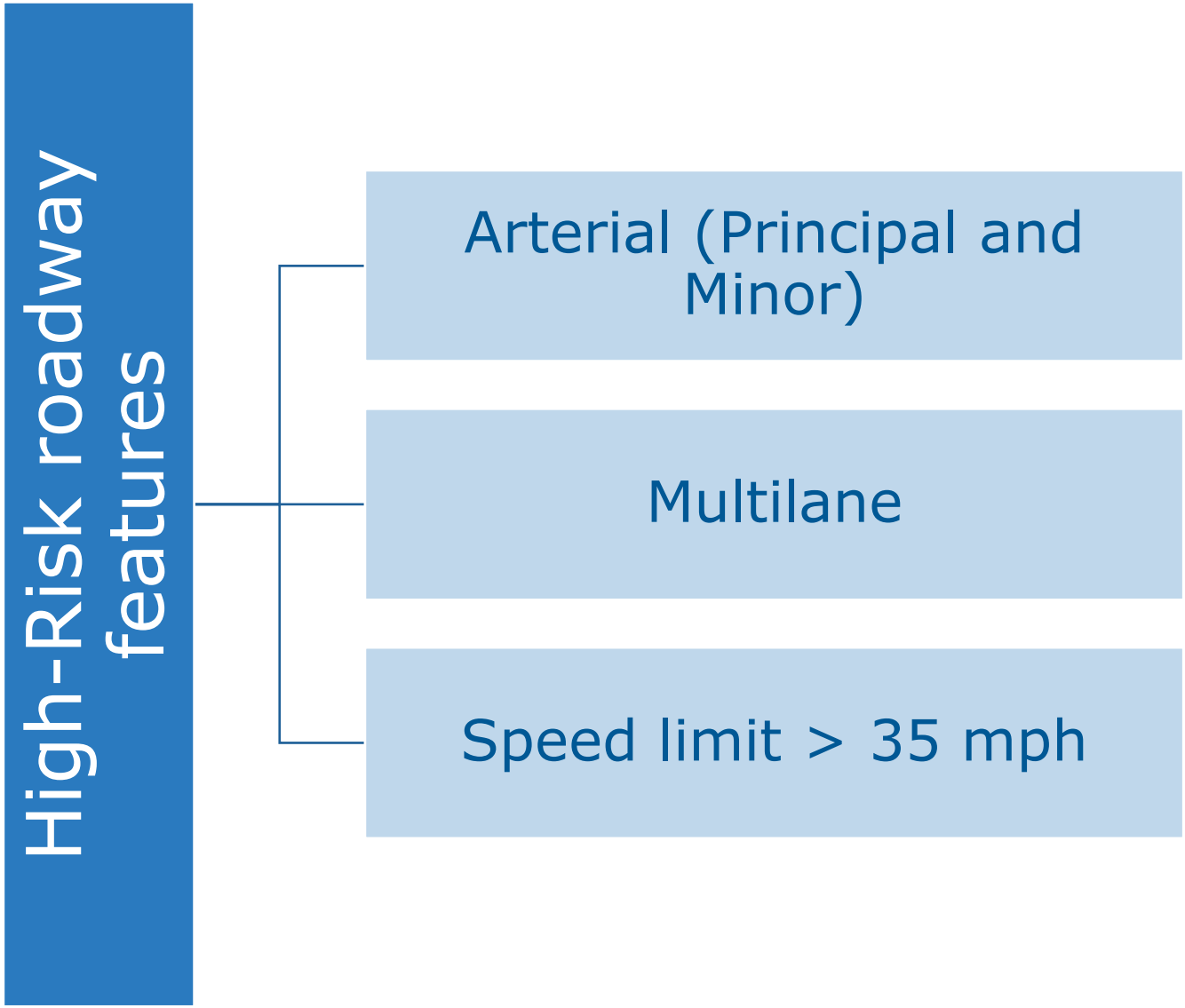
Project Development

Bicycle and pedestrian considerations a full component of Puerto Rico project planning and development.

- **Pedestrian and Bicycle data** consideration
- Include ped and bike **performance measures** as part of project selection processes
- Advanced implementation plan from pedestrian and **bicycle plan and complete streets** guidelines
- **Design** directives to include ped and bike criteria and potential measures
- Include **ped and bike contract** language for all design and construction projects (**RFPs**)
- Include ped and bike needs in traffic control plans (**MOT & detours**)

VRU Assessment Strategies

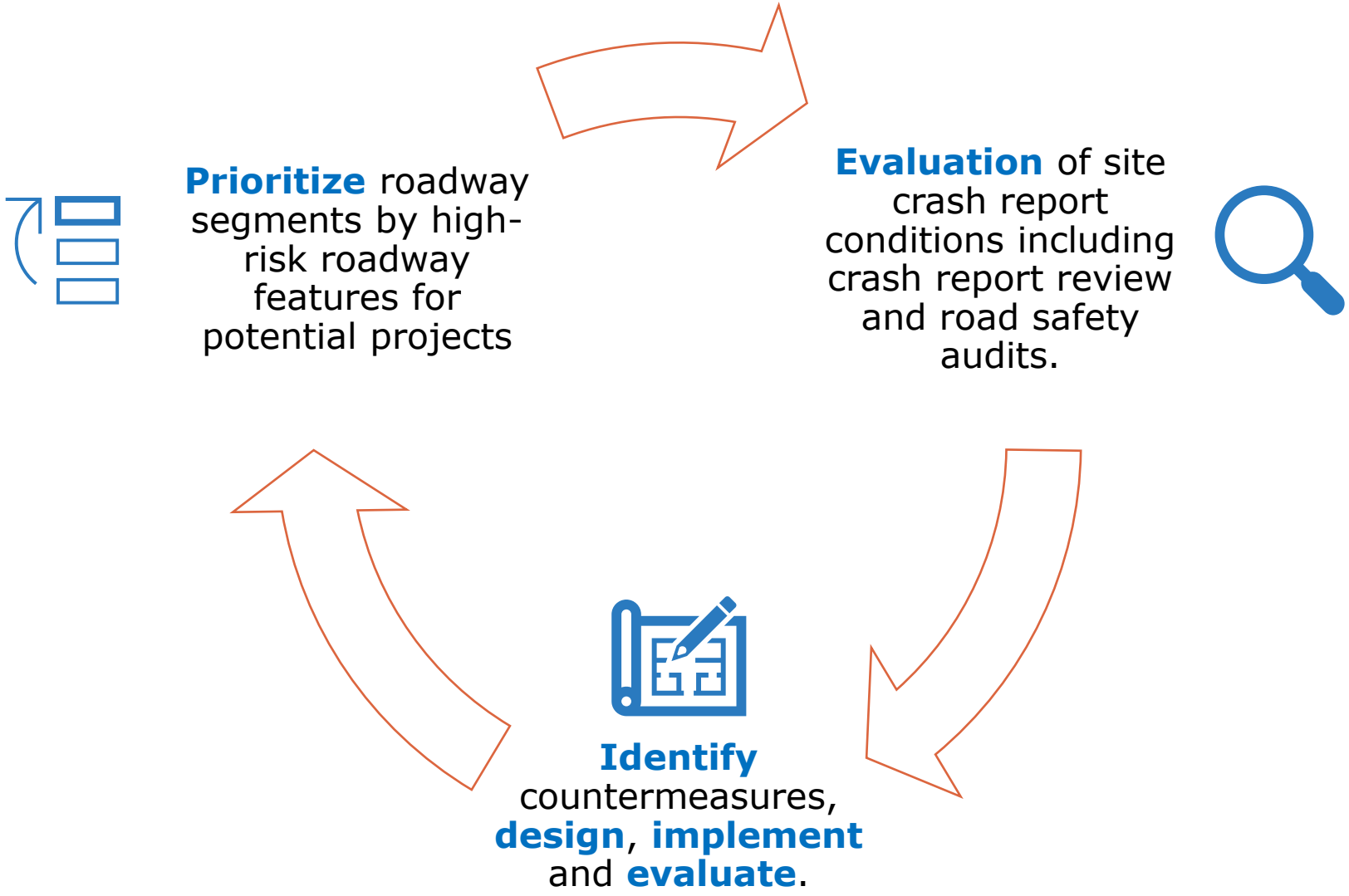
Systemic approach



Intersection – (i.e., pedestrian push buttons and proper time to cross, ADA ramps, sidewalks)

Segments – Road diets, speed management such as traffic calming, roundabouts, mid block crossings, sidewalks repairs, protected bike lanes, shared use path, and pedestrian and bikes signage

VRU Potential Projects



The Safe System Approach

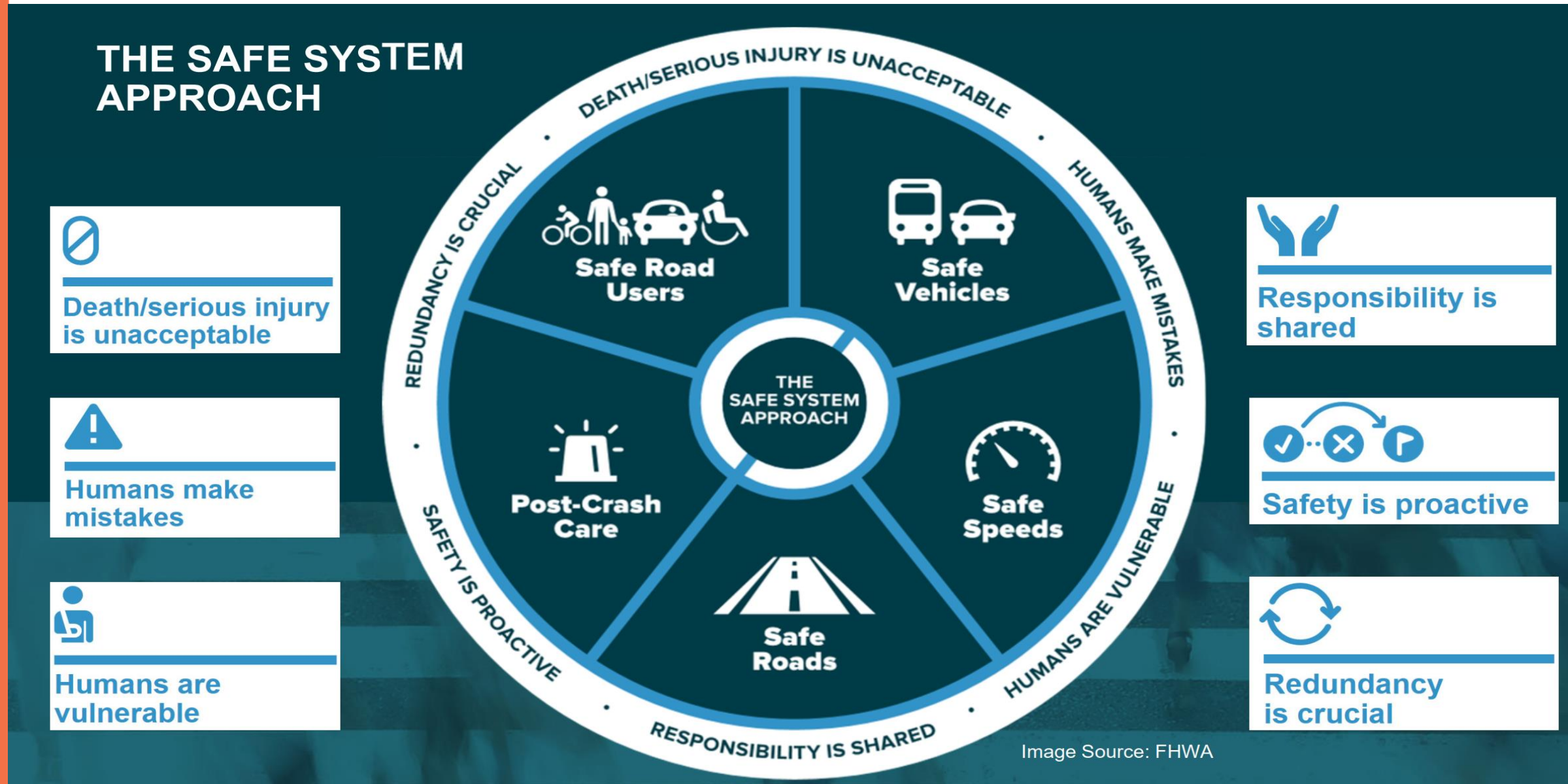


Image Source: FHWA

Responsibility is Shared

15 MINUTES BREAK

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Encuesta - Grupos consultivos en seguridad vial (Región Oeste)

Thank You!

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

PUERTO RICO
HIGHWAYS & TRANSPORTATION
AUTHORITY

New SHSP 2024-2028 & Vulnerable Road Users Assessment

Meeting Metro and North Region
September 7, 2023

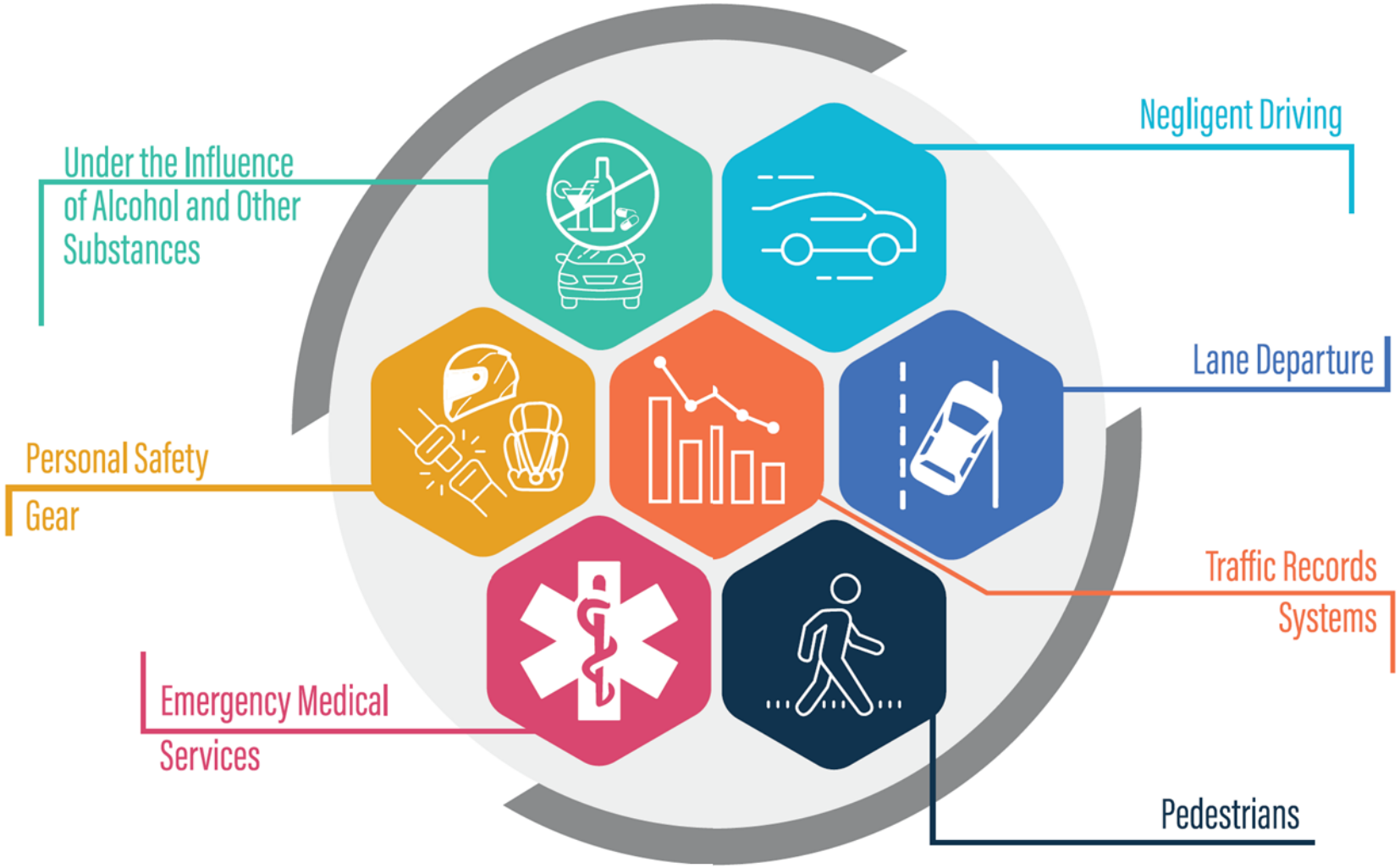
SHSP
STRATEGIC HIGHWAY SAFETY PLAN

1

SHSP 2024-2028
Overview

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Current 2019-2023 Emphasis Areas



New Emphasis Areas (2024-2028)

High Priority Areas

- Vulnerable Road Users
- Speed Management
- Impaired Driving
- Occupant Protection
- Lane Departure
- Communication Integration

Focus Areas

- Traffic Records Systems
- Motorcyclists
- Aging Drivers (65+)
- Legislations & Procedures

The Safe System Approach

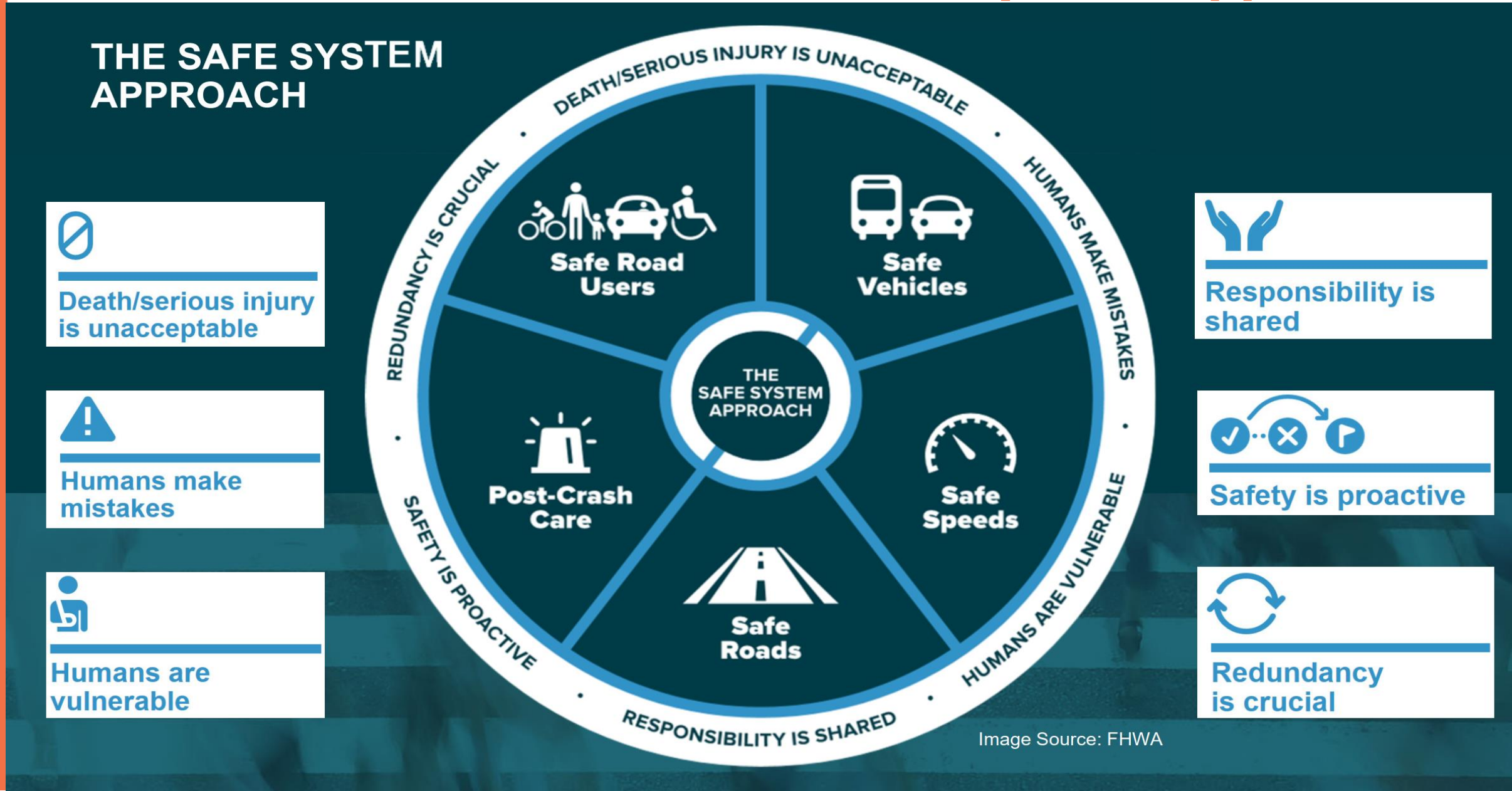
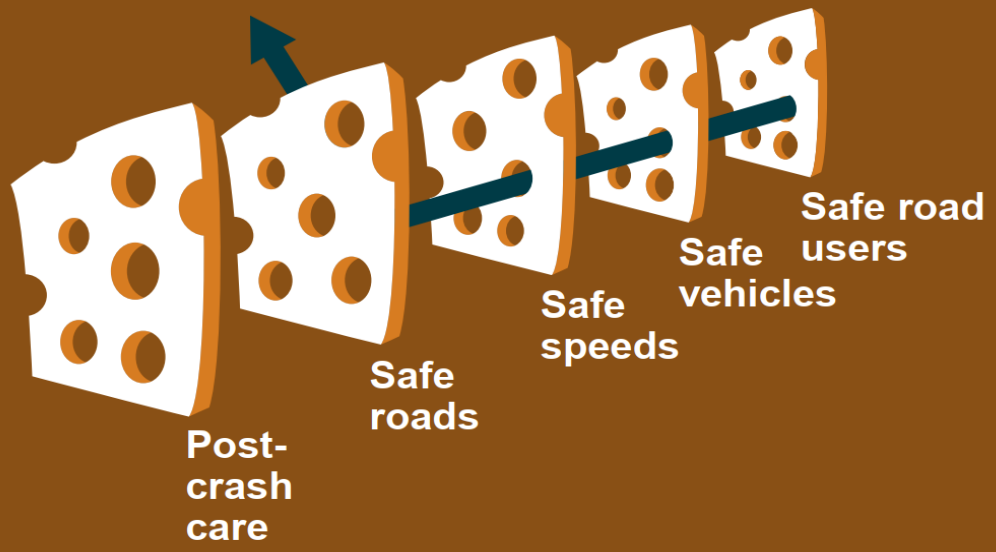


Image Source: FHWA

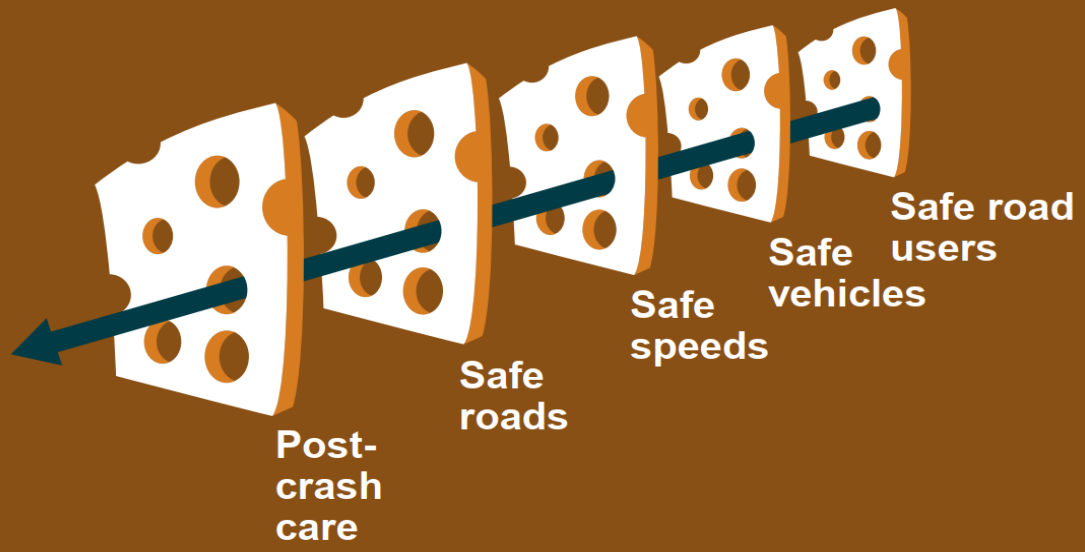
The Safe System Approach (Cont.)

THE 5 SAFE SYSTEM ELEMENTS CREATE REDUNDANCY

The "Swiss Cheese Model" of redundancy creates layers of protection



Death and serious injuries only happen when all layers fail



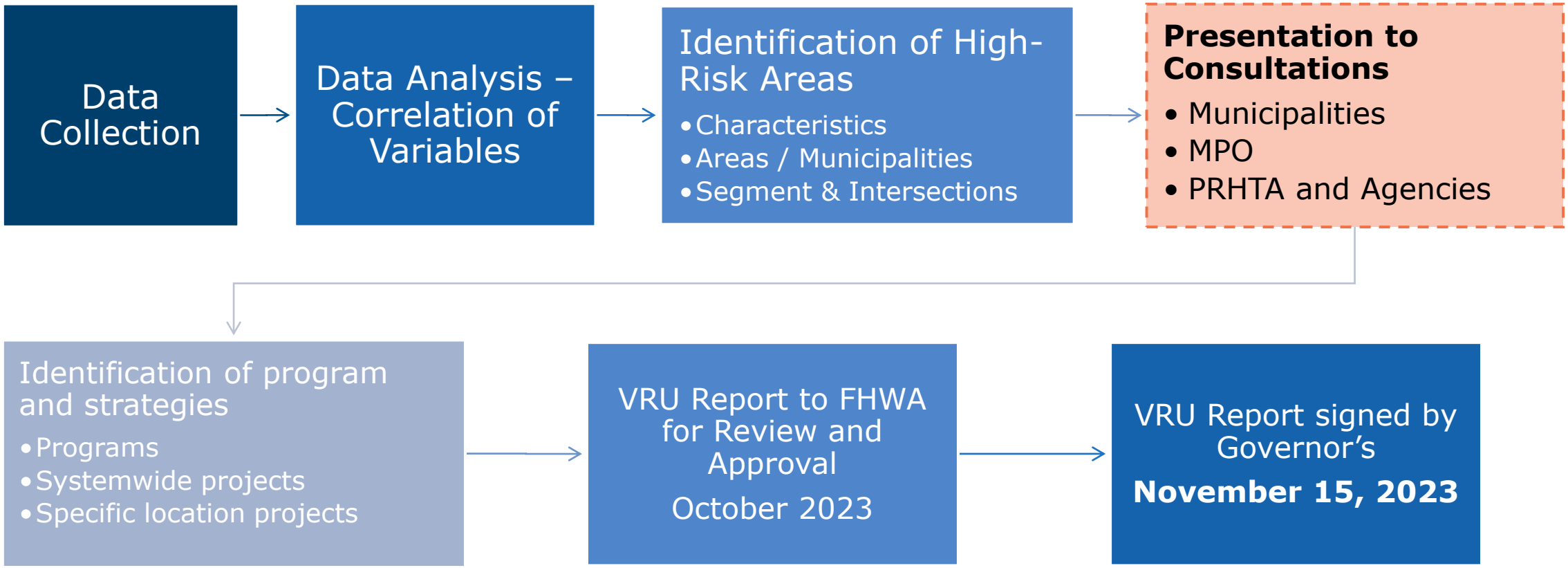
Source: FHWA

2

VRU Assessment:
Development Process

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Development Process



PR VRU Assessment Data

Data Base

Crash Data (Observatorio de Seguridad Vial OSV)

- 2019 to 2022
- Fatal and Severe Injury
- Pedestrian and Bikes
- Age of Victim
- Time of Day
- Month
- Location
- Intersection vs Non intersection

Highway Performance Monitoring System (HPMS)

- Functional Classification
- Speed
- Annual Average Daily Traffic (AADT)
- Number of Lanes
- Kilometers of road by area

PR VRU Assessment Data (Cont.)

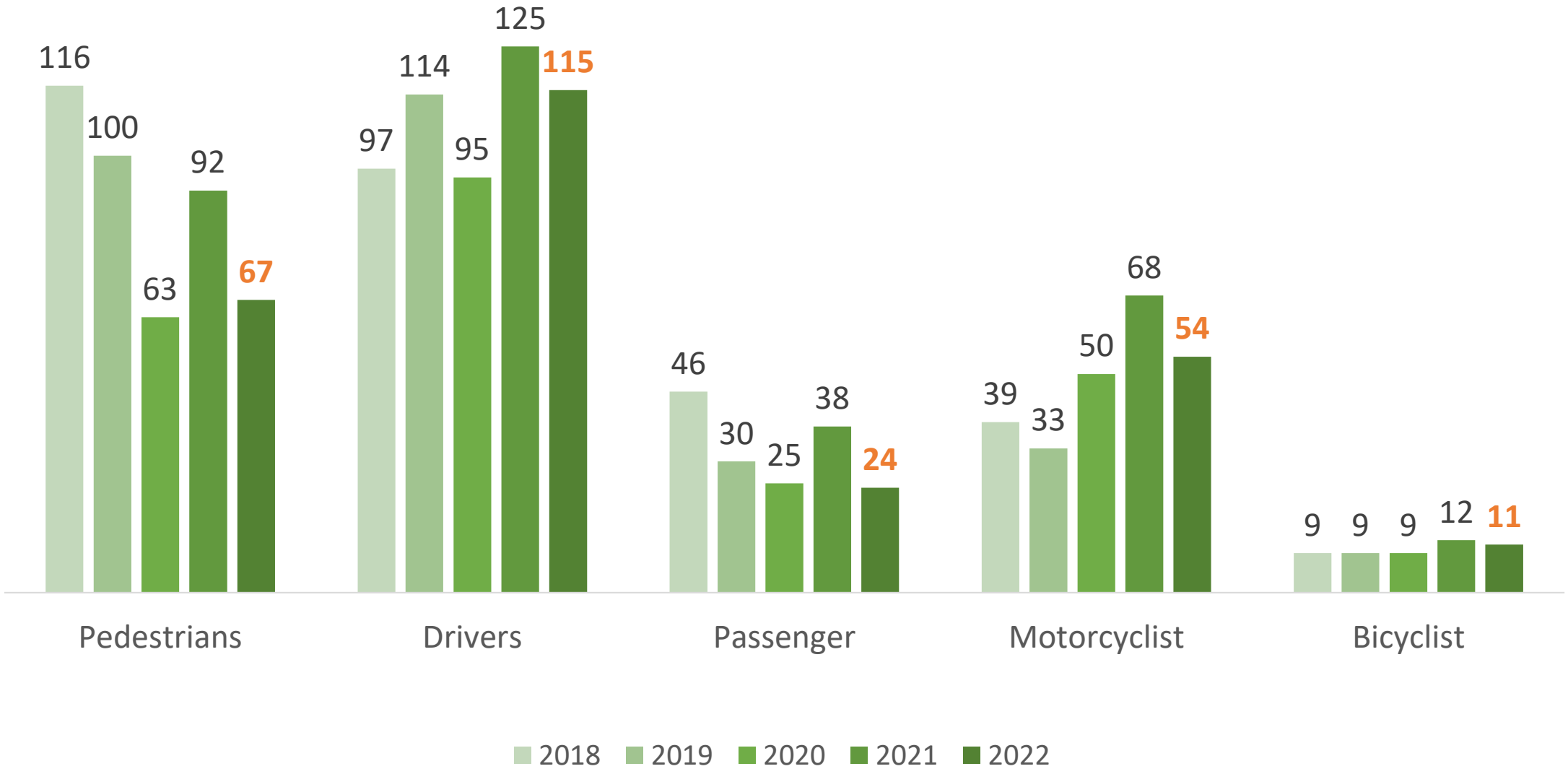
Data Base		
	Geographic Area 	Urban vs Rural
		PRHTA Regional Areas
		DTPW Areas
		Municipalities
	Transit 	Bus routes (AMA) and stop locations
		Transit route (TU) and stop locations
	Census 	Population
		Ethnicity and Race
		Income
		Zero Car Households
		Disability

3

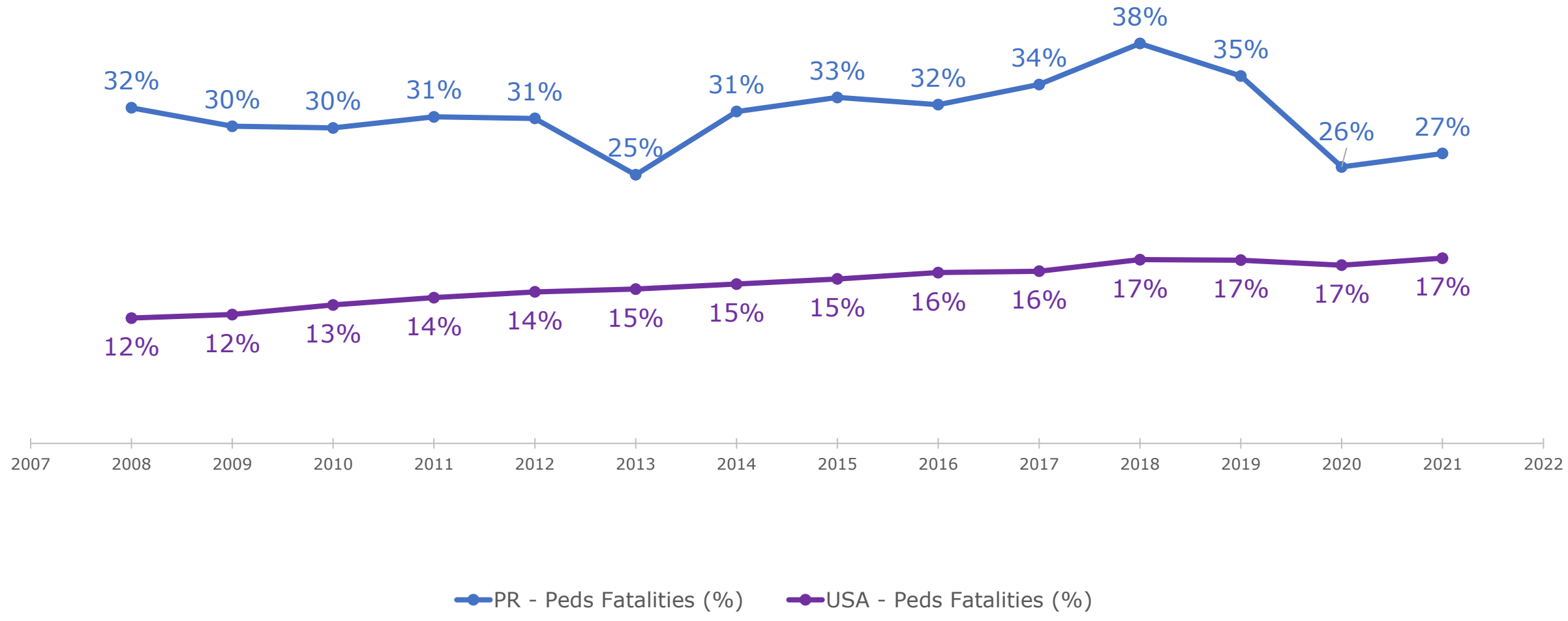
VRU Assessment:
Preliminary Results

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

PR Fatalities by Users



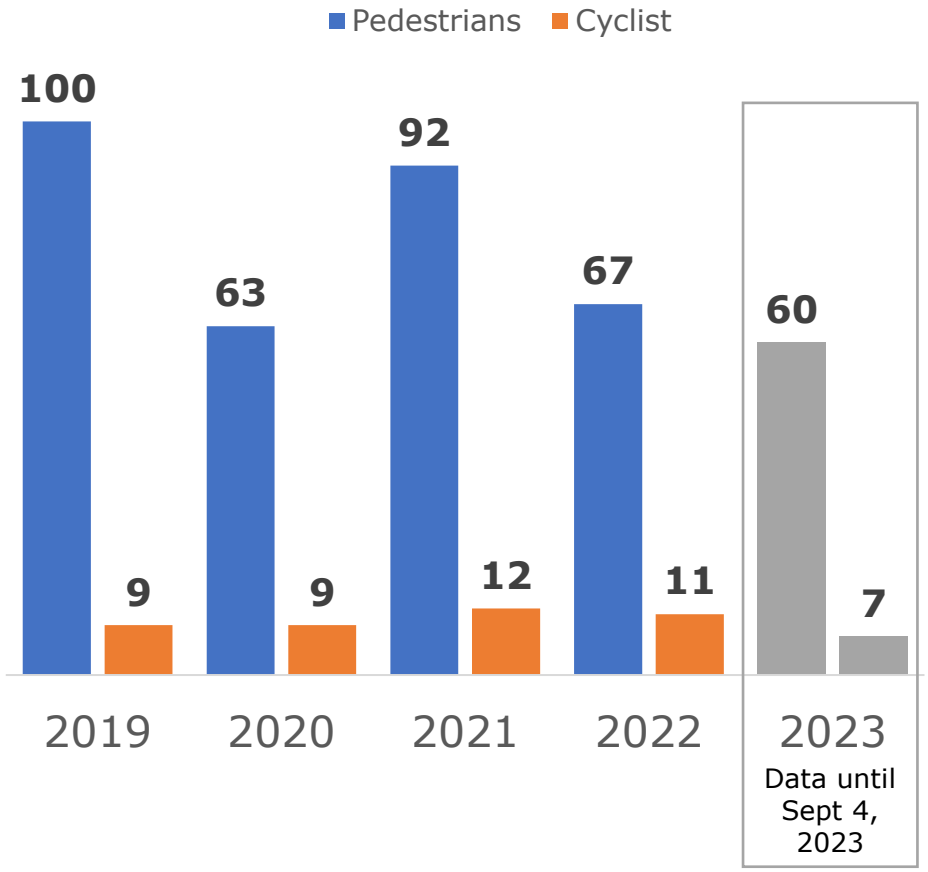
Pedestrian Fatality Percent (PR vs US)



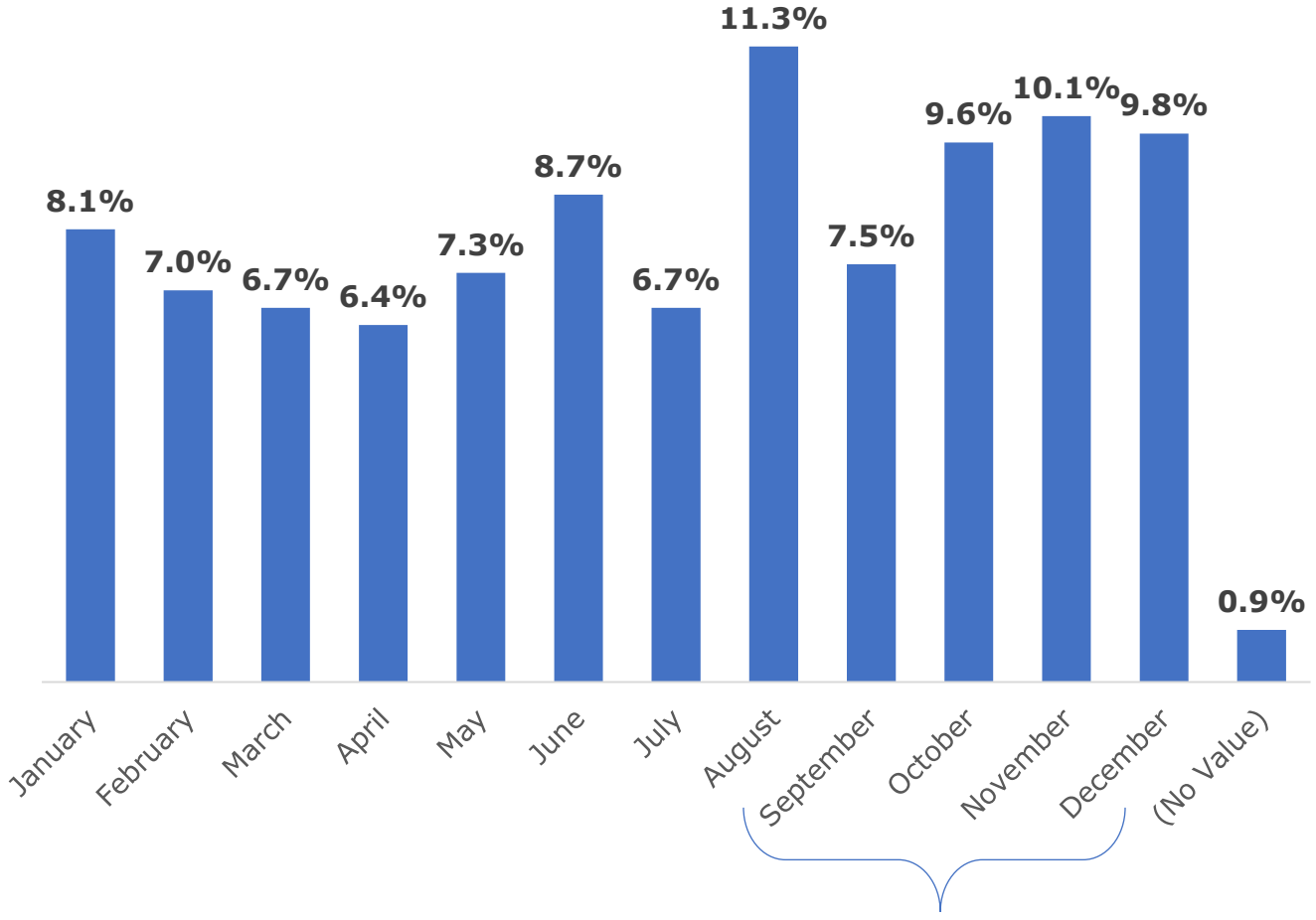
PR VRU Data Results

Fatal & Severe

VRU Fatalities by Year



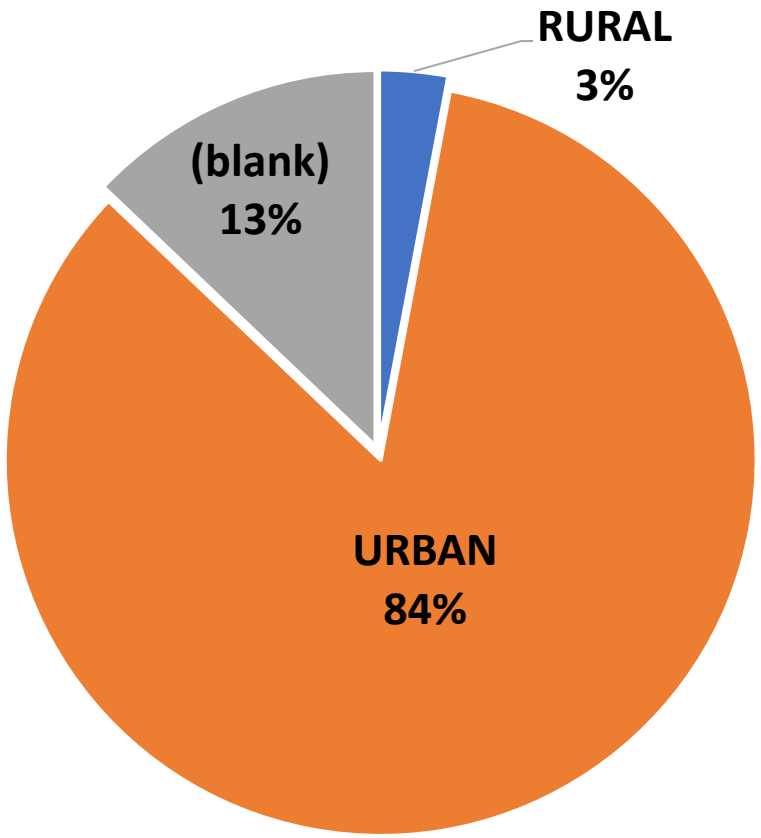
VRU Crash Data by Month



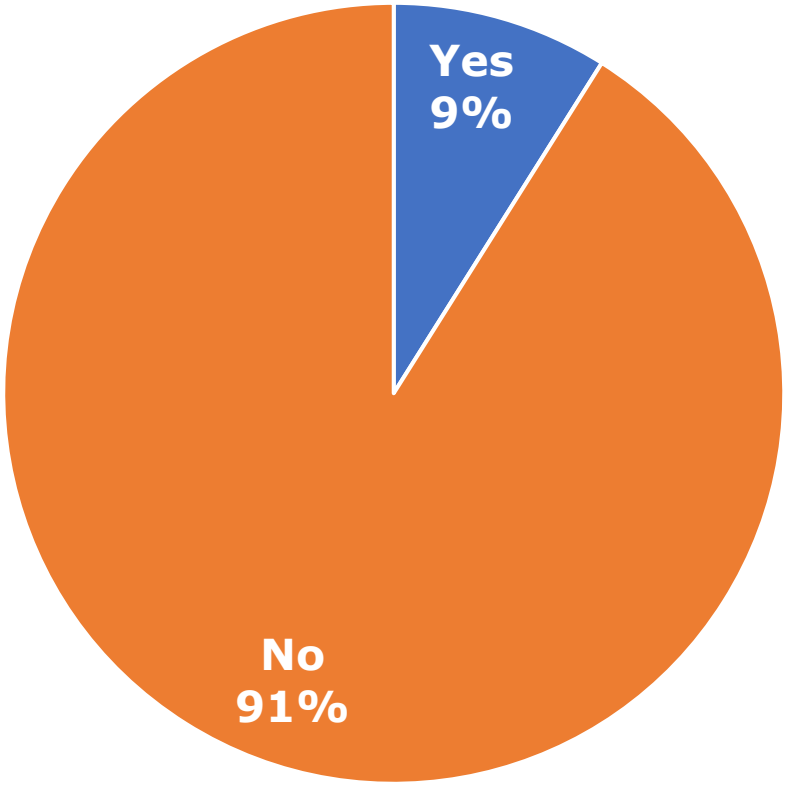
September to December 37%

Urban vs Rural and Intersection

VRU Crashes Urban vs Rural

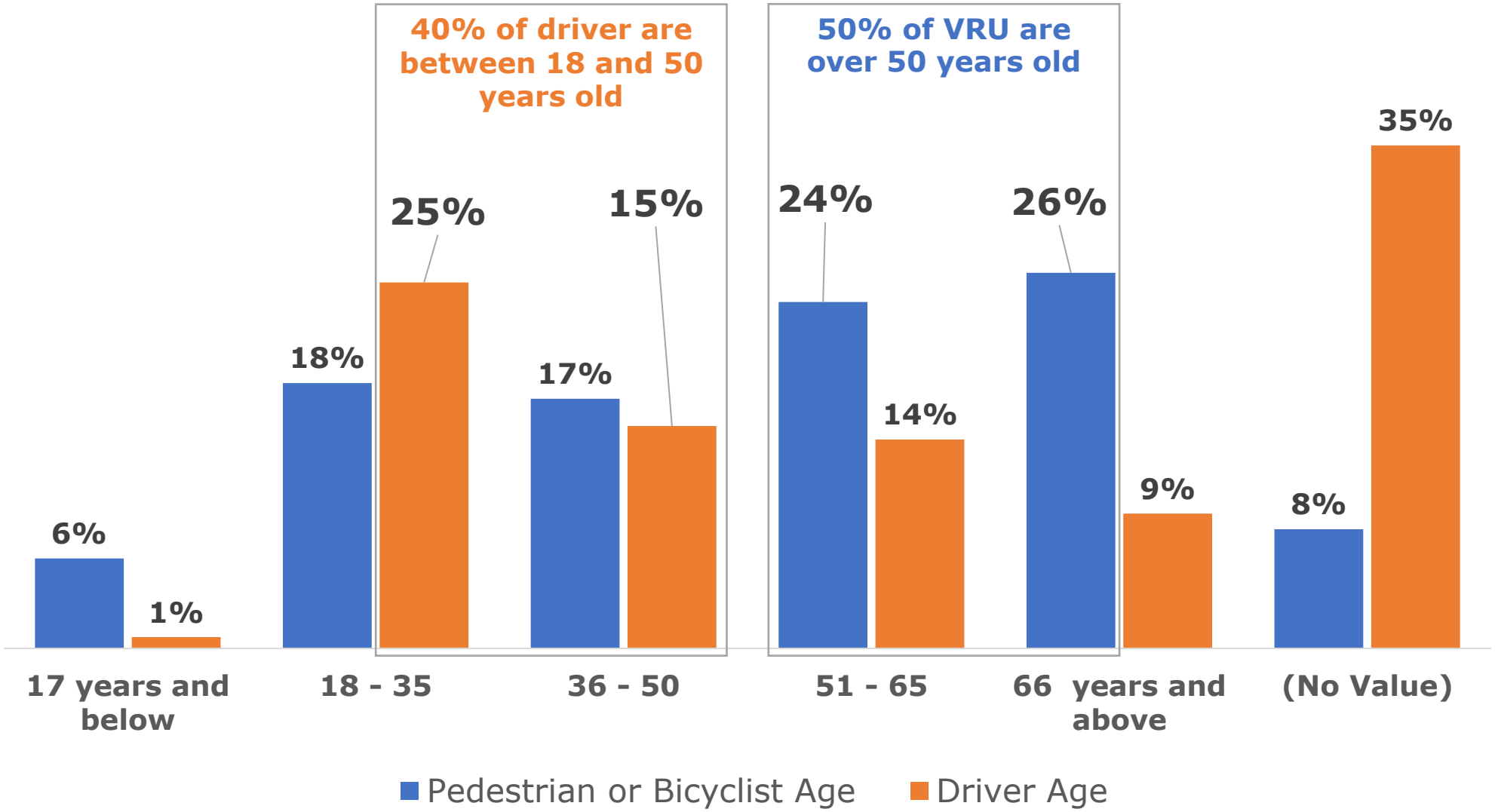


Intersection Related Crashes

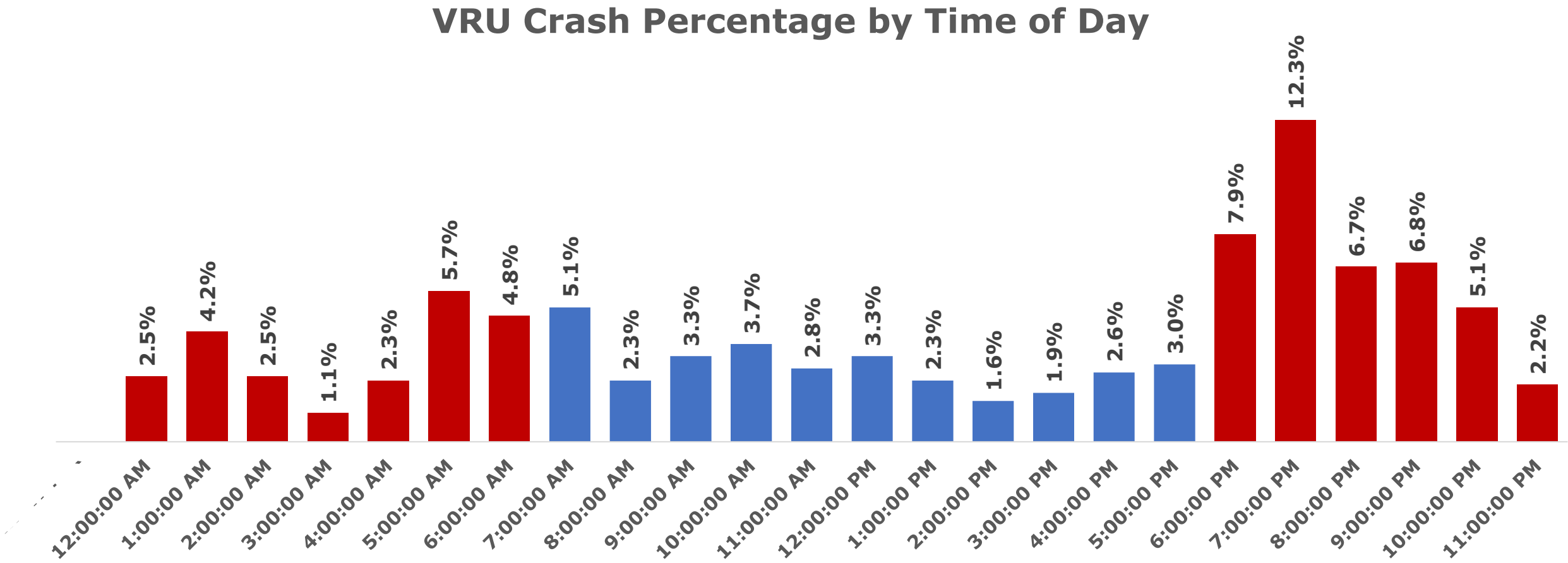


VRU Age vs. Driver Age

Fatal & Severe



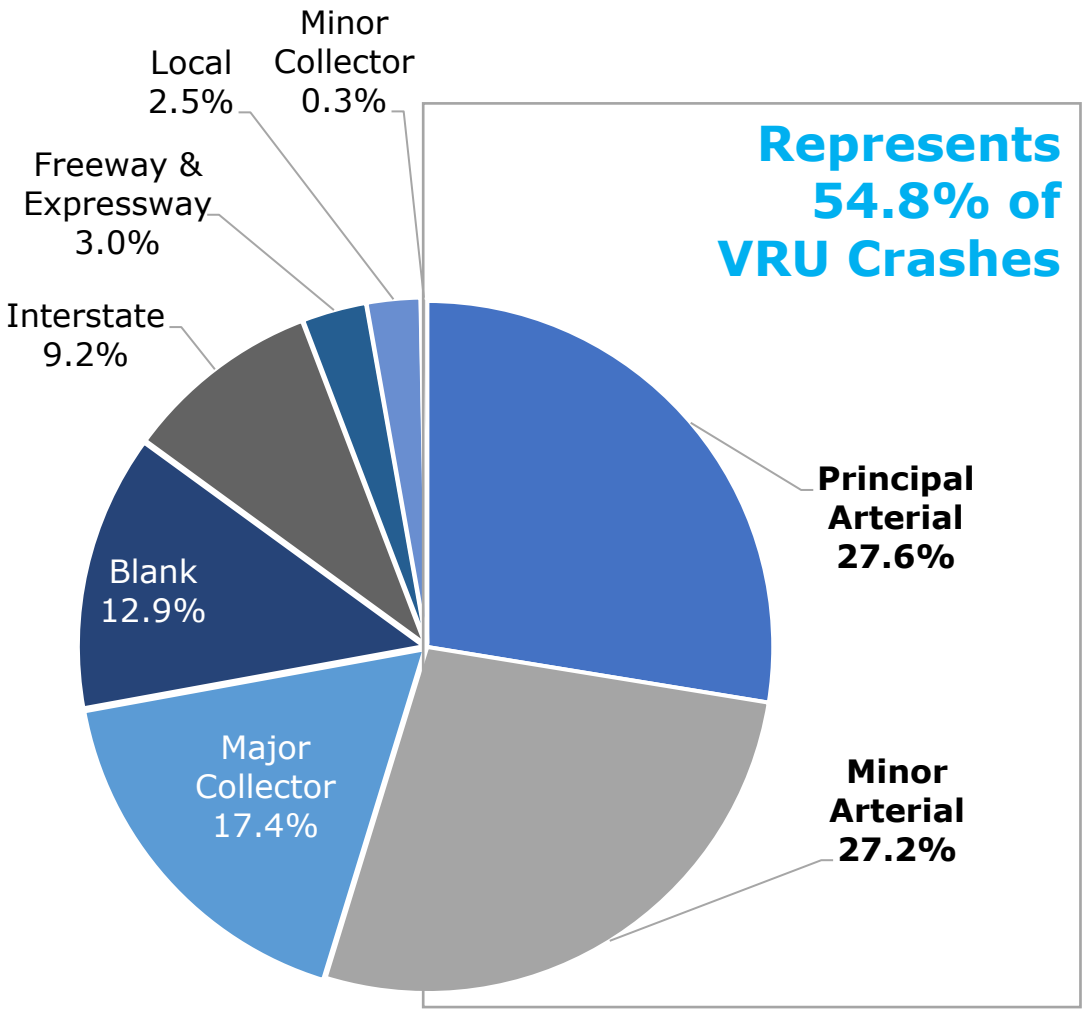
Time of Day



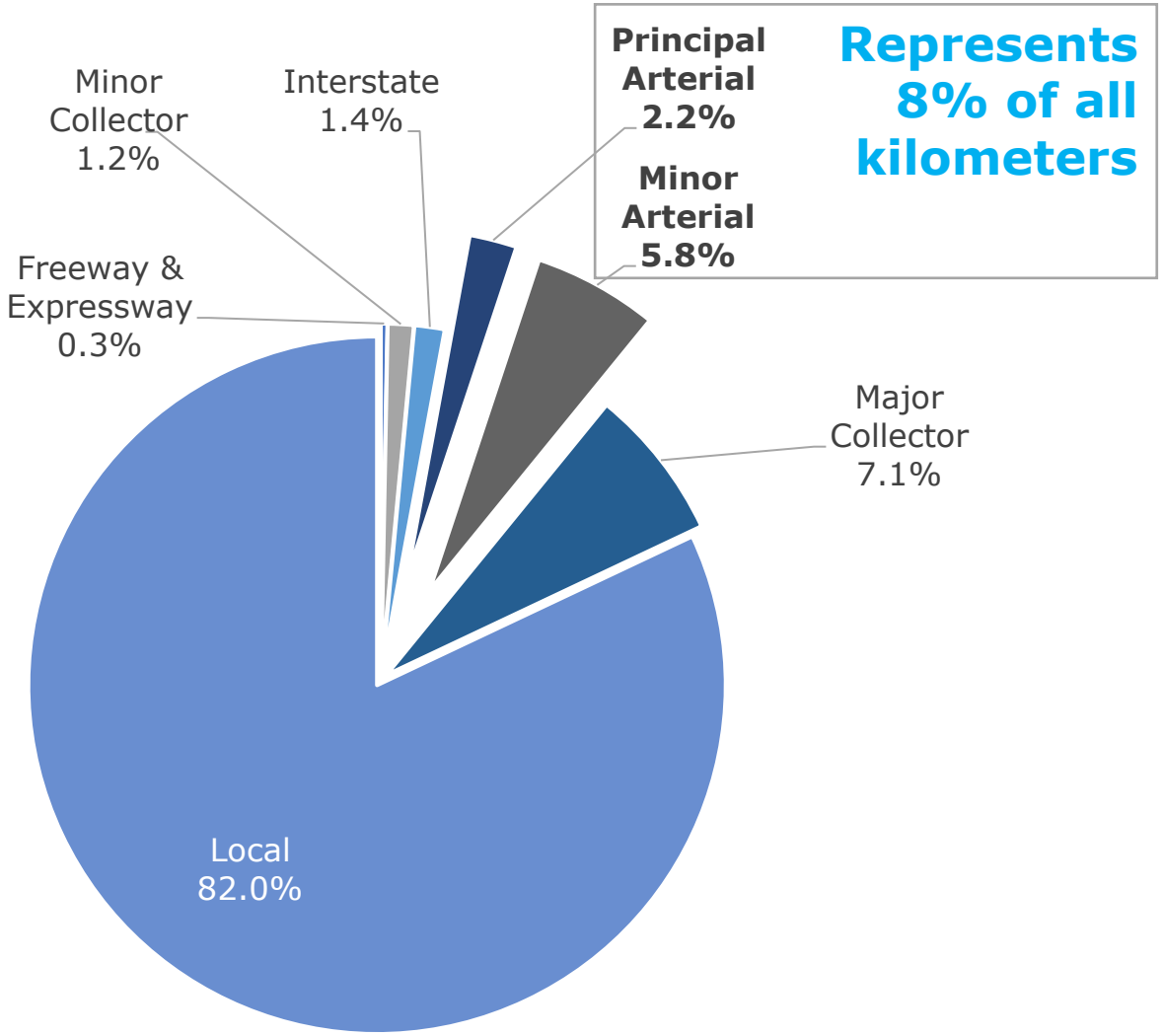
59% of VRU Fatal and Severe occurred from 6:00pm to 6:00am (i.e., nighttime conditions)

Roadway Functional Classification

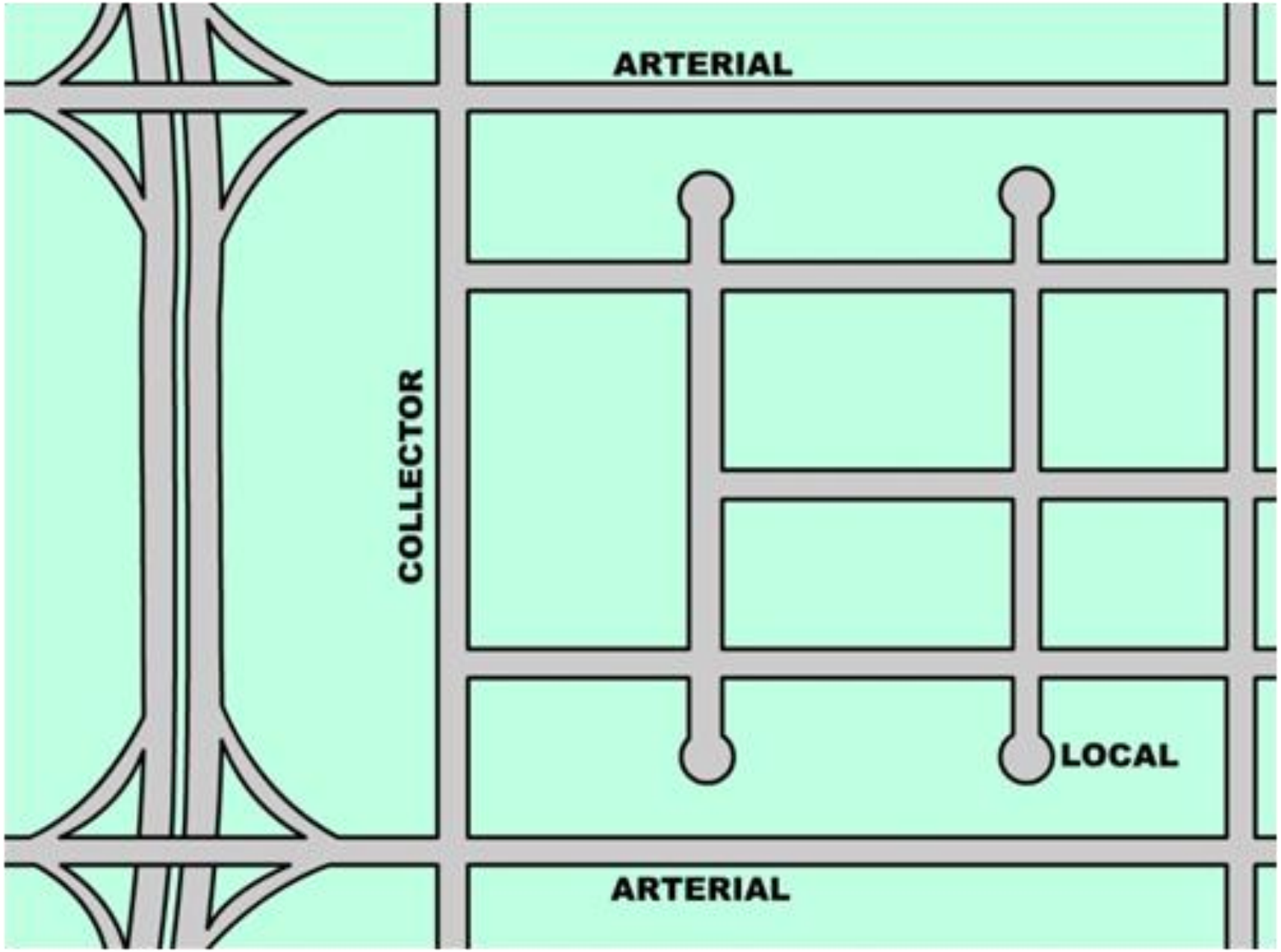
VRU Crash Percentage vs Functional Classification



Kilometers % vs Functional Classification



Roadway Functional Classification



Principal and Minor Arterials:

- Mid-high volume roads
- 2 or more lanes
- Major intersections some with signal controlled
- Direct vehicular access to properties from the road
- Some sidewalk presence
- No cycling infrastructure

Roadway Functional Classification

PR 2 – Manati Source: Google Maps

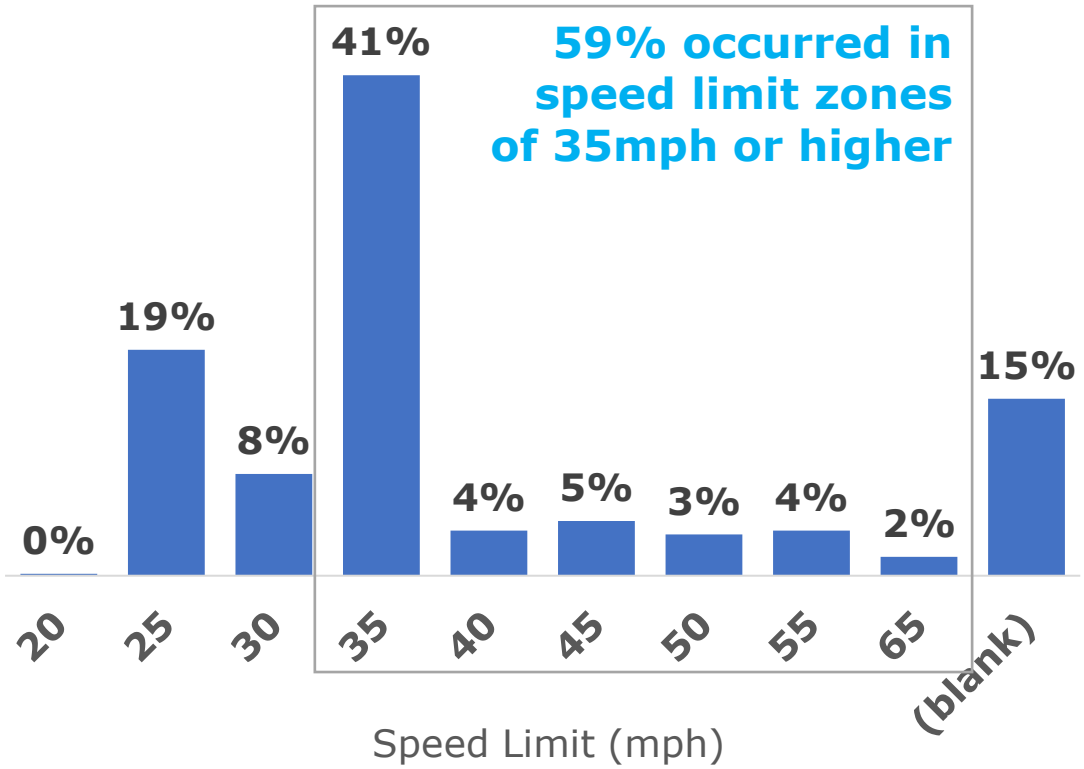
PR 3 – Carolina Source: Google Maps

PR 866 – Toa Baja Source: Google Maps

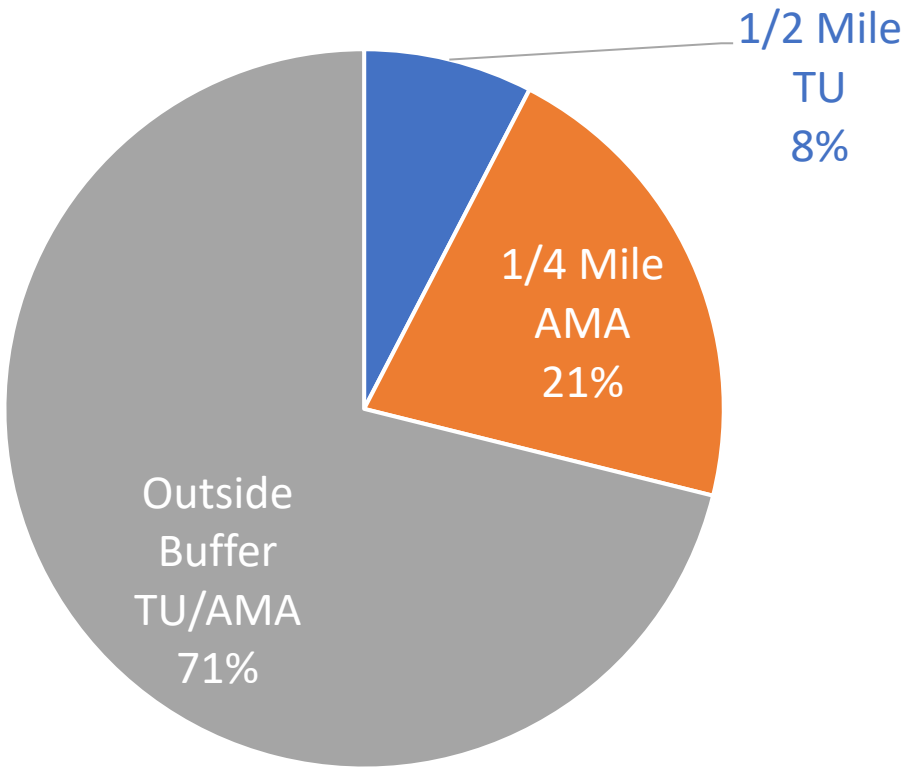
PR 27 – San Juan Source: Google Maps

Speed Limit and Transit

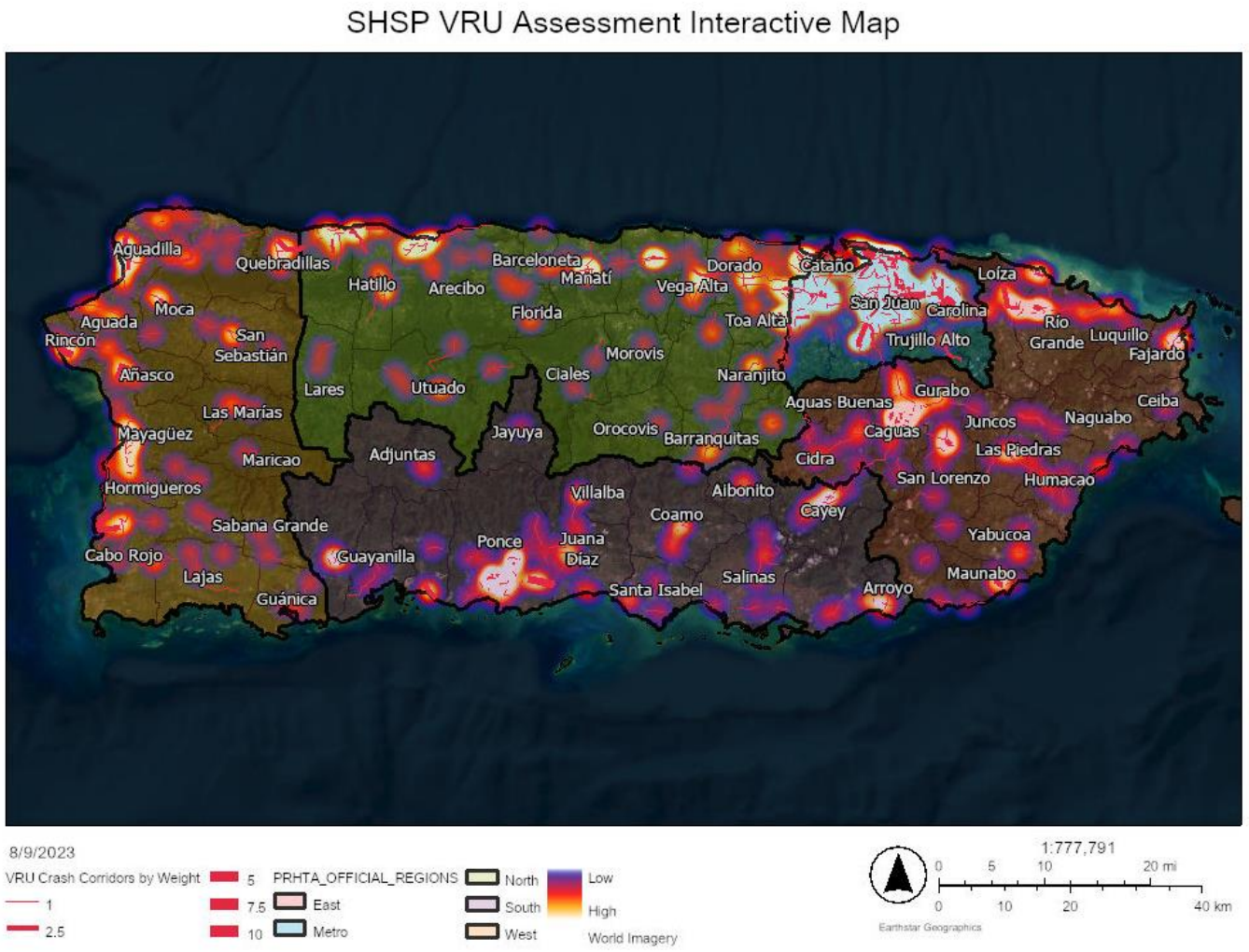
VRU Crash Percentage by Speed Limit



VRU Crashes and Transit Stops



VRU High-Risk Areas



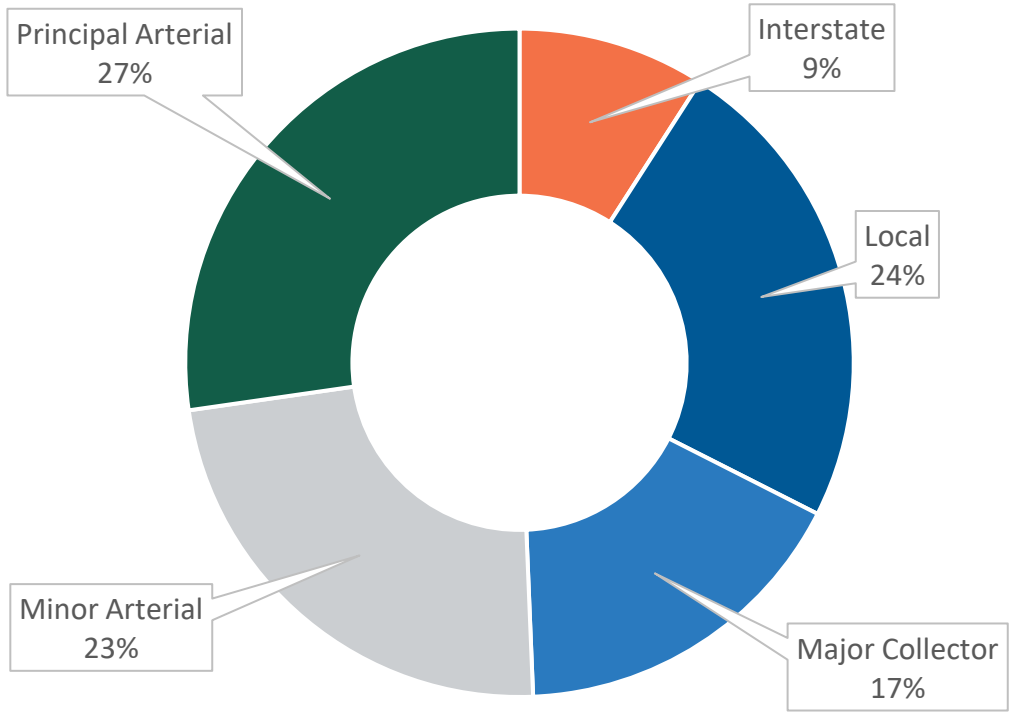
Areas

- By PRHTA Region
- Population
- Kilometers
- Hundred Million Vehicle Miles Travel

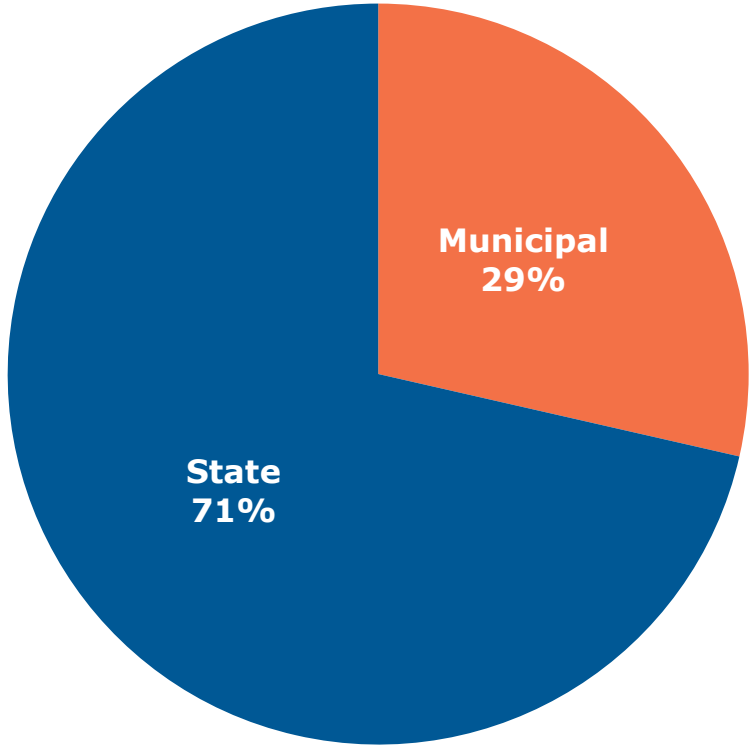
[SHSP VRU Assessment Interactive Map (arcgis.com)]

VRU North Region

PRHTA North Region Functional Classification

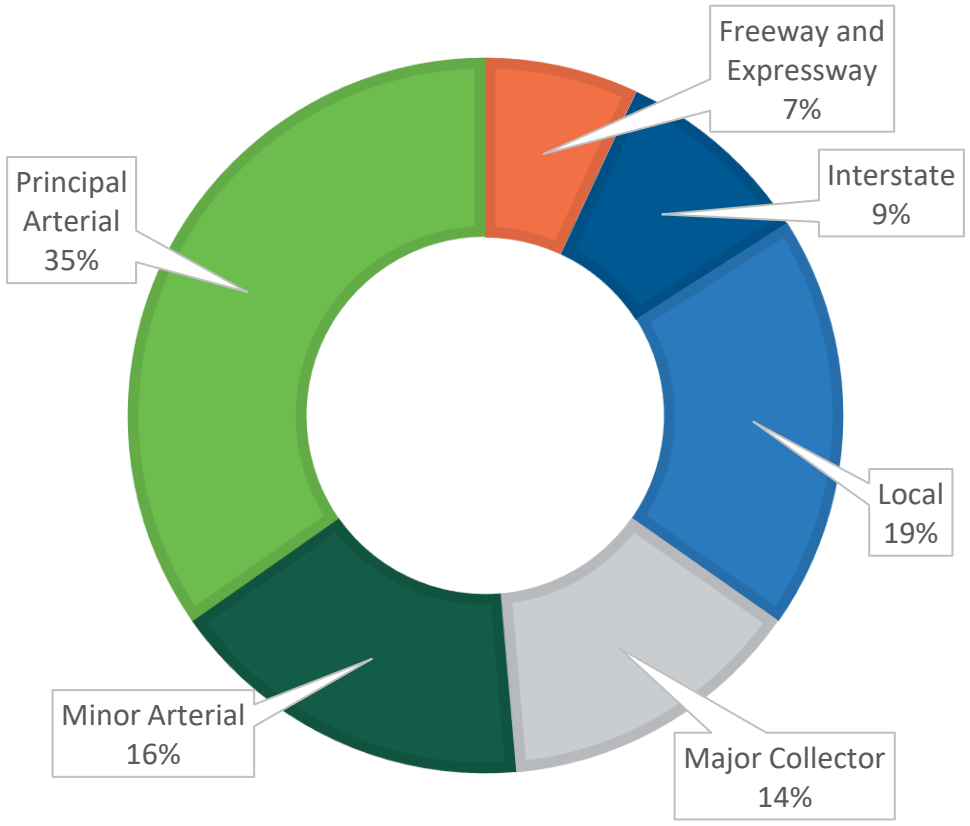


PRHTA North Region Jurisdiction

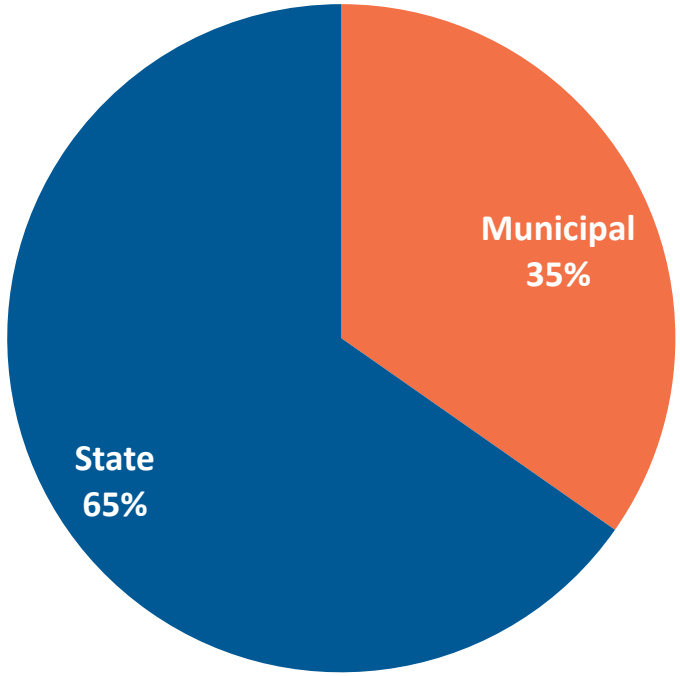


VRU Metro Region

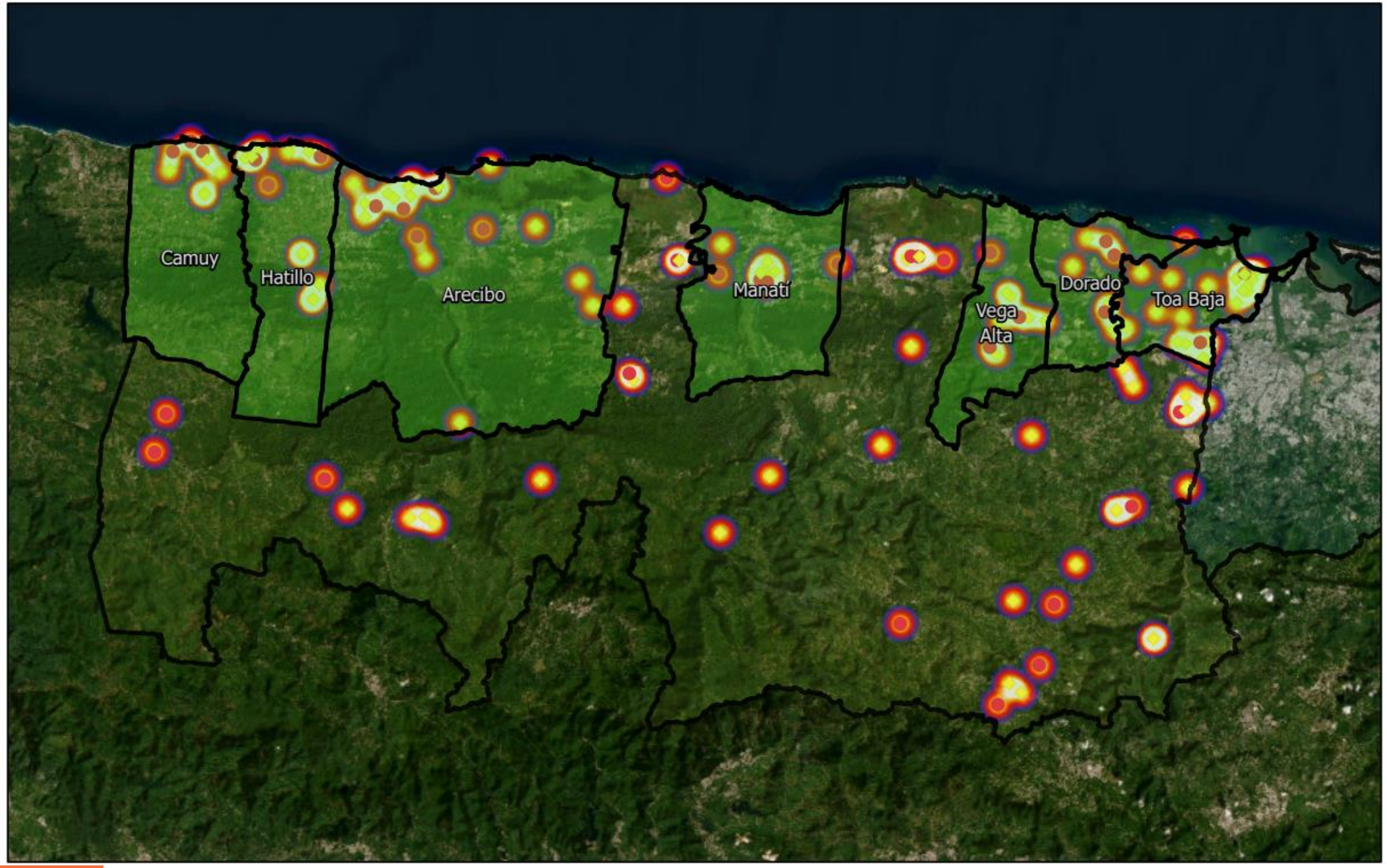
PRHTA METRO REGION FUNCTIONAL CLASSIFICATION



PRHTA Metro Region Jurisdiction



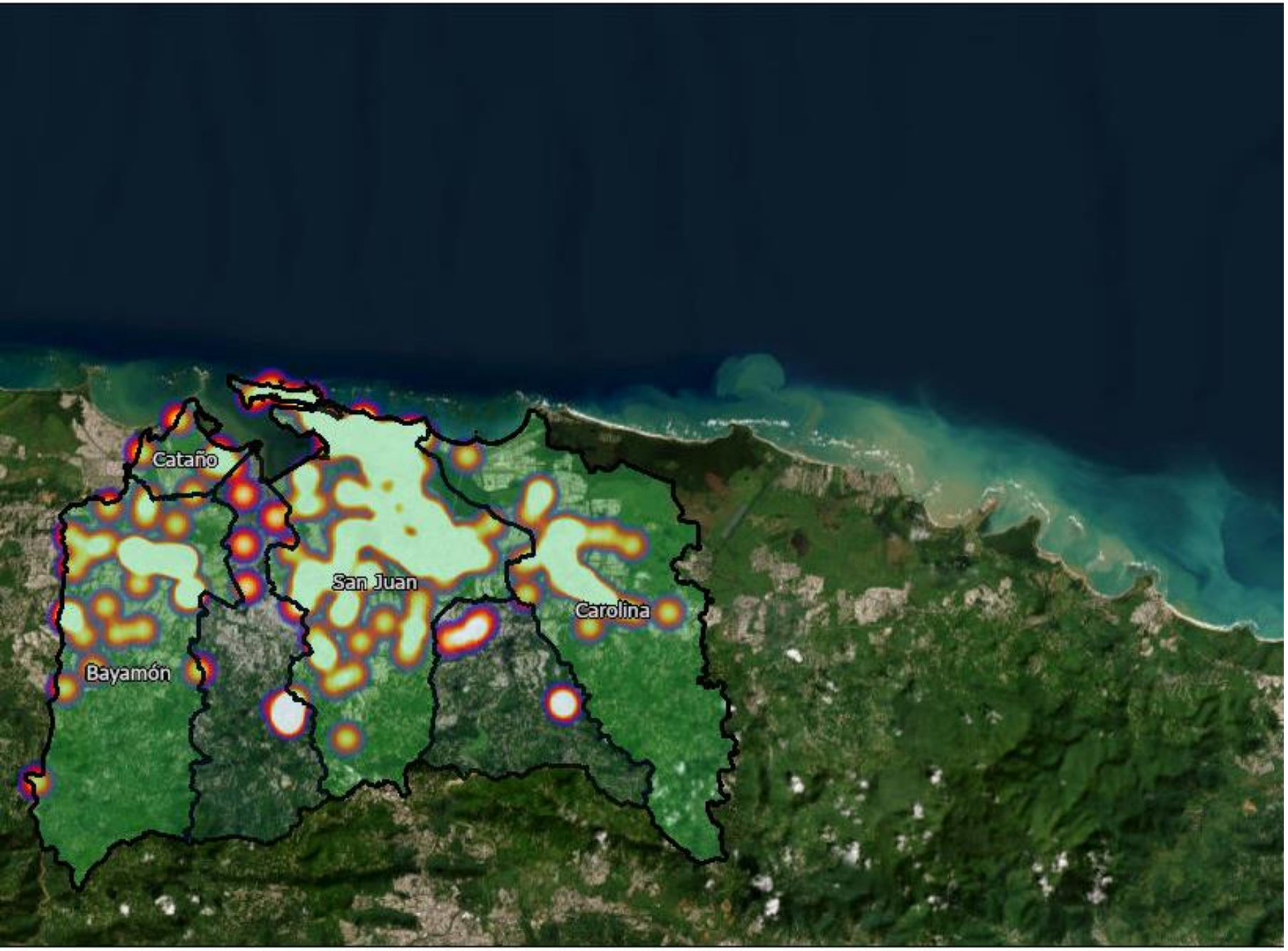
SHSP VRU Assessment Interactive Map



VRU North Region

SHSP VRU Assessment Interactive Map (arcgis.com)

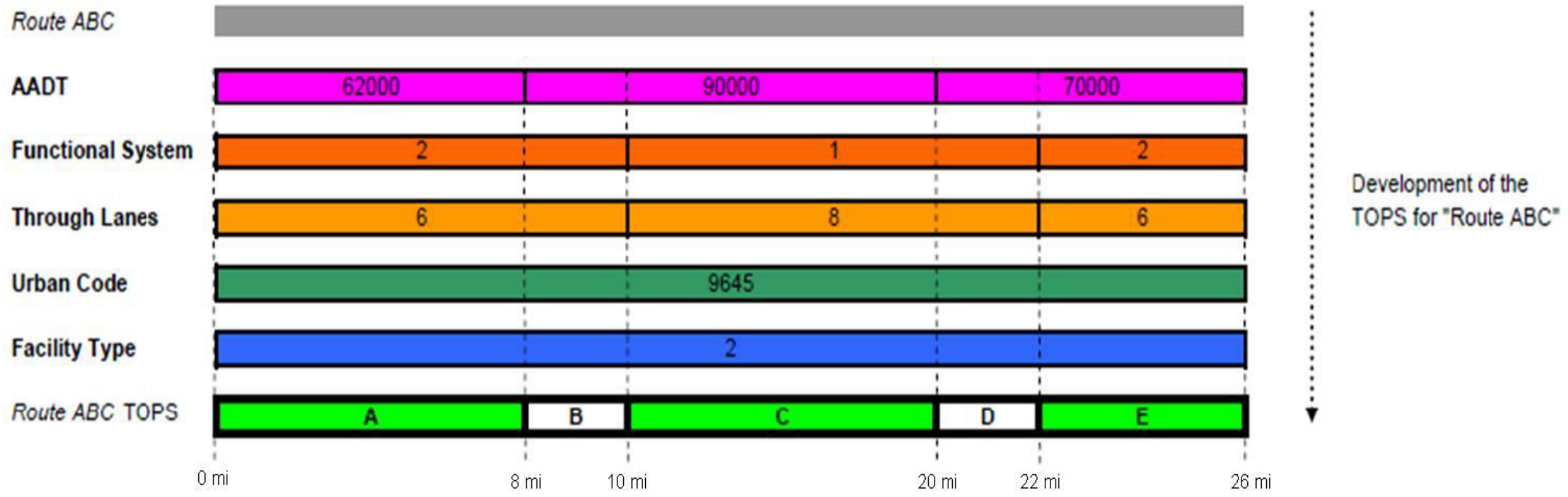
VRU Metro Region



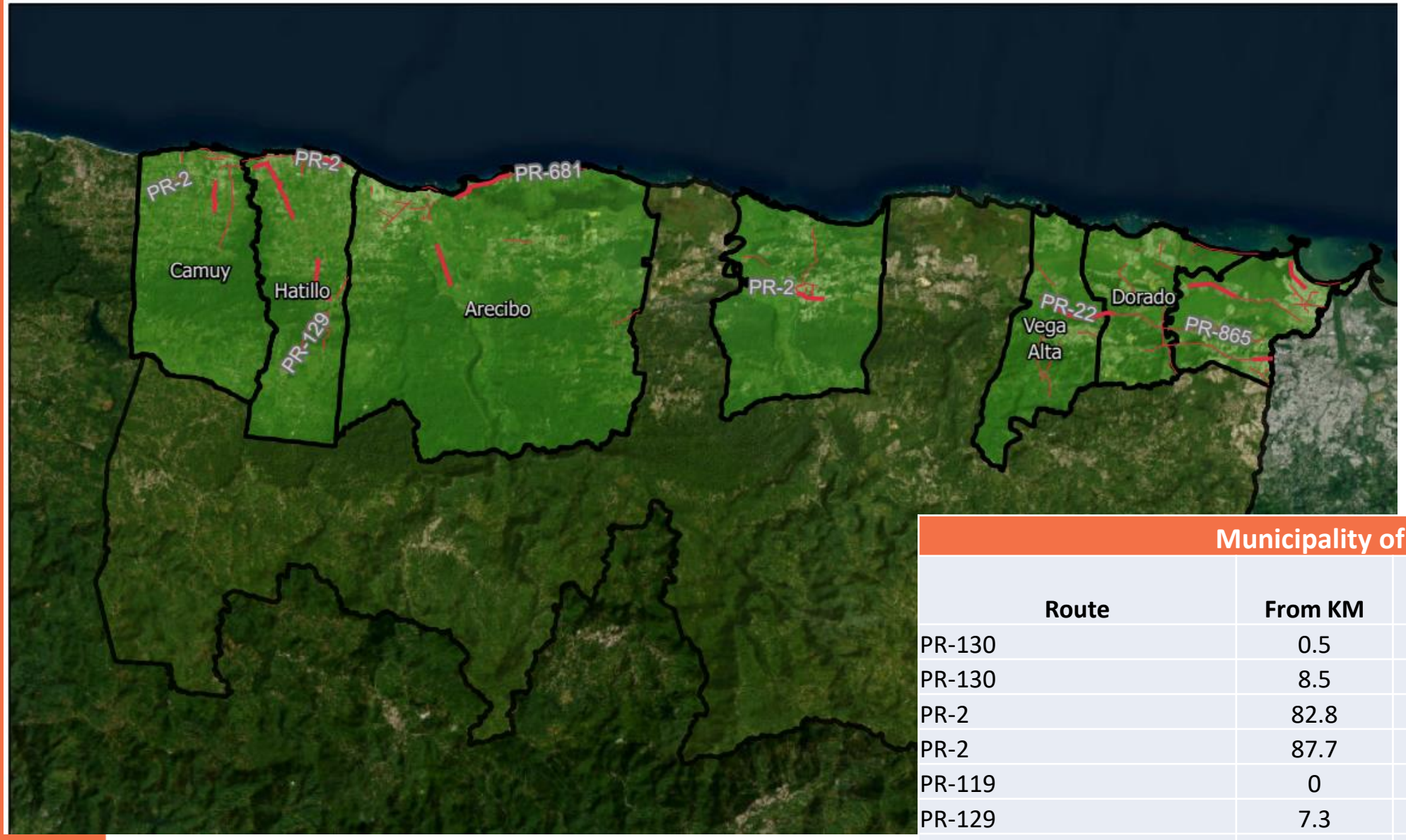
SHSP VRU Assessment Interactive Map (arcgis.com)

VRU Corridor Selection - HPMS

Figure 6.1 TOPS Development Process



SHSP VRU Assessment Interactive Map

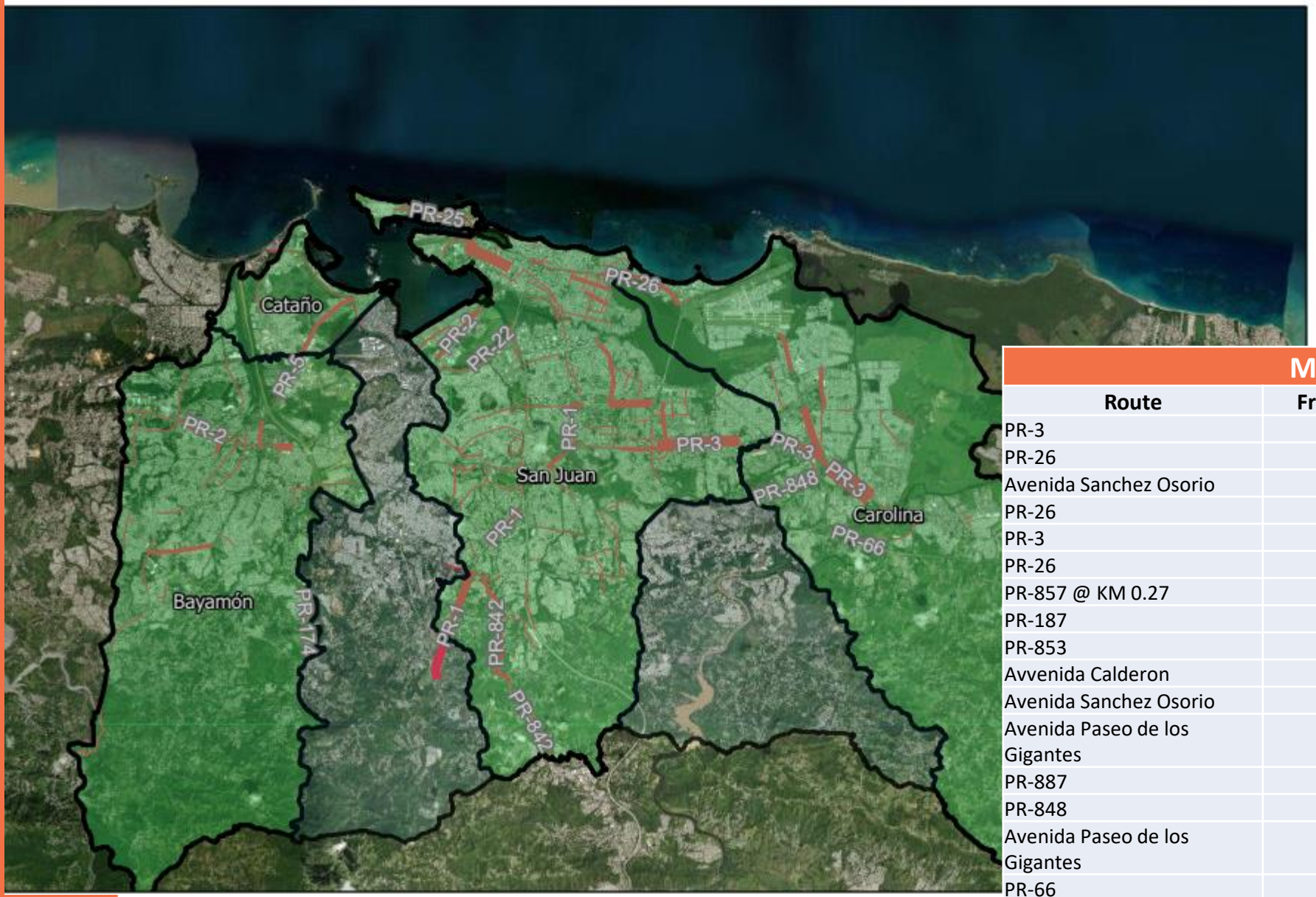


VRU North Region

[SHSP VRU Assessment Interactive Map (arcgis.com)]

Municipality of Hatillo					
Route	From KM	To Km	Length KM	Fatal	Severe
PR-130	0.5	4.85	4.35	2	
PR-130	8.5	11.8	3.30		2
PR-2	82.8	86.2	3.40	1	1
PR-2	87.7	88.8	1.10		2
PR-119	0	3	3.00		1
PR-129	7.3	9	1.70		1
PR-129	10	15.2	5.20		1
PR-134	14.2	17.5	3.21		1
Calle Mangotin			1.00		1

SHSP VRU Assessment Interactive Map



VRU Metro Region

[SHSP VRU Assessment Interactive Map (arcgis.com)]

Municipality of Carolina					
Route	**From KM**	**To Km**	**Length KM**	**Fatal**	**Severe**
PR-3	8.8	10.6	1.80	5	1
PR-26	13.6	15.5	1.90	3	
Avenida Sanchez Osorio	1.12	2.55	1.40	2	
PR-26	4.44	7.34	2.90	1	1
PR-3	6.6	8.8	2.20	2	
PR-26	11	12.35	1.35	1	1
PR-857 @ KM 0.27	0	0.6	0.60	1	
PR-187	0	0.95	0.95		1
PR-853	0	1.3	1.30		1
Avvenida Calderon	0	1.56	1.56		1
Avenida Sanchez Osorio	0	1.12	1.10	1	
Avenida Paseo de los Gigantes	0.96	1.68	0.53	1	
PR-887	1.2	1.8	0.60		1
PR-848	2.3	4.7	2.38		1
Avenida Paseo de los Gigantes	2.98	3.88	0.93		1
PR-66	3.1	5	1.90	1	
PR-3	10.9	11.8	0.90		1
Avenida El Comandante			1.70	1	
Plaza Escorial/Entrada Sams			0.64	1	

4

VRU Assessment: Strategies, Implementation Examples and Potential Projects

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Safe System Approach

SAFE ROADS: AVOIDING CRASHES

Elements of the Safe System Approach

Avoiding crashes involves:

Separating users in space

Separating users in time

Increasing attentiveness and awareness

Source for all images: Fehr & Peers

Safe System Approach

SAFE ROADS: CRASH KINETIC ENERGY

Elements of the Safe System Approach

Managing crash kinetic energy involves:

Source: Fehr & Peers

Managing speed


Source: City of Carmel, IN

Managing crash angles


Source: FHWA

Managing crash energy distribution

Safety Countermeasures

Pedestrian/Bicyclist

Bicycle Lanes

Crosswalk Visibility Enhancements

Leading Pedestrian Interval

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

Pedestrian Hybrid Beacons

Rectangular Rapid Flashing Beacons (RRFB)

Road Diets (Roadway Configuration)

Walkways

References: Proven Safety Countermeasures | FHWA (dot.gov)
Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org)

Safety Countermeasures

Pedestrian/Bicyclist

Bicycle Lanes

Cycle Track

Pavement Marking

Raised Island

Traffic Delineator

Pavement Marking

Additional reference: Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org)

Safety Countermeasures

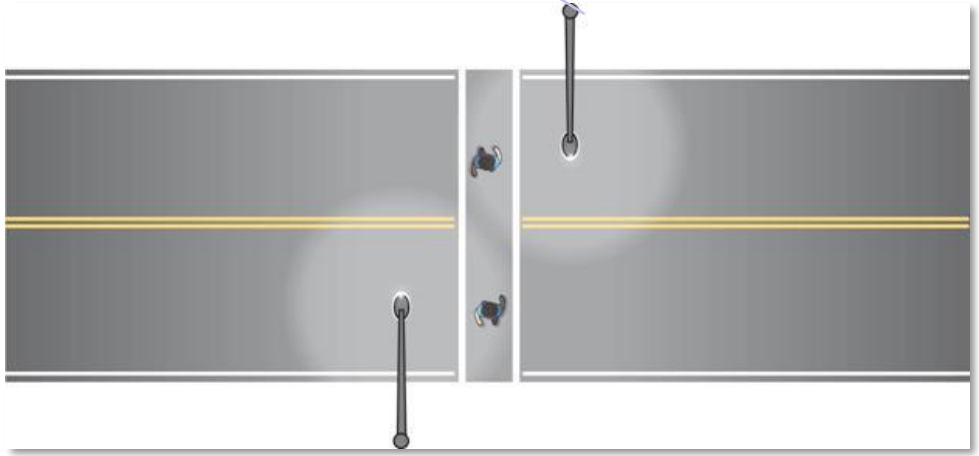
Crosswalk Visibility Enhancements

Pavement Marking

Curb Extension

Limit Parking at Intersections

Pedestrian Lighting



Signage “Stop here for pedestrians”

Safety Countermeasures

Leading Pedestrian Interval

Traffic Signals APS and Peds Signals

Safety Countermeasures

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

Safety Countermeasures

Pedestrian Hybrid Beacons

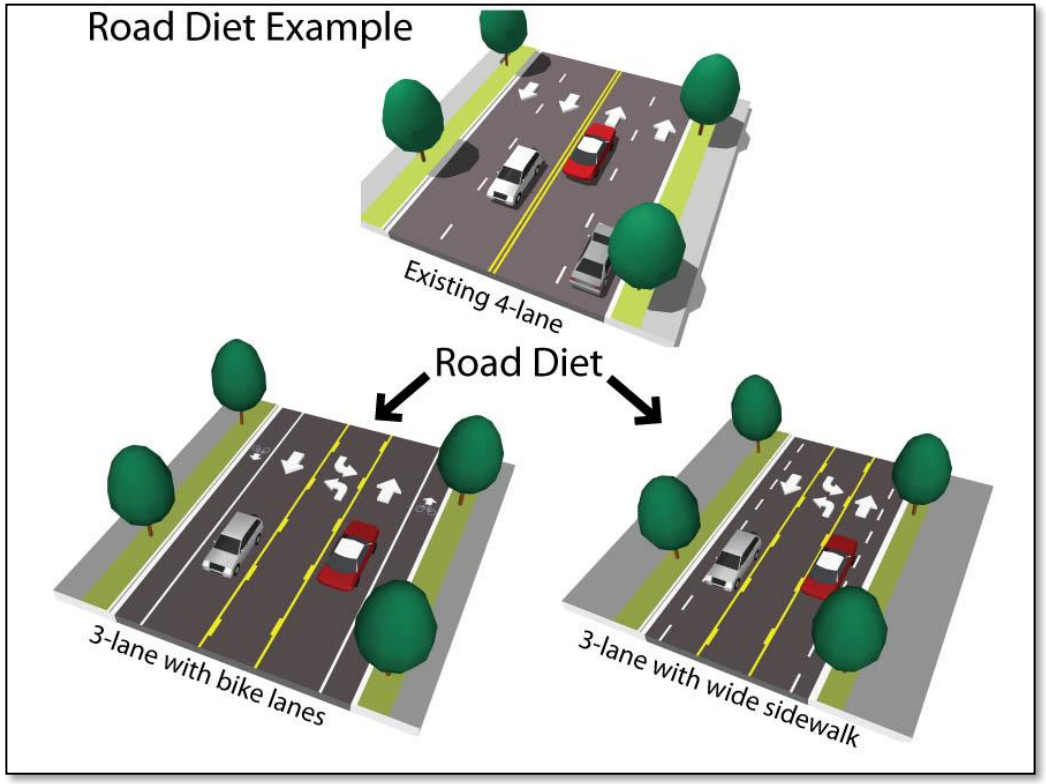
Rectangular Rapid Flashing Beacons (RRFB)

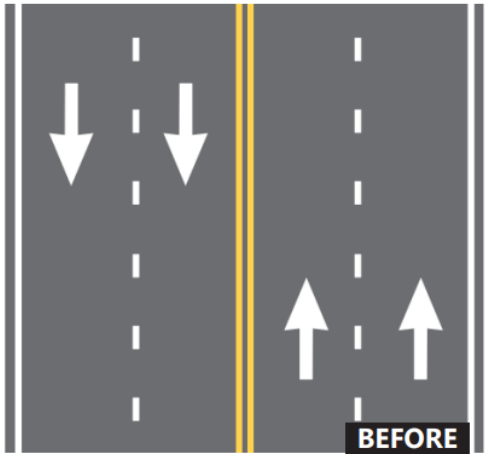
PHB

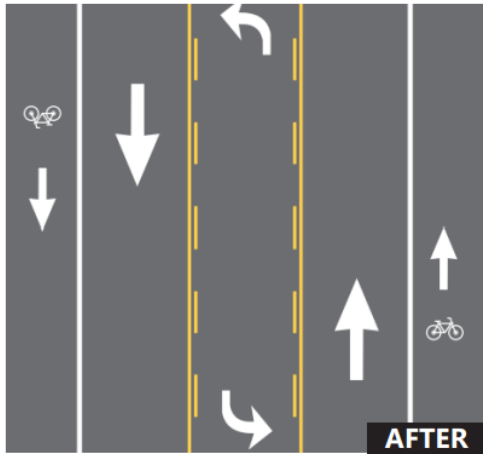
RRFB

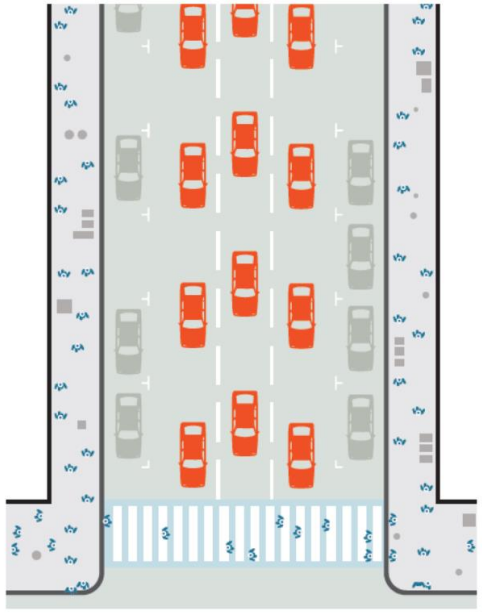
Safety Countermeasures

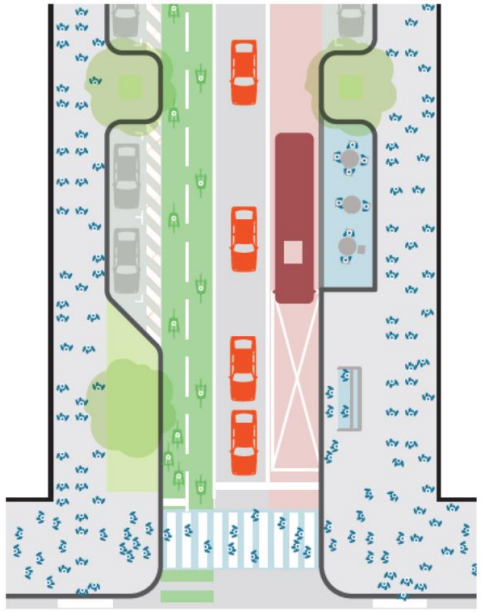
[Road Diets (Roadway Configuration)]







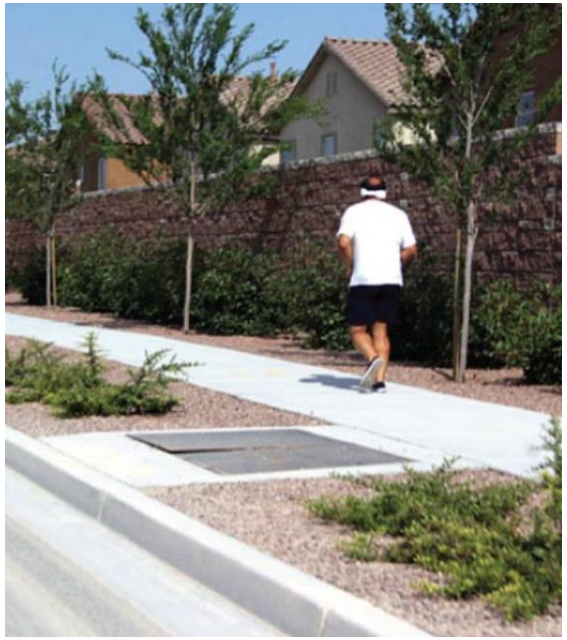


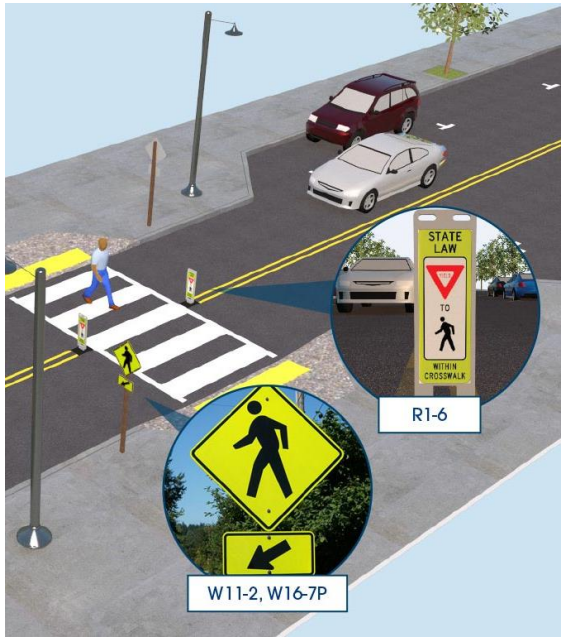


Safety Countermeasures

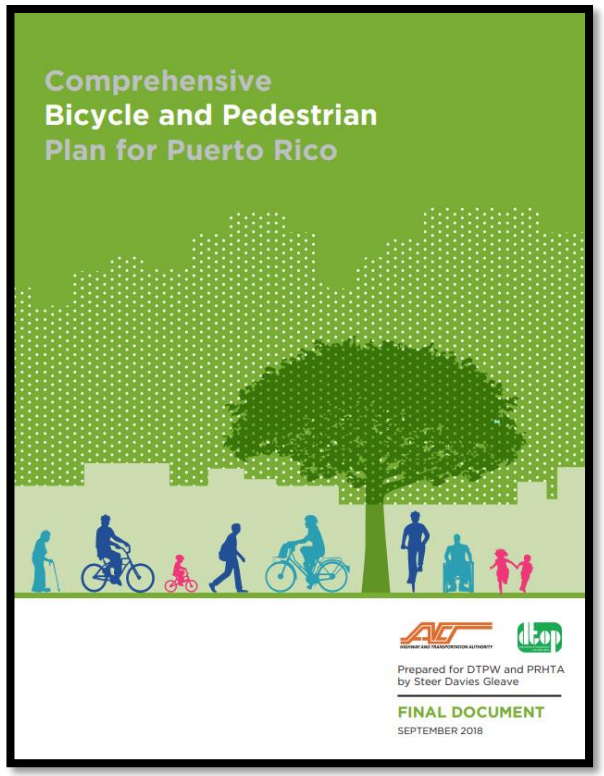
Walkways

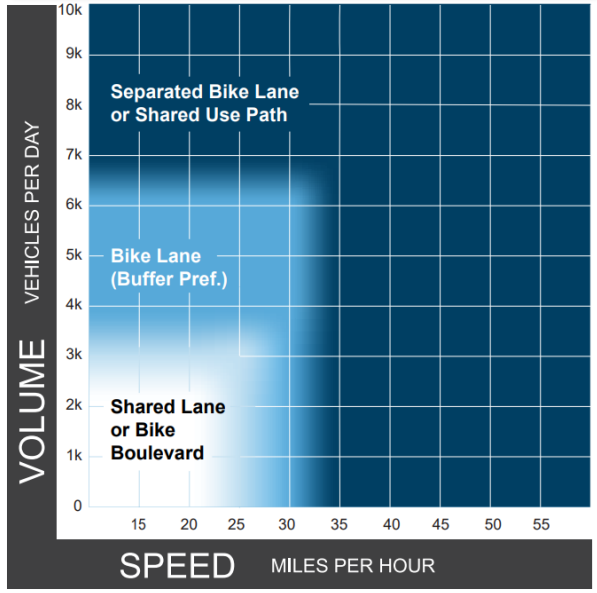
Pedestrian Crossings & Walkways



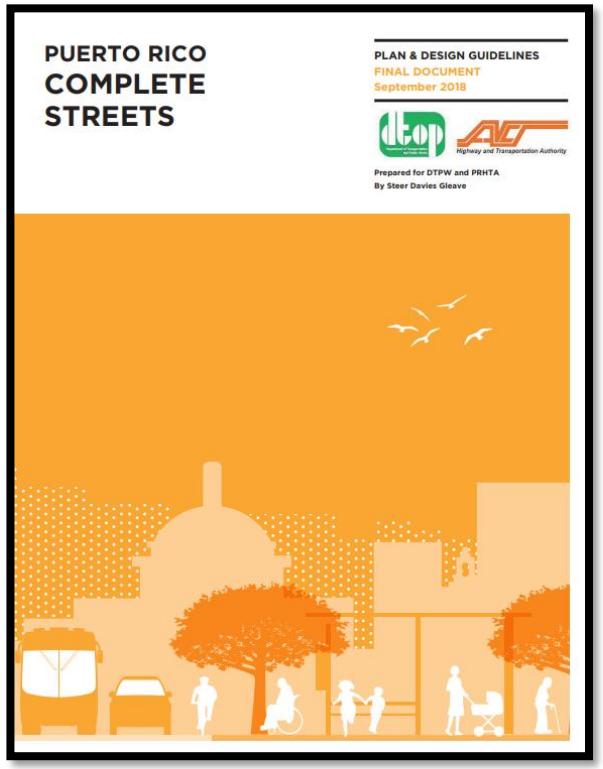


VRU Assessment Strategies





Source: FHWA bikeway selection guide



Source: PR Complete Streets Plan & Design Guidelines

Complete Street Vision

Successful urban roads should provide reliable major routes through cities with vibrant, safe, secure and well maintained urban environments, and make shops and services easily accessible. Urban Streets Complete Street vision includes:

- Maintain automobile priority but improve provisions for other modes;
- Reduce width of travel lanes where appropriate;
- Comfortable and sheltered waiting areas for transit users;
- Comfortable sidewalk width of 1.5 - 2.1 meters /5-7 feet;
- Crossings to match wider pedestrian network, including at mid-block where appropriate;
- Buffered, separated or off-road bikeways (Class I, II or IV – for Class definitons see Bikeways, Section 3 Part B);
- High quality landscape character;
- Provide shade trees along sidewalks and bikeways; and
- Provide street lighting that relates to pedestrians and cyclists.

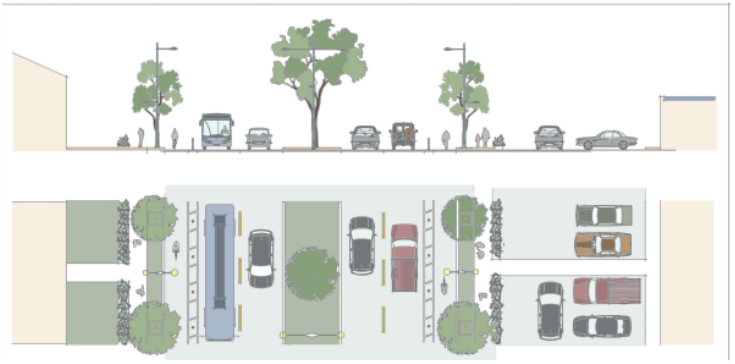
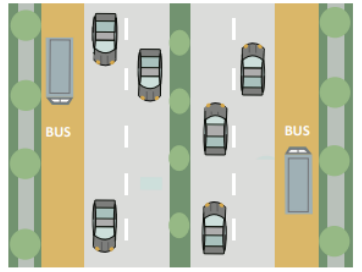
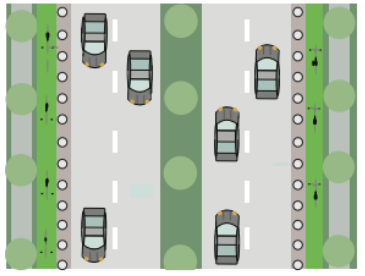


Figure 2.5: Urban Road Complete Street Vision

Source: SDG



Transit priority



Non-motorized priority

VRU Assessment Strategies

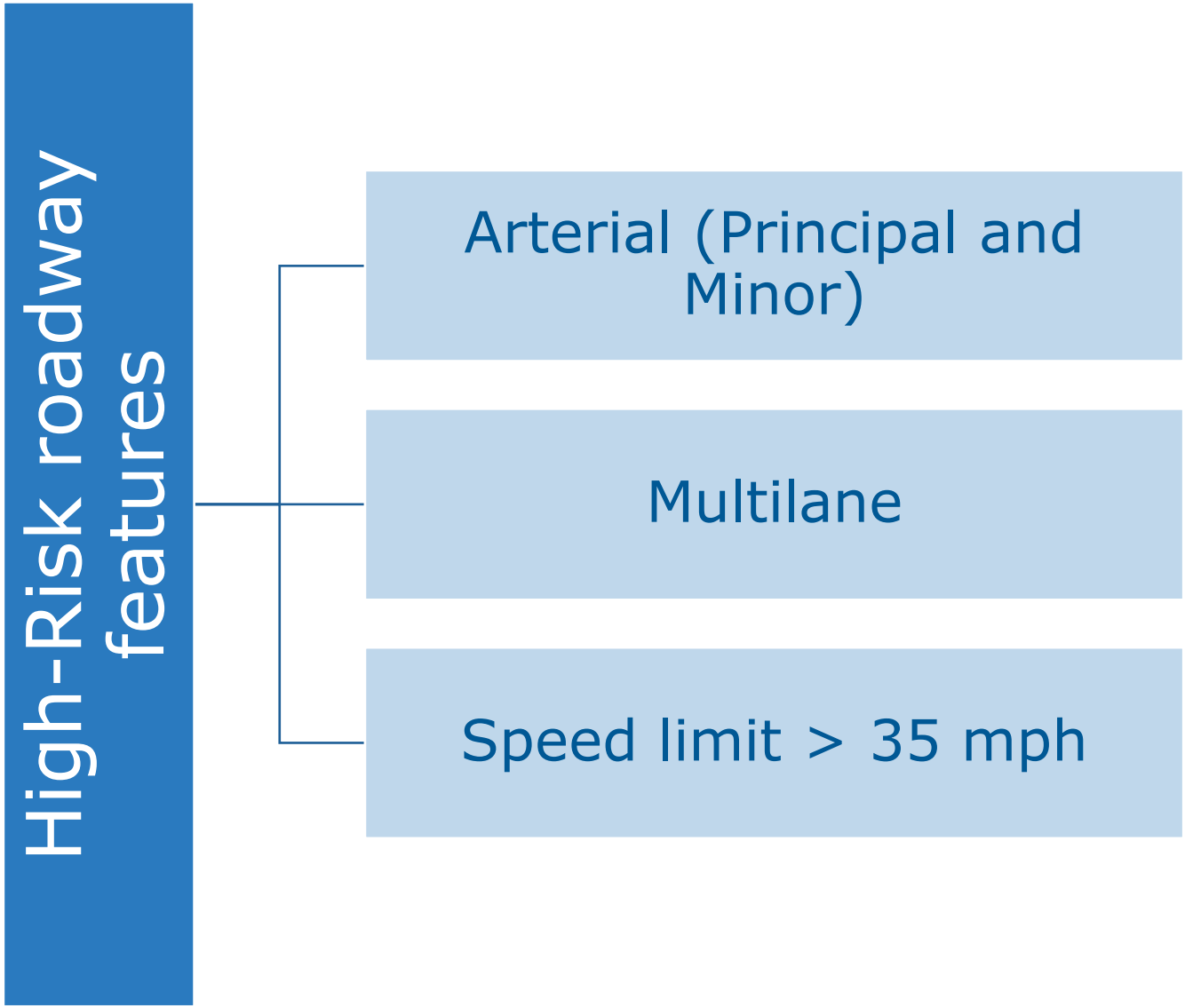
Project Development

Bicycle and pedestrian considerations a full component of Puerto Rico project planning and development.

- **Pedestrian and Bicycle data** consideration
- Include ped and bike **performance measures** as part of project selection processes
- Advanced implementation plan from pedestrian and **bicycle plan and complete streets** guidelines
- **Design** directives to include ped and bike criteria and potential measures
- Include **ped and bike contract** language for all design and construction projects (**RFPs**)
- Include ped and bike needs in traffic control plans (**MOT & detours**)

VRU Assessment Strategies

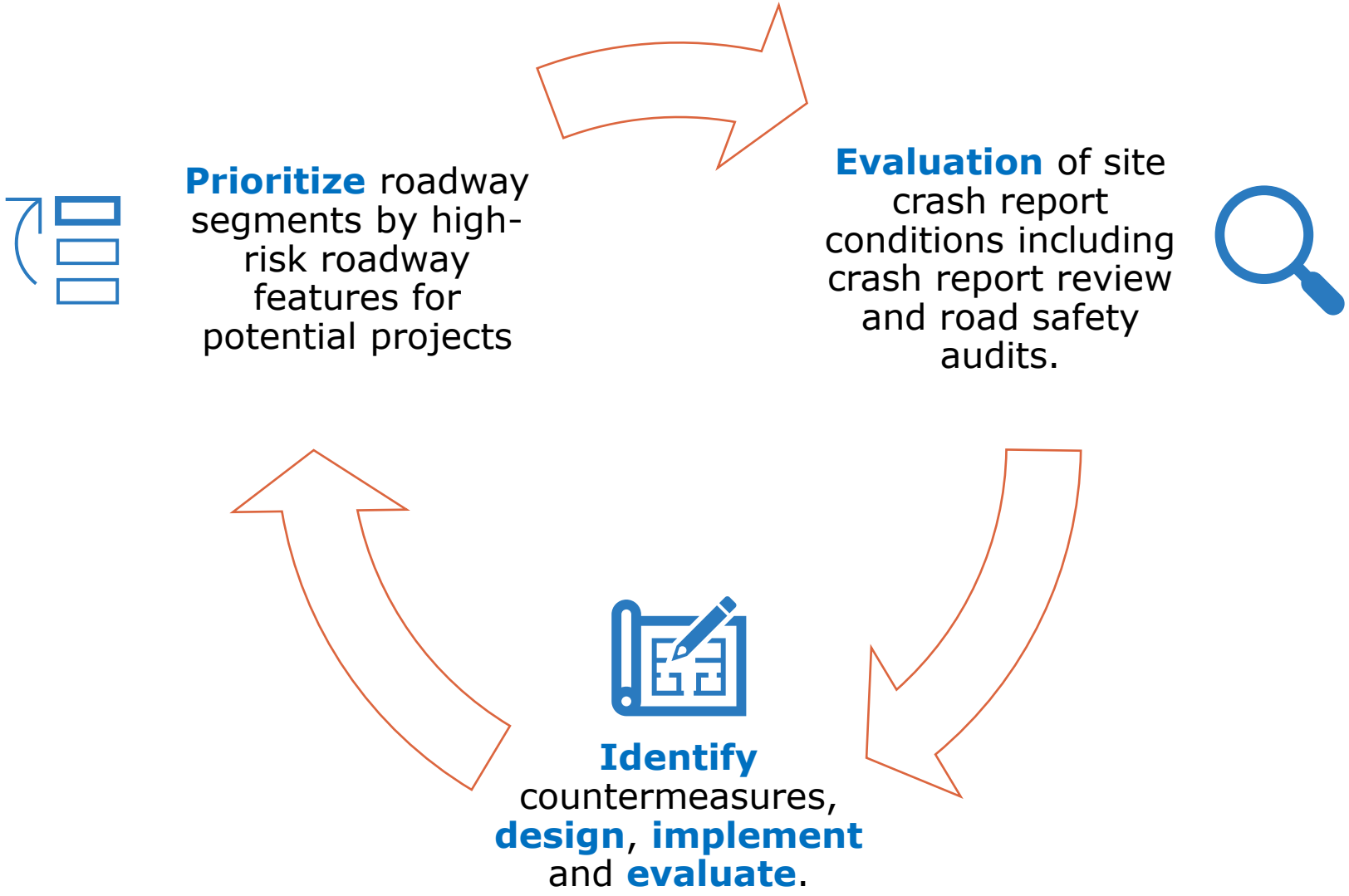
Systemic approach



Intersection – (i.e., pedestrian push buttons and proper time to cross, ADA ramps, sidewalks)

Segments – Road diets, speed management such as traffic calming, roundabouts, mid block crossings, sidewalks repairs, protected bike lanes, shared use path, and pedestrian and bikes signage

VRU Potential Projects



The Safe System Approach

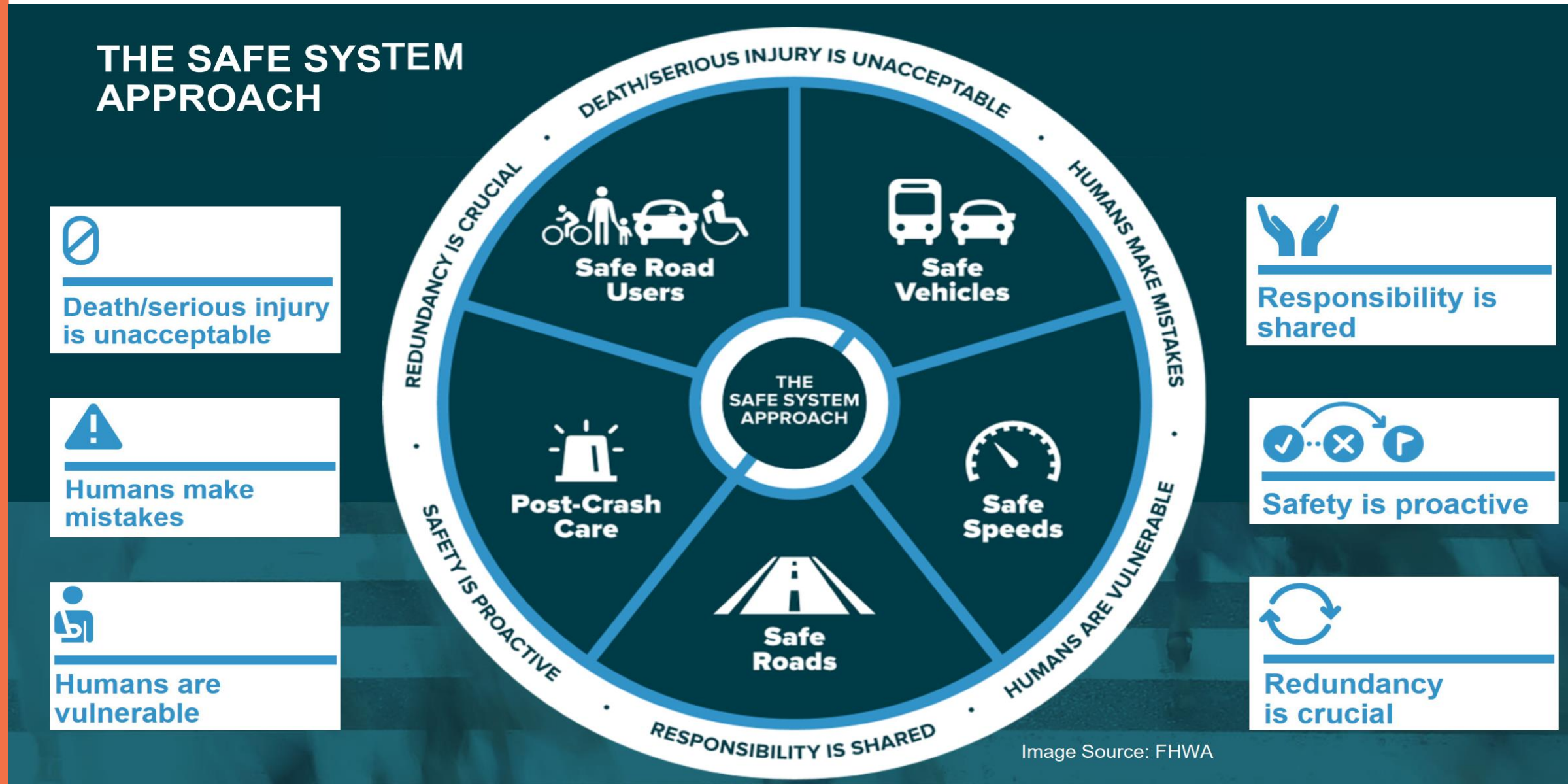


Image Source: FHWA

Responsibility is Shared

15 MINUTES BREAK

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Encuesta - Grupos consultivos en seguridad vial (Región Norte y Metro)

Thank You!

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

PUERTO RICO
HIGHWAYS &
TRANSPORTATION
AUTHORITY

New SHSP 2024-2028 & Vulnerable Road Users Assessment

Meeting South Region
September 8, 2023

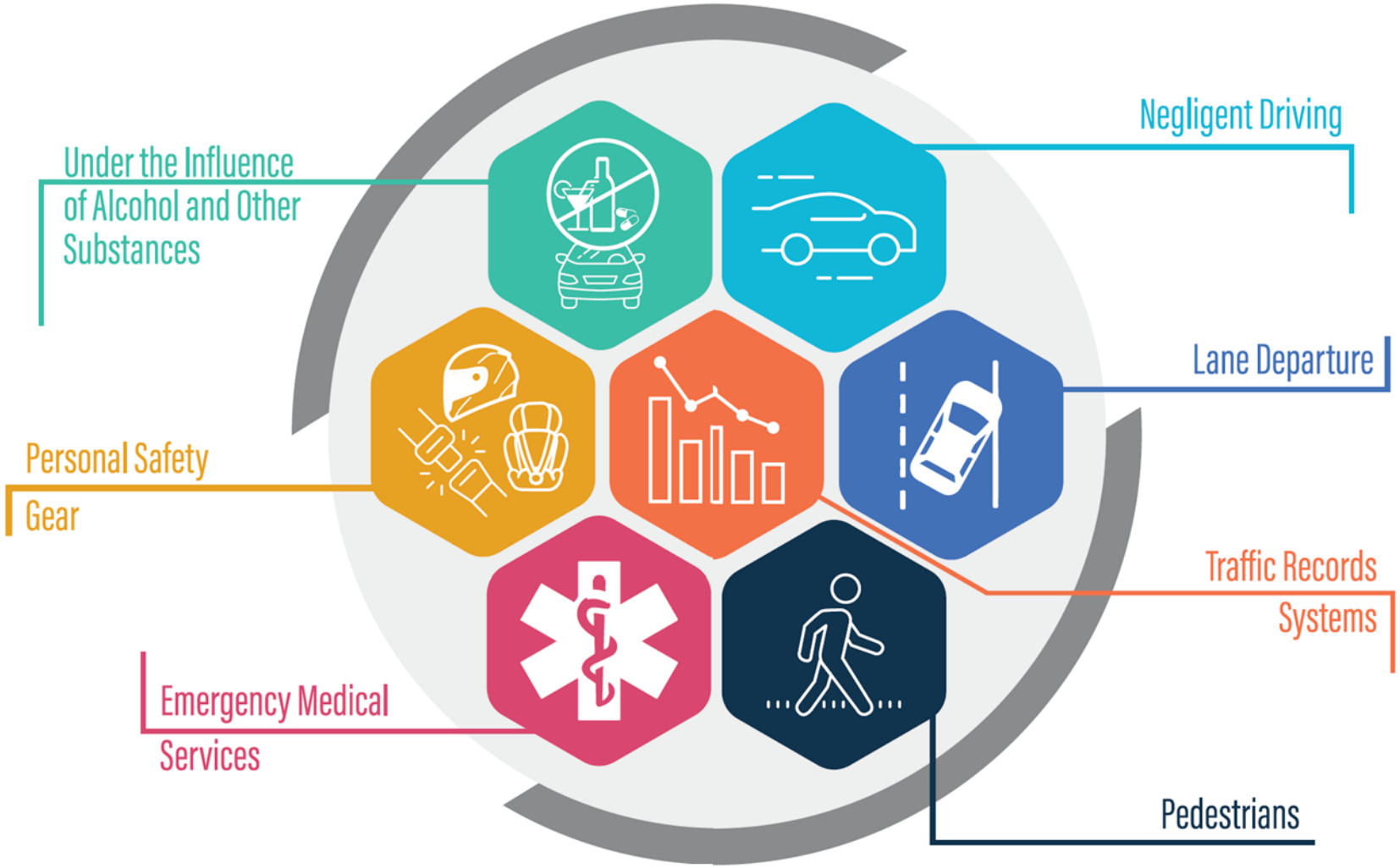
SHSP
STRATEGIC HIGHWAY SAFETY PLAN

1

SHSP 2024-2028
Overview

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Current 2019-2023 Emphasis Areas



New Emphasis Areas (2024-2028)

High Priority Areas

- Vulnerable Road Users
- Speed Management
- Impaired Driving
- Occupant Protection
- Lane Departure
- Communication Integration

Focus Areas

- Traffic Records Systems
- Motorcyclists
- Aging Drivers (65+)
- Legislations & Procedures

The Safe System Approach

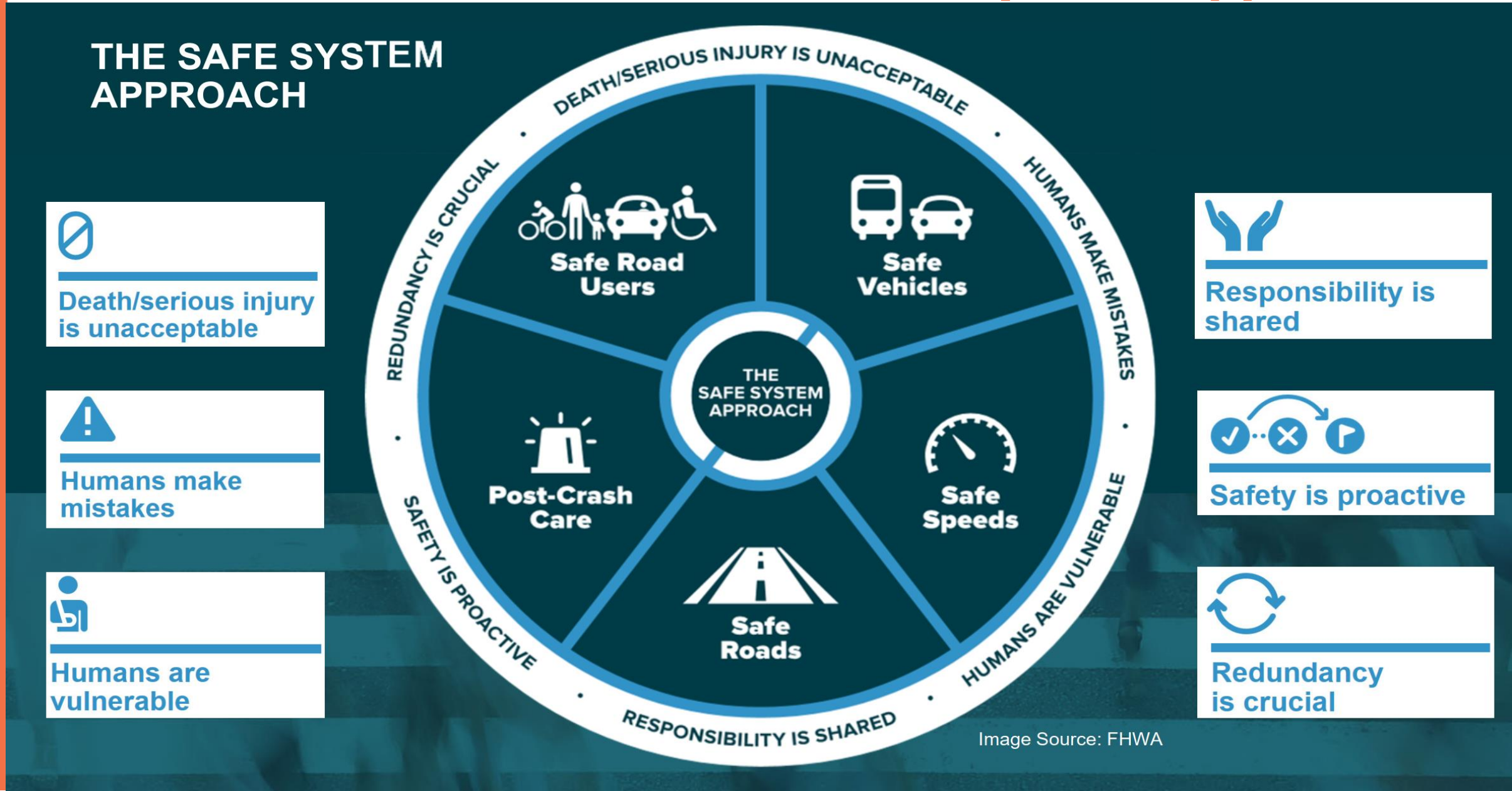
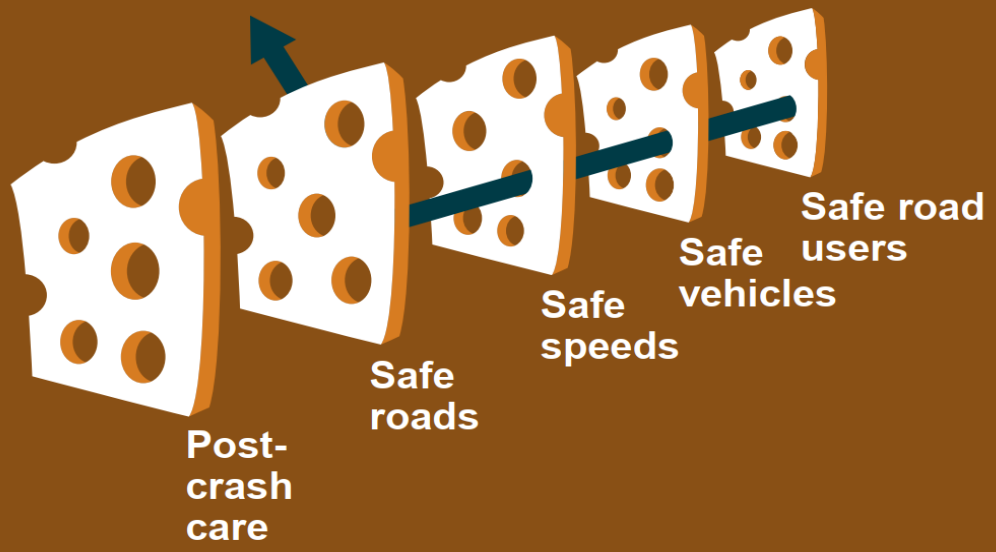


Image Source: FHWA

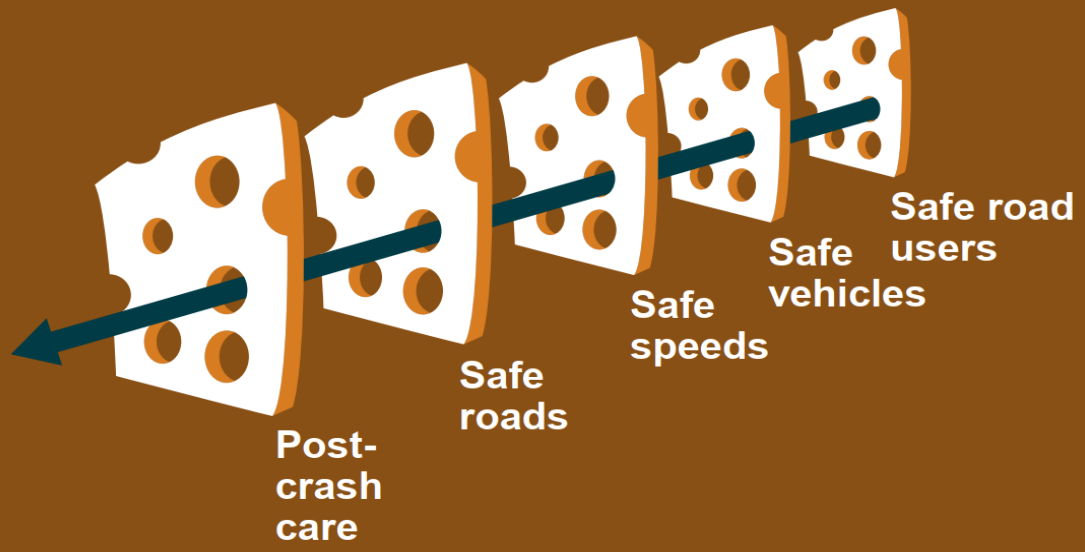
The Safe System Approach (Cont.)

THE 5 SAFE SYSTEM ELEMENTS CREATE REDUNDANCY

The "Swiss Cheese Model" of redundancy creates layers of protection



Death and serious injuries only happen when all layers fail



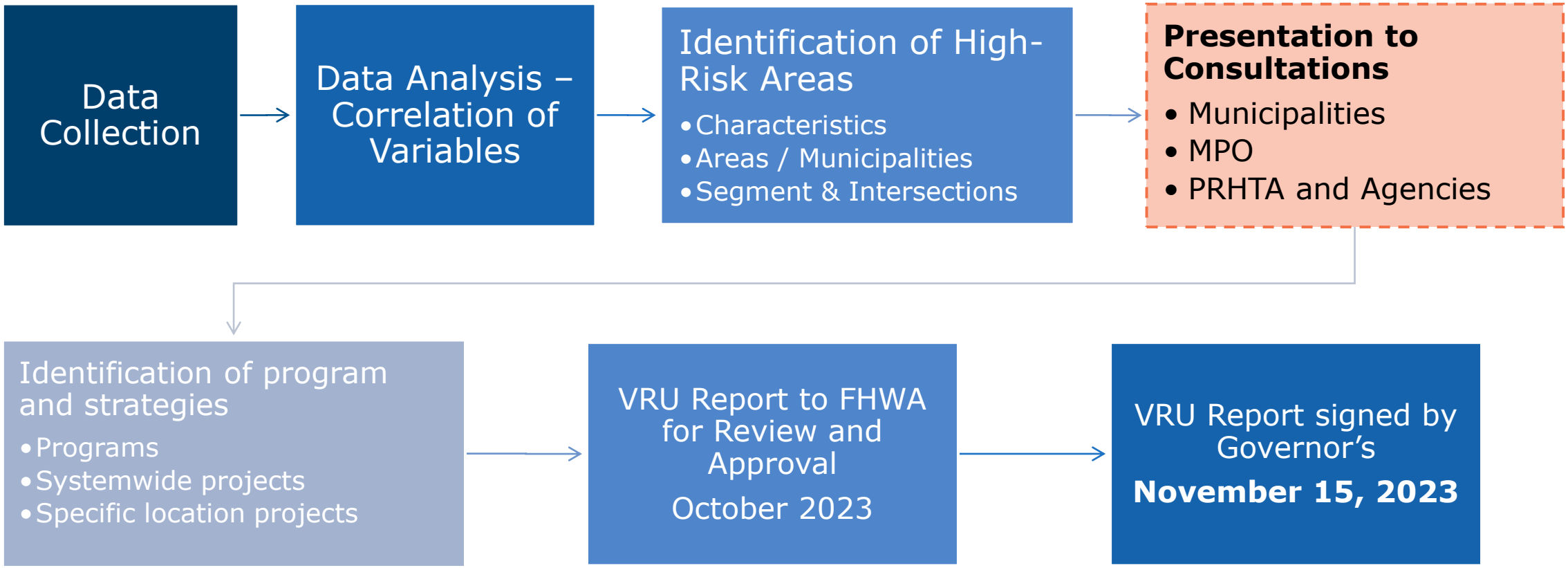
Source: FHWA

2

VRU Assessment:
Development Process

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Development Process



PR VRU Assessment Data

Data Base

Crash Data (Observatorio de Seguridad Vial OSV)

- 2019 to 2022
- Fatal and Severe Injury
- Pedestrian and Bikes
- Age of Victim
- Time of Day
- Month
- Location
- Intersection vs Non intersection

Highway Performance Monitoring System (HPMS)

- Functional Classification
- Speed
- Annual Average Daily Traffic (AADT)
- Number of Lanes
- Kilometers of road by area

PR VRU Assessment Data (Cont.)

Data Base		
	Geographic Area 	Urban vs Rural
		PRHTA Regional Areas
		DTPW Areas
		Municipalities
	Transit 	Bus routes (AMA) and stop locations
		Transit route (TU) and stop locations
	Census 	Population
		Ethnicity and Race
		Income
		Zero Car Households
		Disability

3

VRU Assessment:
Preliminary Results

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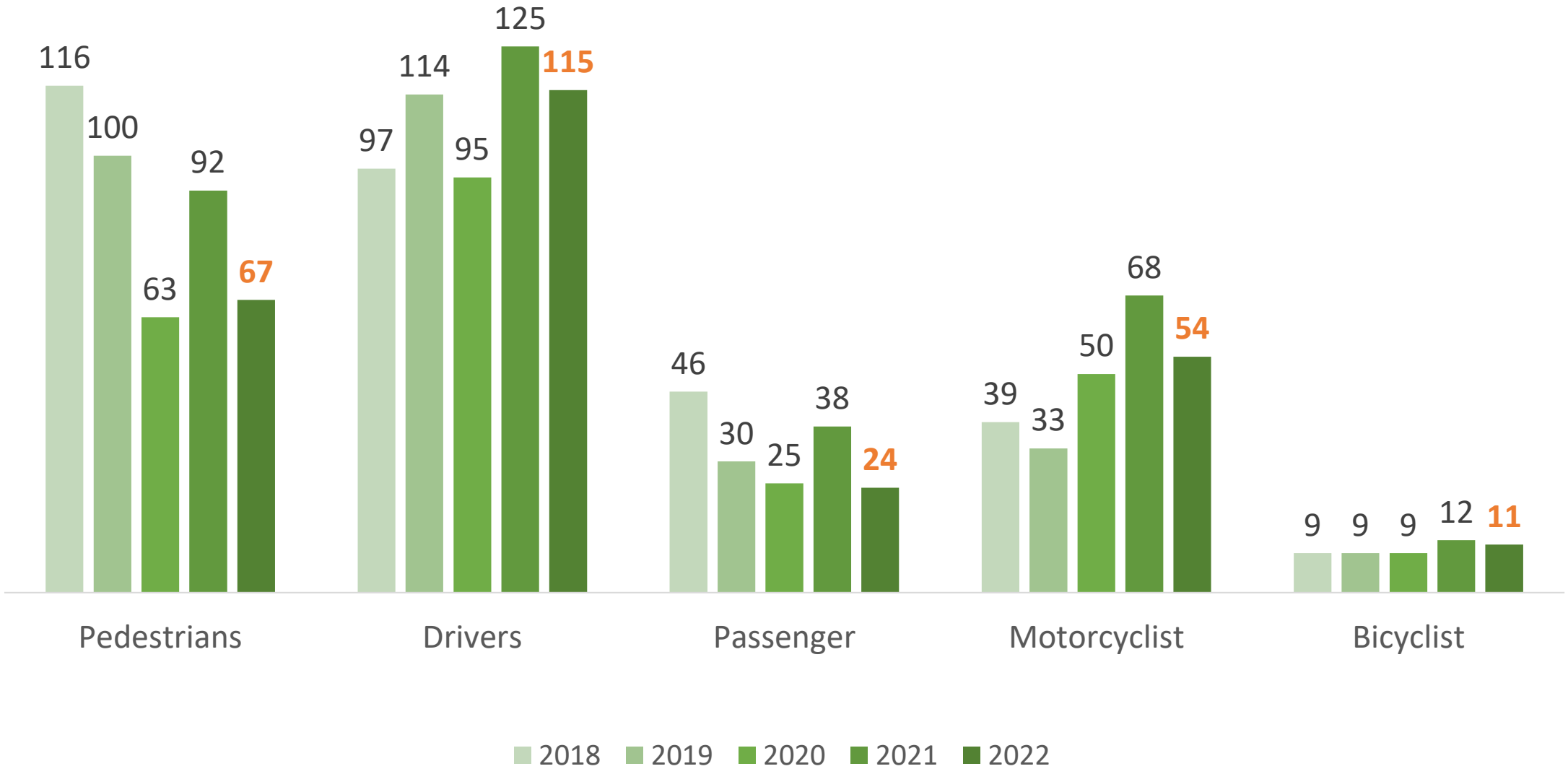
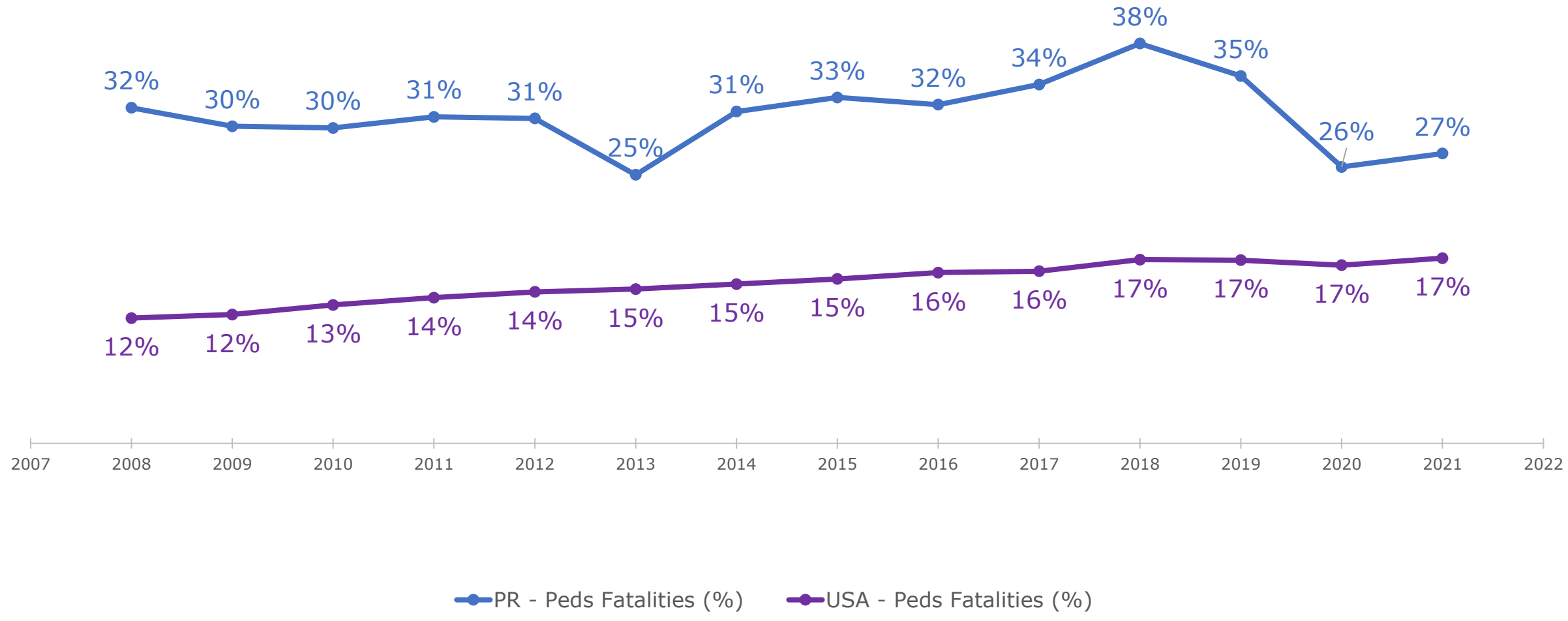
STRATEGIC HIGHWAY SAFETY PLAN

PR Fatalities by Users



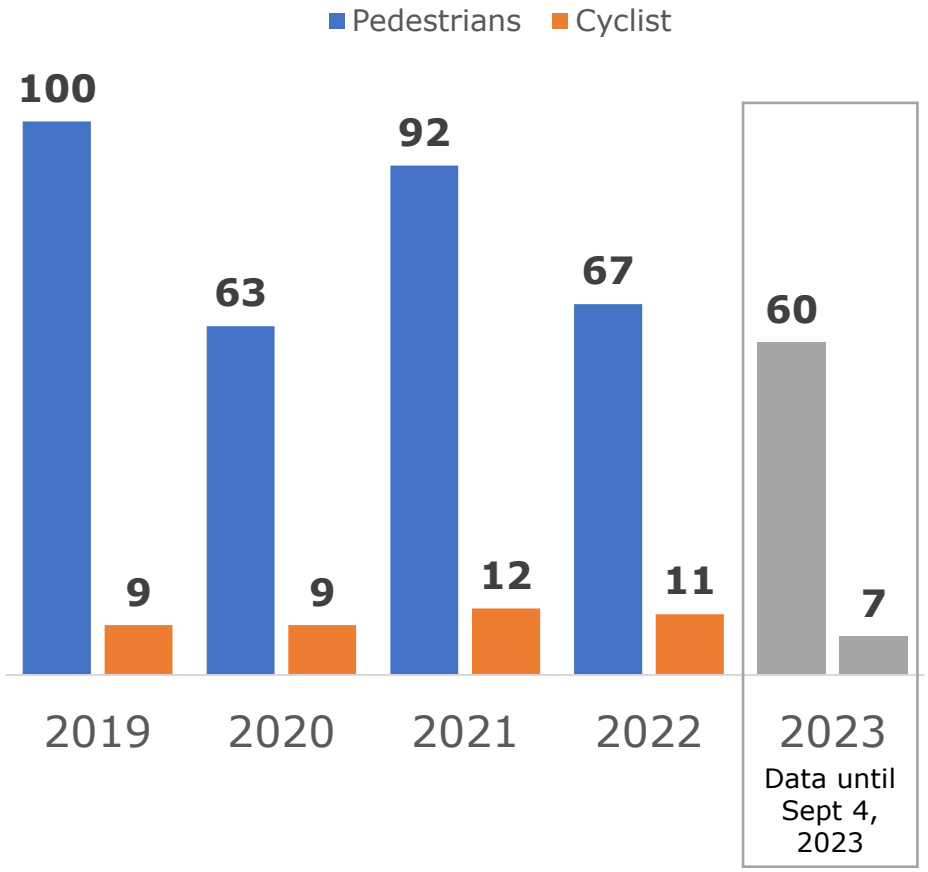
Pedestrian Fatality Percent (PR vs US)



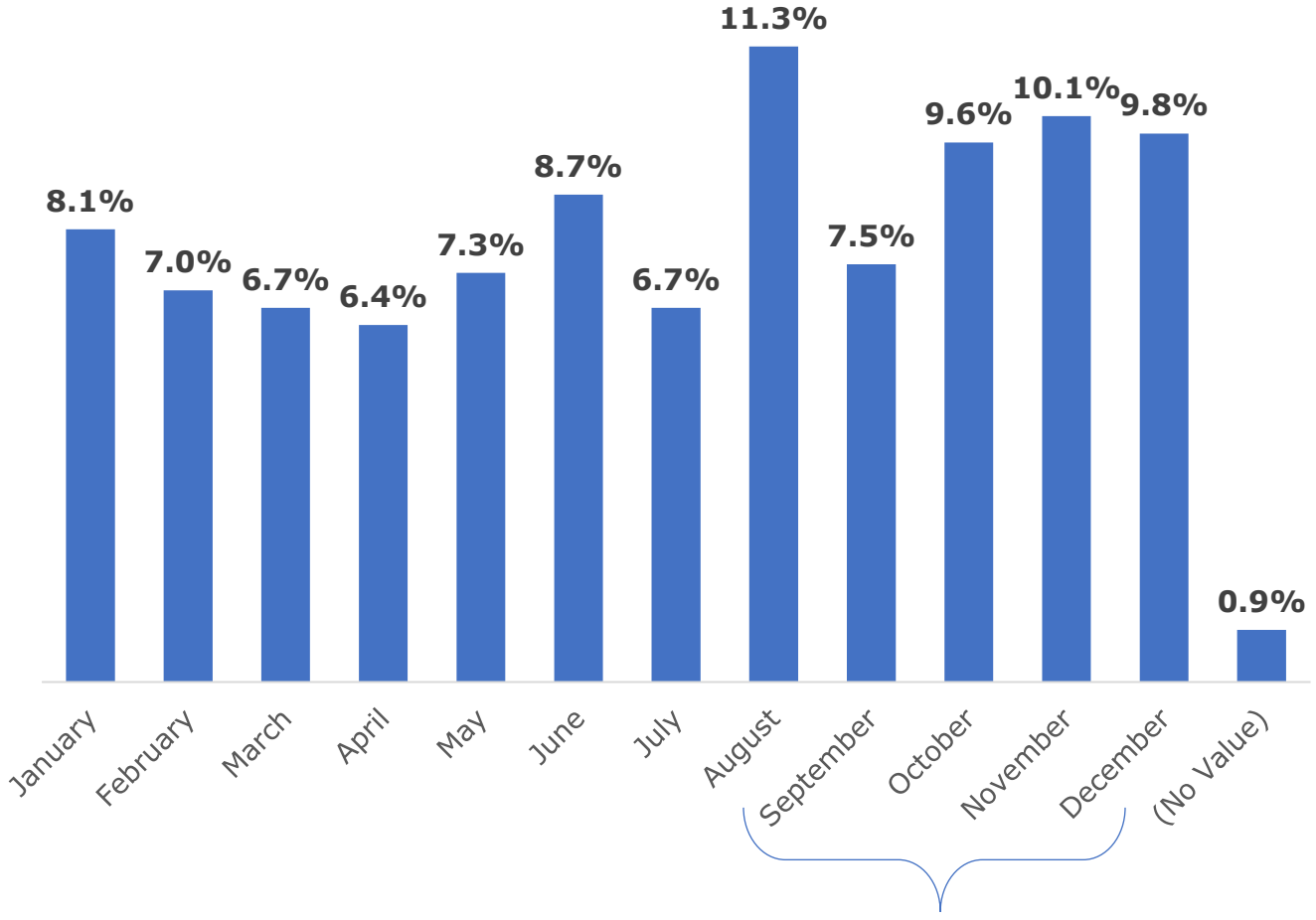
PR VRU Data Results

Fatal & Severe

VRU Fatalities by Year



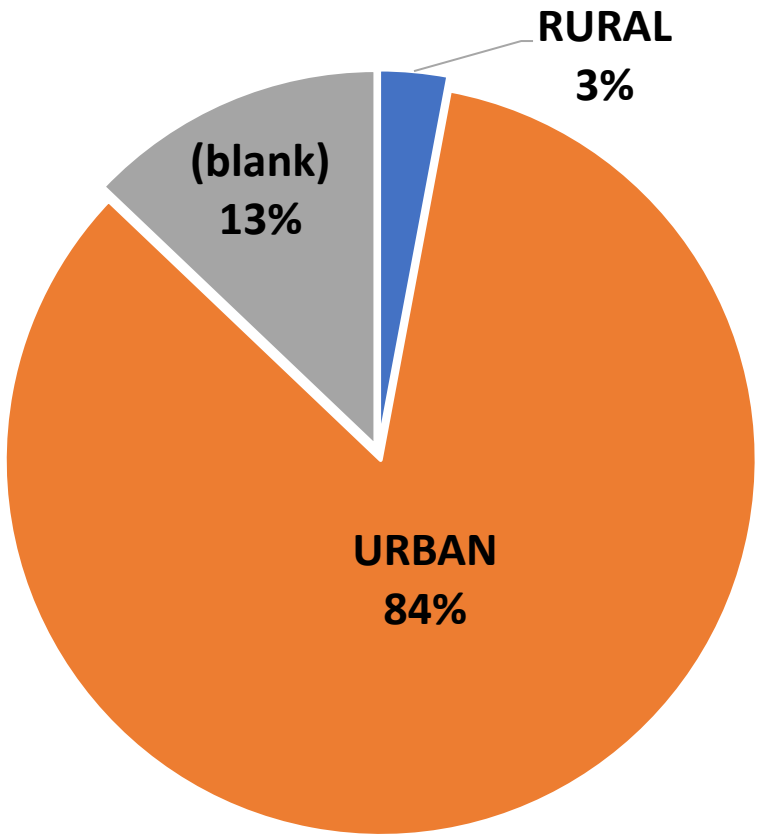
VRU Crash Data by Month



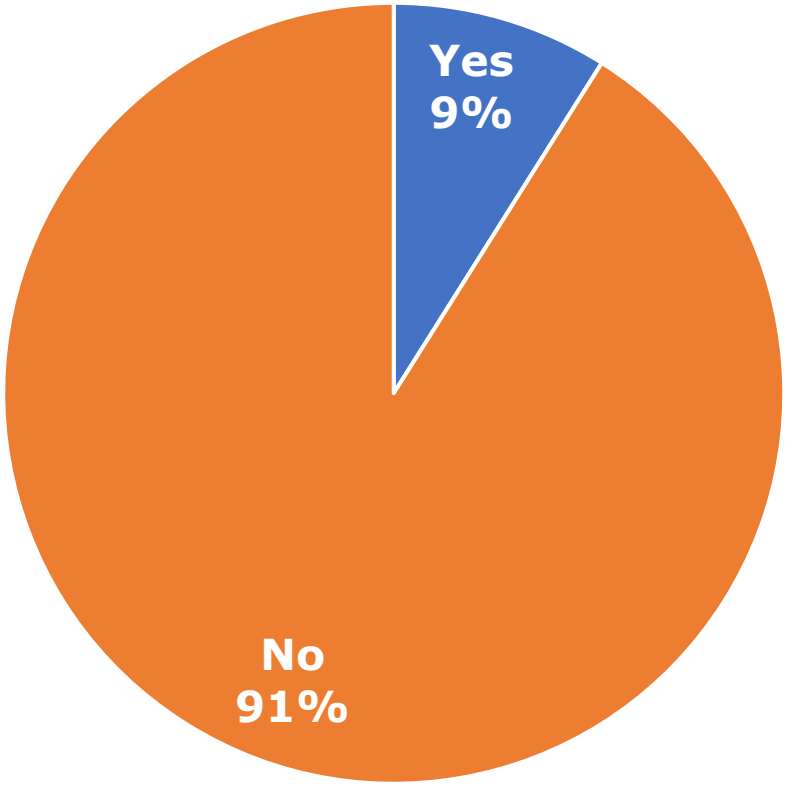
September to December 37%

Urban vs Rural and Intersection

VRU Crashes Urban vs Rural

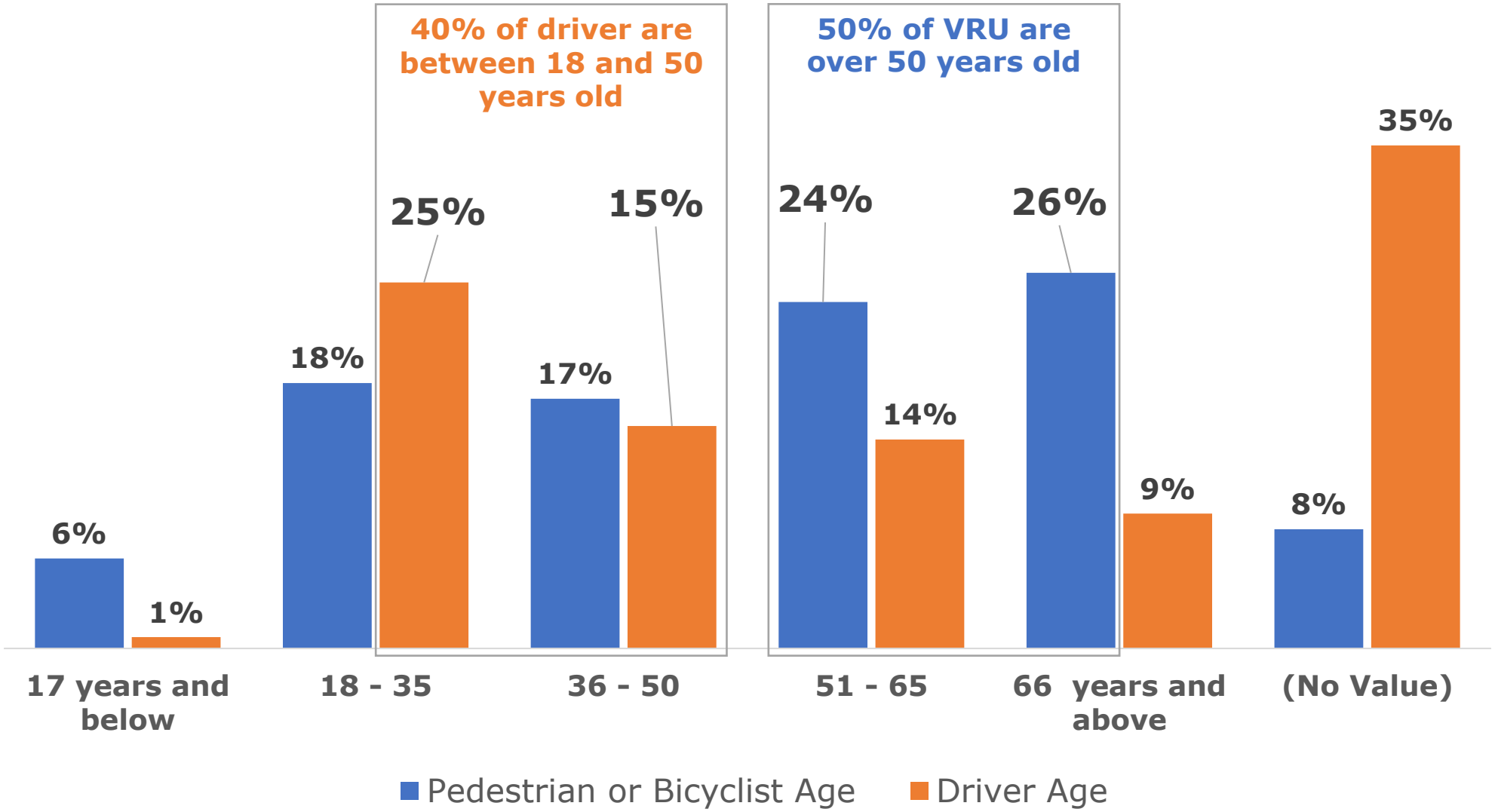


Intersection Related Crashes

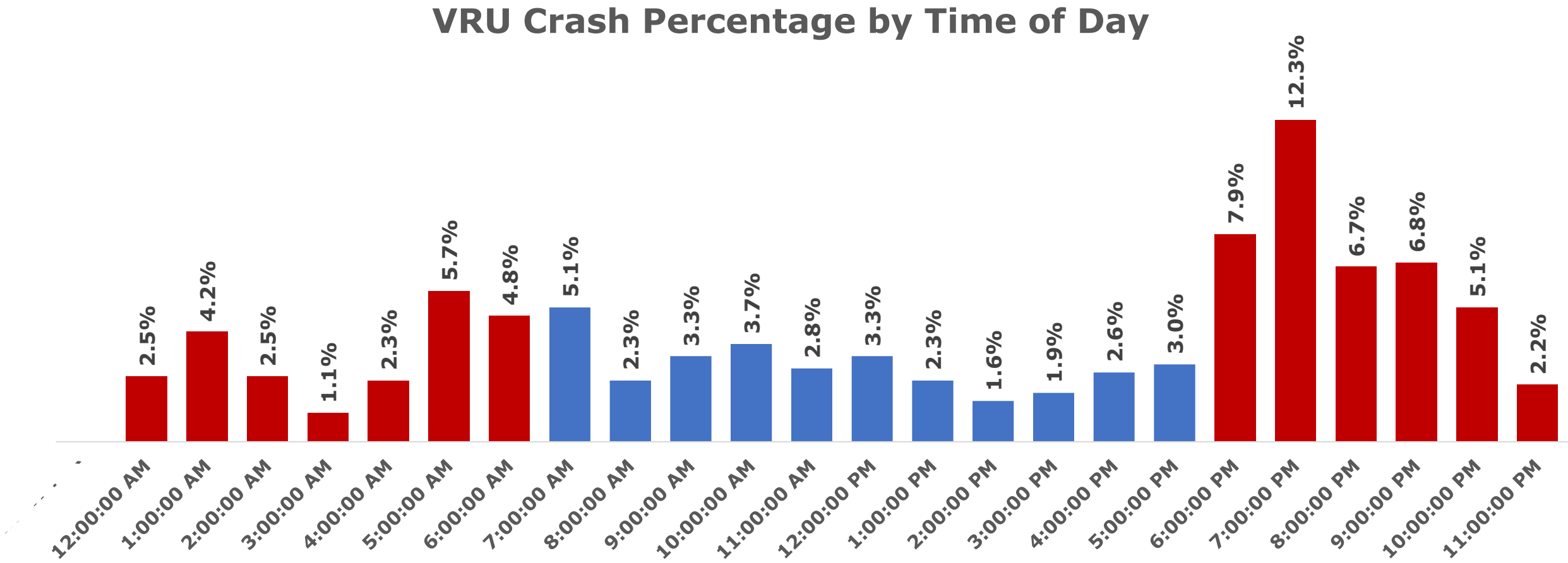


VRU Age vs. Driver Age

Fatal & Severe



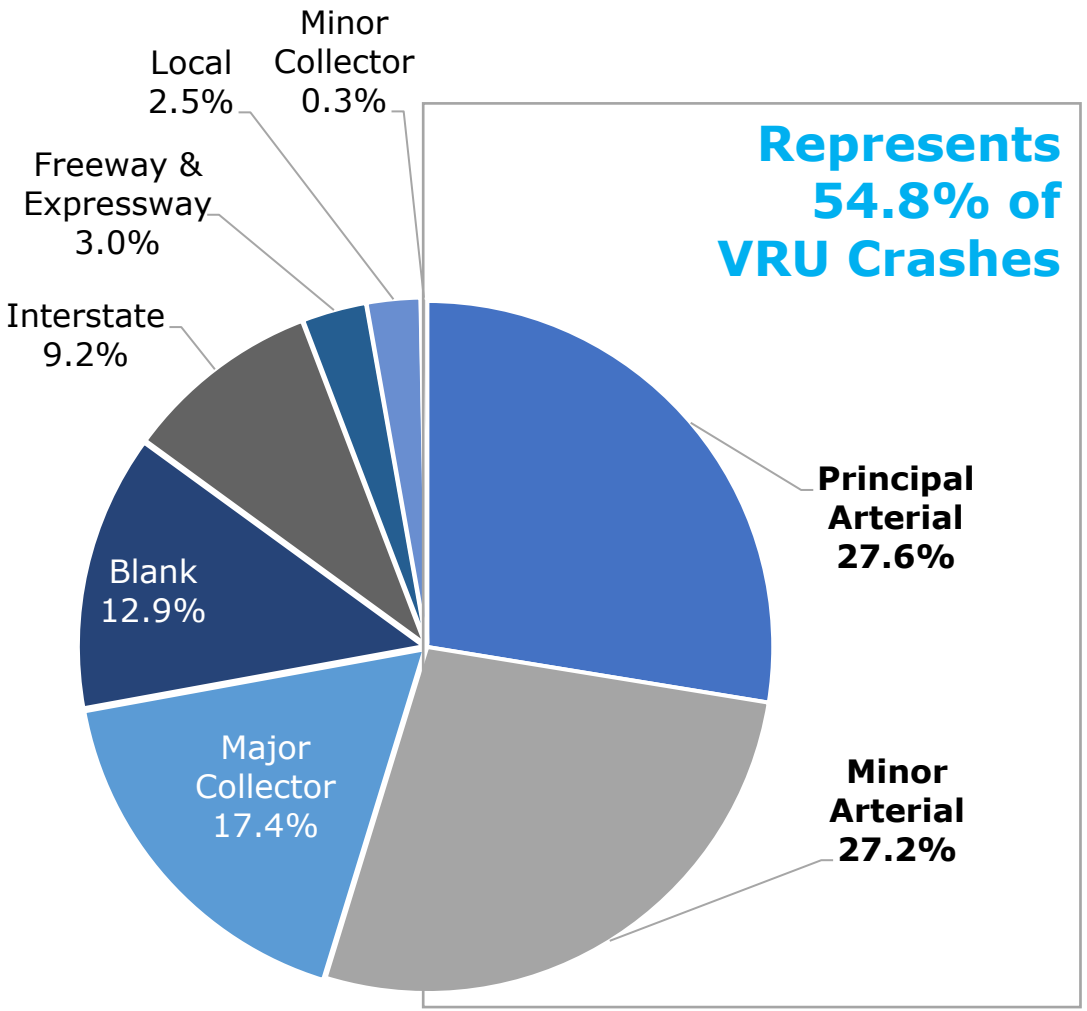
Time of Day



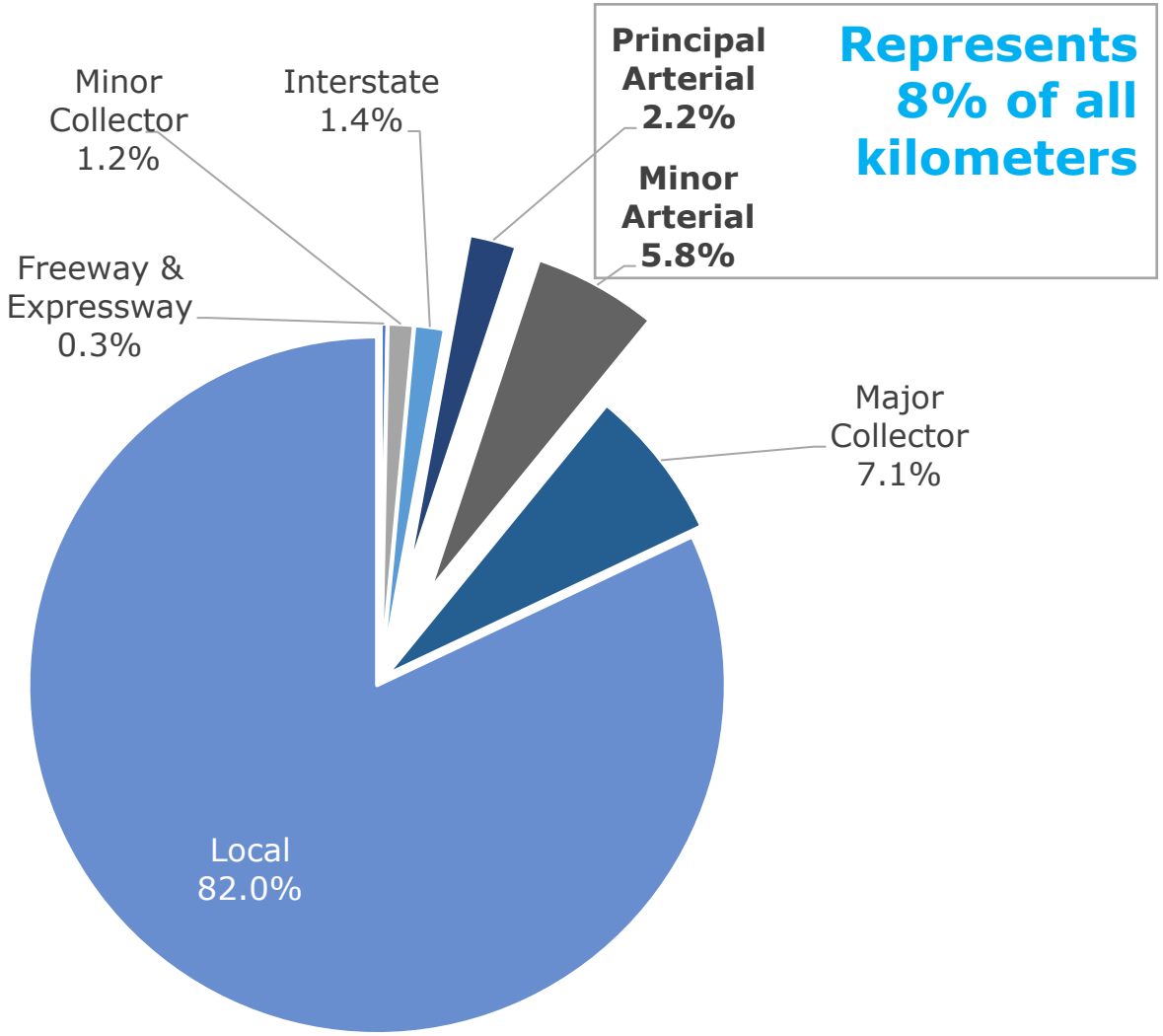
59% of VRU Fatal and Severe occurred from 6:00pm to 6:00am (i.e., nighttime conditions)

Roadway Functional Classification

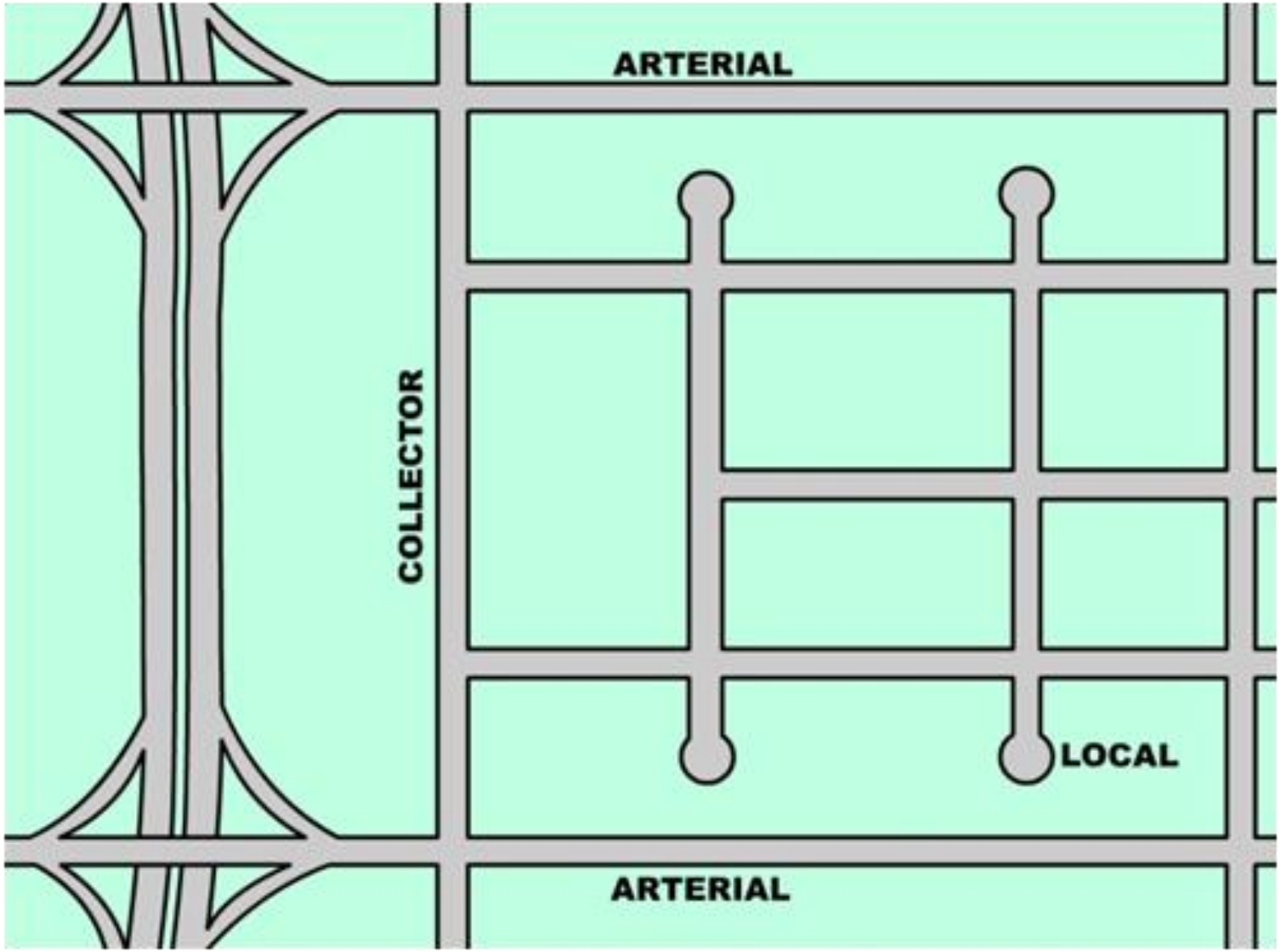
VRU Crash Percentage vs Functional Classification



Kilometers % vs Functional Classification



Roadway Functional Classification



Principal and Minor Arterials:

- Mid-high volume roads
- 2 or more lanes
- Major intersections some with signal controlled
- Direct vehicular access to properties from the road
- Some sidewalk presence
- No cycling infrastructure

Roadway Functional Classification

PR 3 – Arroyo Source: Google Maps

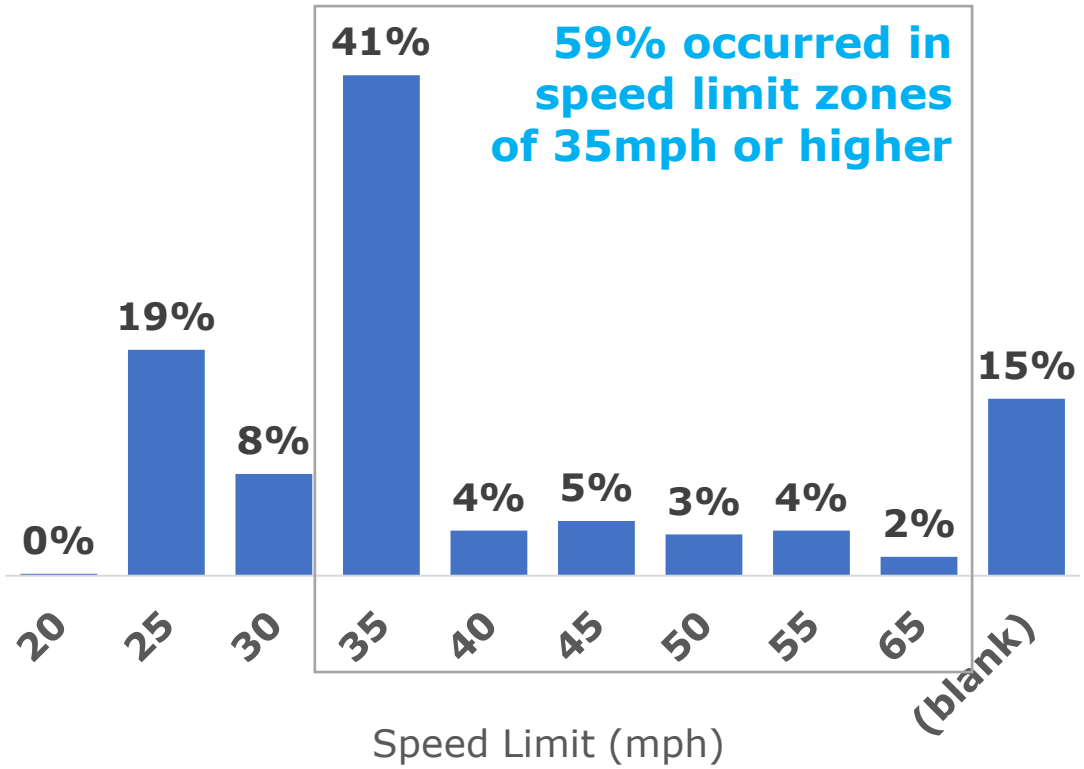
PR 14 – Ponce Source: Google Maps

PR 149 – Juana Diaz Source: Google Maps

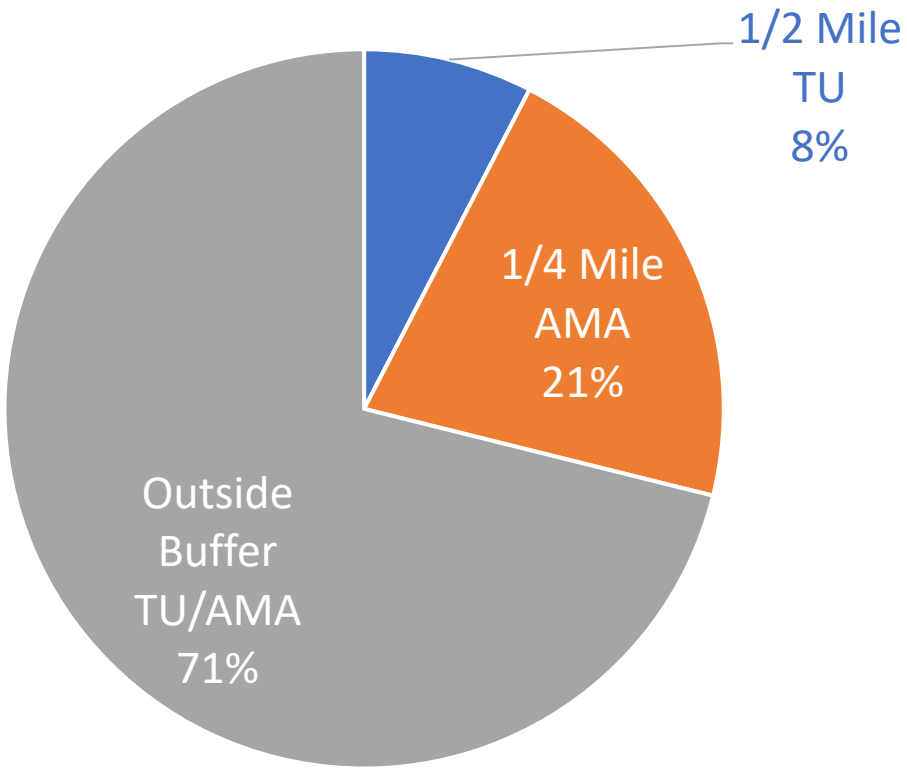
PR 1 – Ponce Source: Google Maps

Speed Limit and Transit

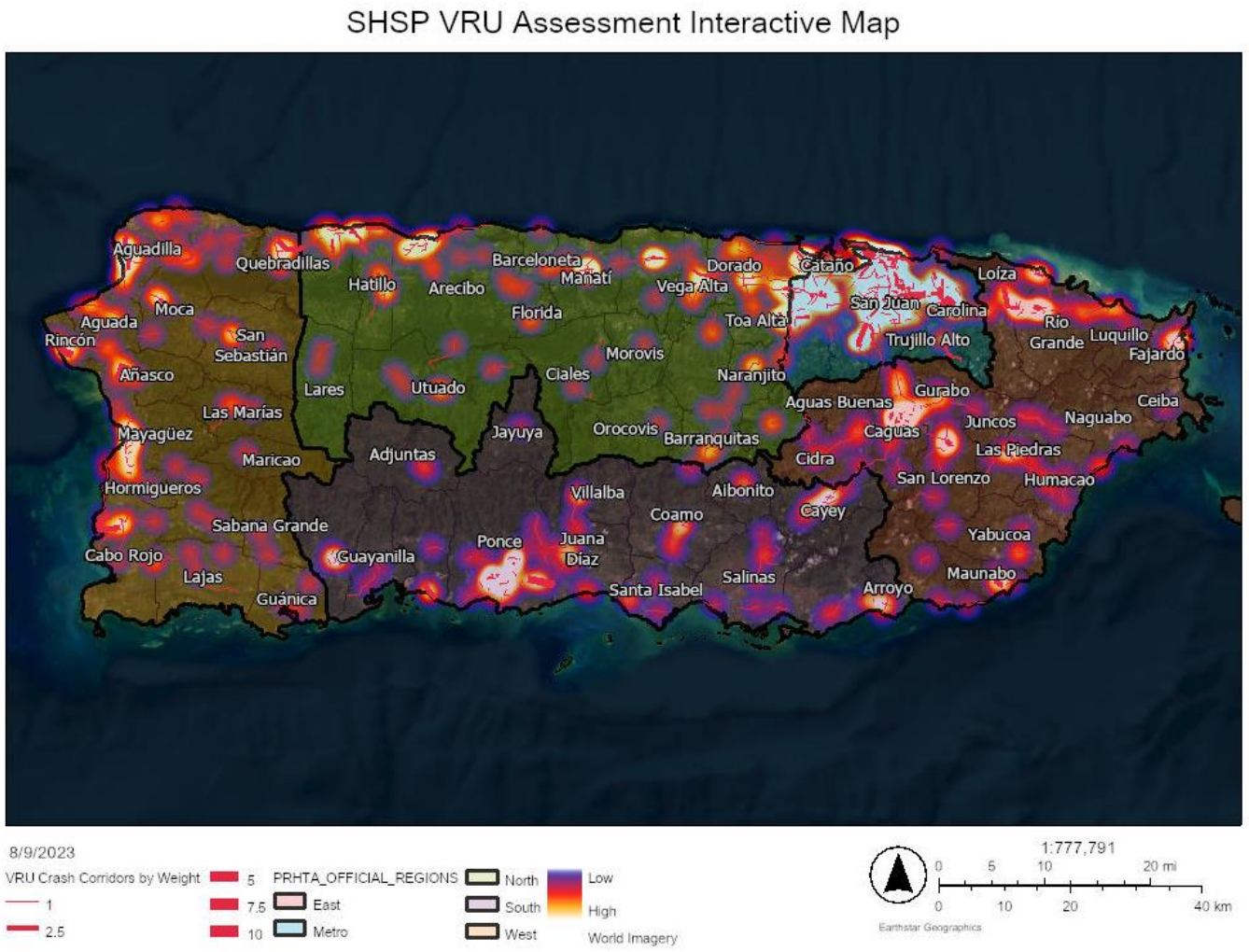
VRU Crash Percentage by Speed Limit



VRU Crashes and Transit Stops



VRU High-Risk Areas



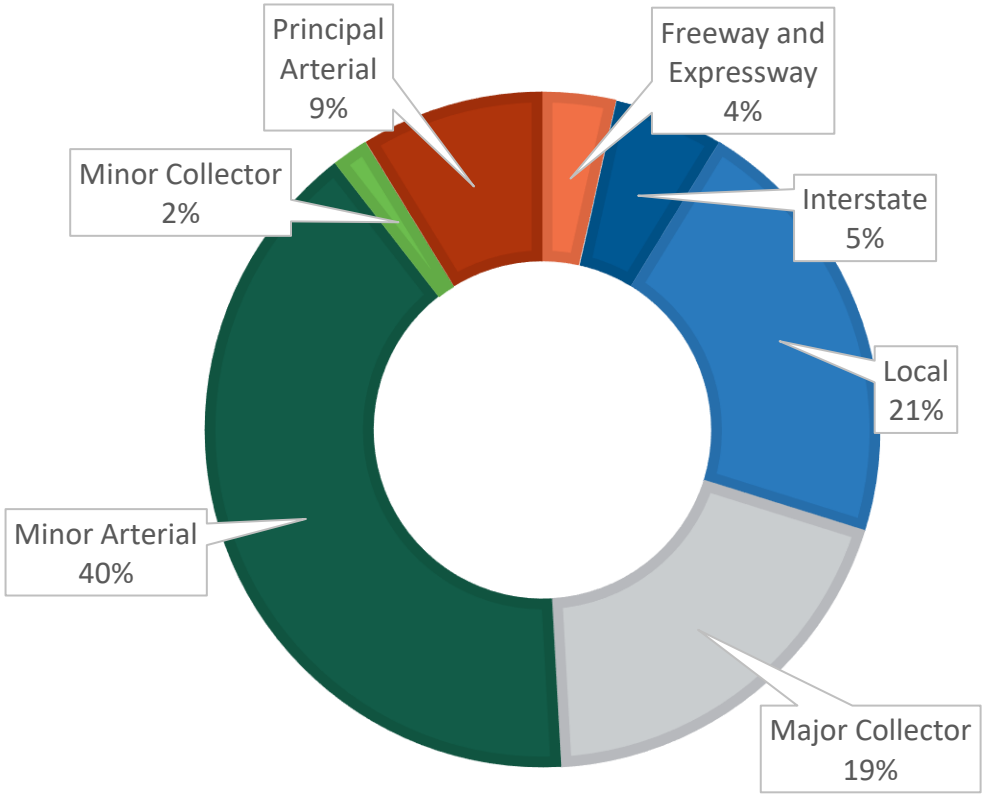
Areas

- By PRHTA Region
- Population
- Kilometers
- Hundred Million Vehicle Miles Travel

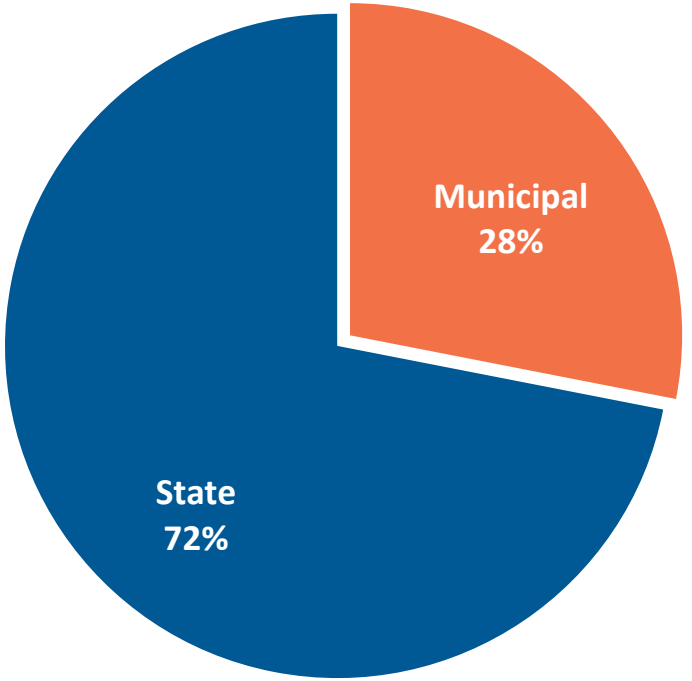
[SHSP VRU Assessment Interactive Map (arcgis.com)]

VRU South Region

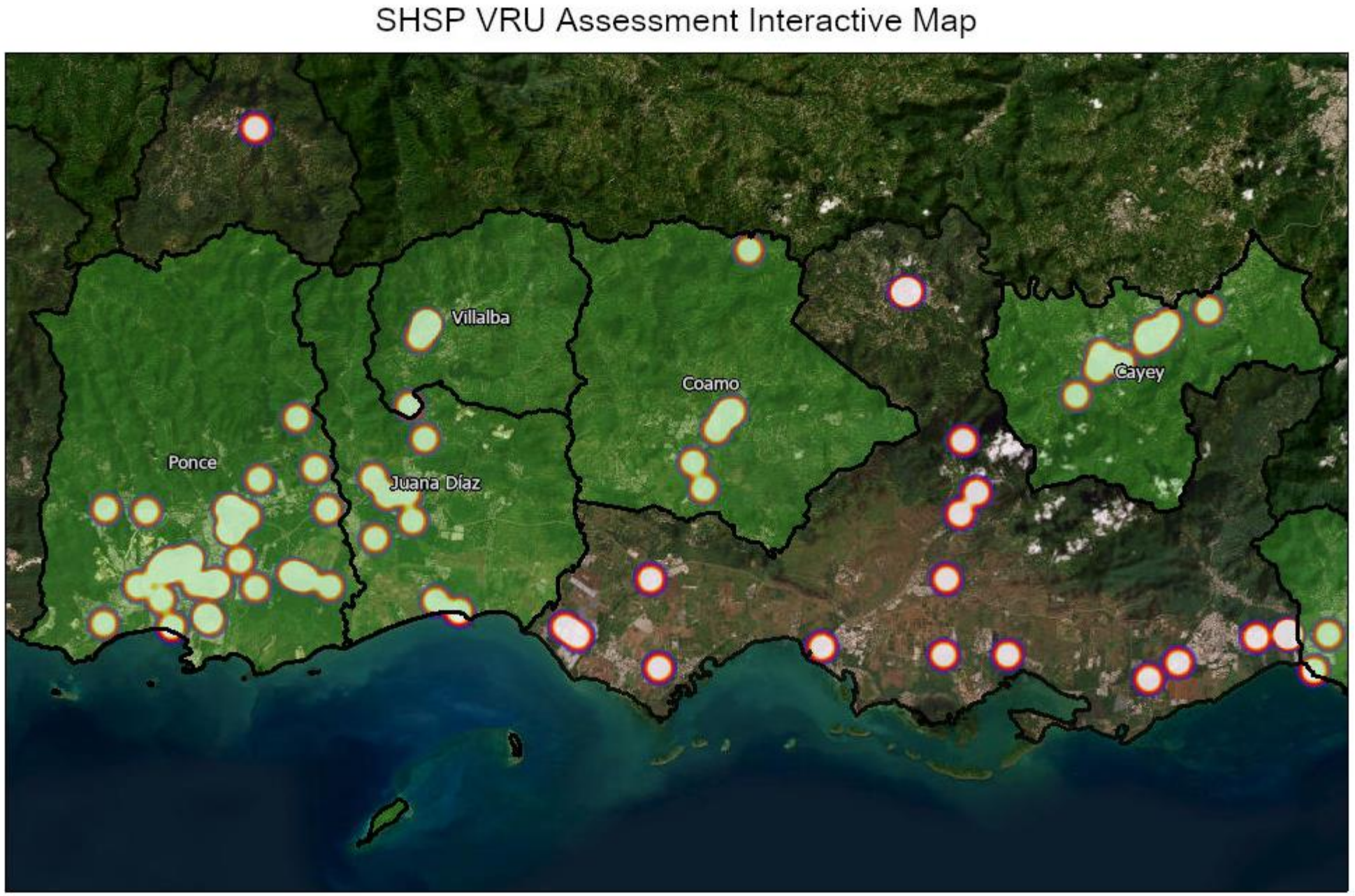
PRHTA SOUTH REGION FUNCTIONAL CLASSIFICATION



PRHTA South Region Jurisdiction



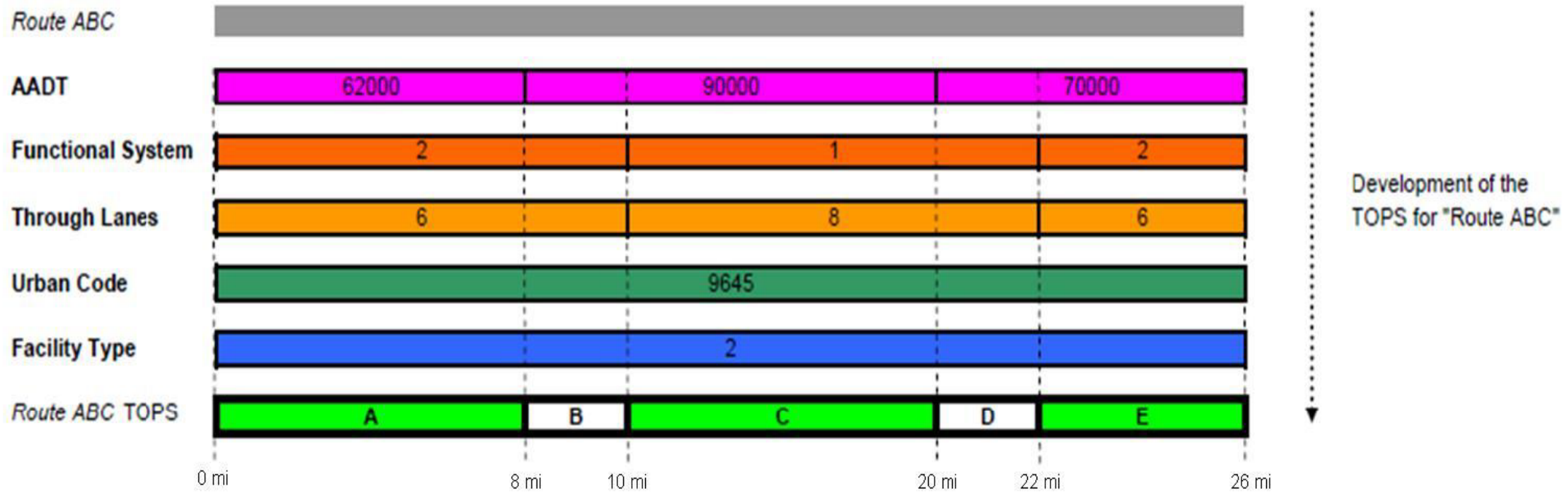
VRU South Region



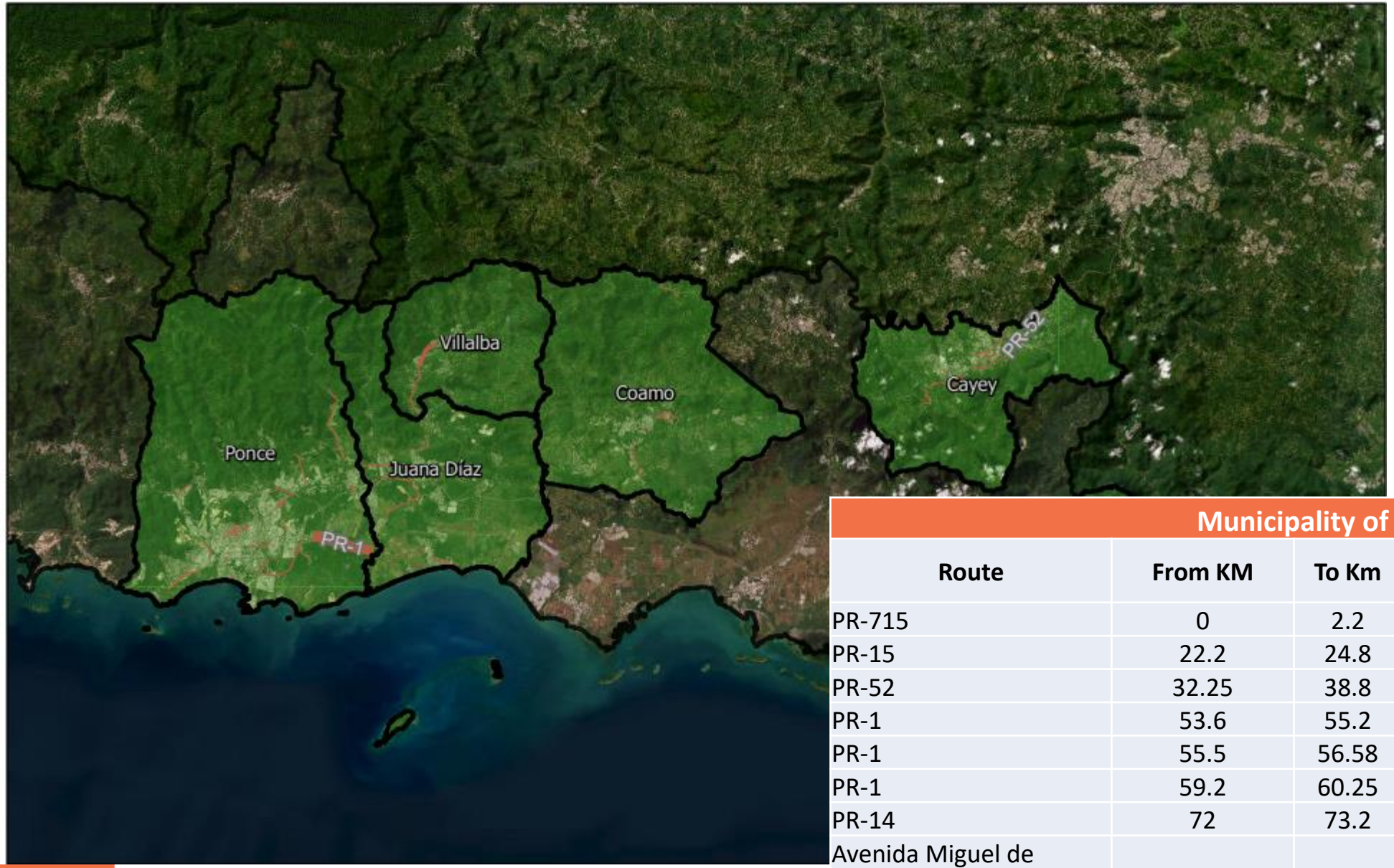
SHSP VRU Assessment Interactive Map (arcgis.com)

VRU Corridor Selection - HPMS

Figure 6.1 TOPS Development Process



SHSP VRU Assessment Interactive Map



VRU South Region

[SHSP VRU Assessment Interactive Map (arcgis.com)]

Municipality of Cayey					
Route	**From KM**	**To Km**	**Length KM**	**Fatal**	**Severe**
PR-715	0	2.2	2.2		1
PR-15	22.2	24.8	2.6		1
PR-52	32.25	38.8	6.6		1
PR-1	53.6	55.2	1.6	1	
PR-1	55.5	56.58	1.1		1
PR-1	59.2	60.25	1.0		1
PR-14	72	73.2	1.1		1
Avenida Miguel de Muesas			0.8	1	
Calle Baltazar Méndoza & Calle Luis Barreras					1

4

VRU Assessment: Strategies, Implementation Examples and Potential Projects

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Safe System Approach

SAFE ROADS: AVOIDING CRASHES

Elements of the Safe System Approach

Avoiding crashes involves:

Separating users in space

Separating users in time

Increasing attentiveness and awareness

Source for all images: Fehr & Peers

Safe System Approach

SAFE ROADS: CRASH KINETIC ENERGY

Elements of the Safe System Approach

Managing crash kinetic energy involves:

Source: Fehr & Peers

Managing speed


Source: City of Carmel, IN

Managing crash angles


Source: FHWA

Managing crash energy distribution

Safety Countermeasures

Pedestrian/Bicyclist

Bicycle Lanes

Crosswalk Visibility Enhancements

Leading Pedestrian Interval

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

Pedestrian Hybrid Beacons

Rectangular Rapid Flashing Beacons (RRFB)

Road Diets (Roadway Configuration)

Walkways

References: Proven Safety Countermeasures | FHWA (dot.gov)
Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org)

Safety Countermeasures

Pedestrian/Bicyclist

Bicycle Lanes

Cycle Track

Pavement Marking

Raised Island

Traffic Delineator

Pavement Marking

Additional reference: Pedestrian Safety Guide and Countermeasure Selection System (pedbikesafe.org)

Safety Countermeasures

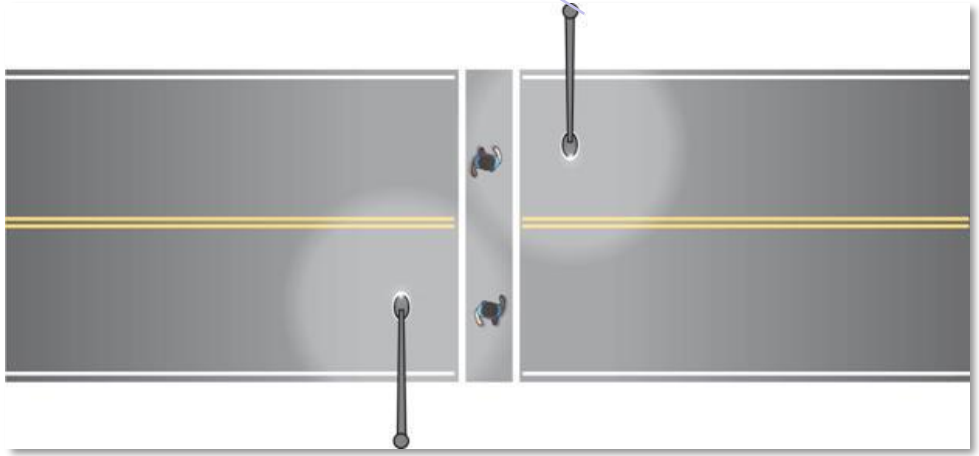
Crosswalk Visibility Enhancements

Pavement Marking

Curb Extension

Limit Parking at Intersections

Pedestrian Lighting



Signage “Stop here for pedestrians”

Safety Countermeasures

Leading Pedestrian Interval

Traffic Signals APS and Peds Signals

Safety Countermeasures

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

Safety Countermeasures

Pedestrian Hybrid Beacons

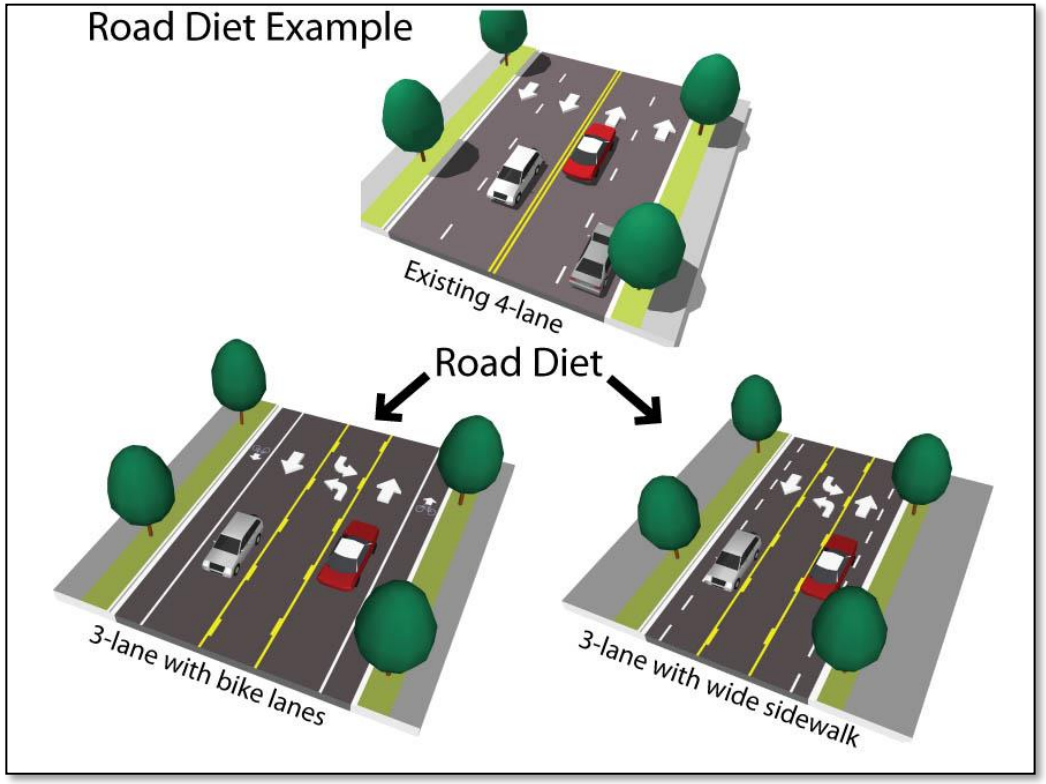
Rectangular Rapid Flashing Beacons (RRFB)

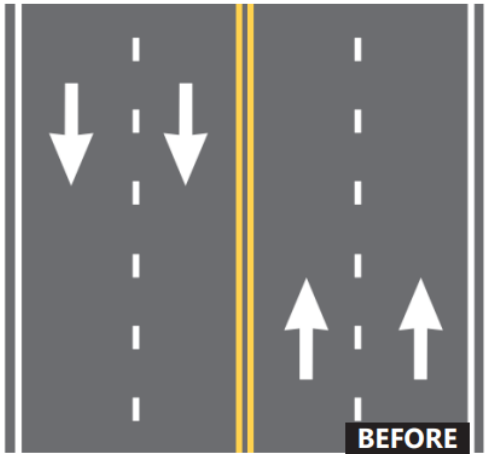
PHB

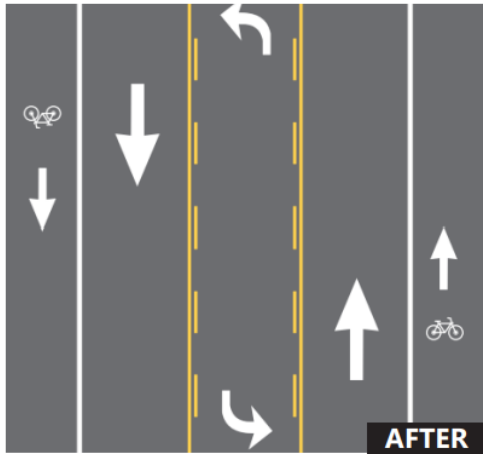
RRFB

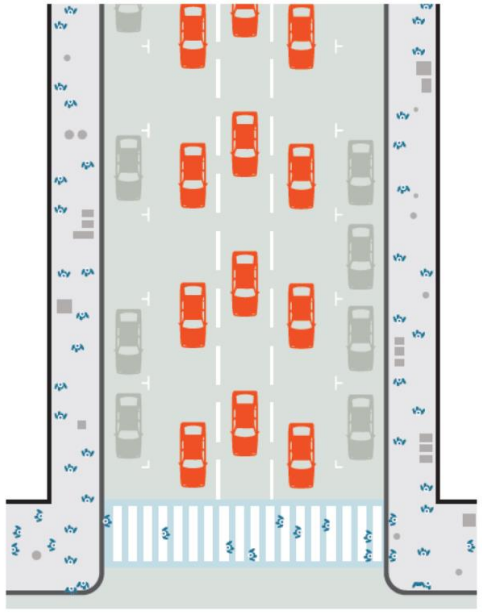
Safety Countermeasures

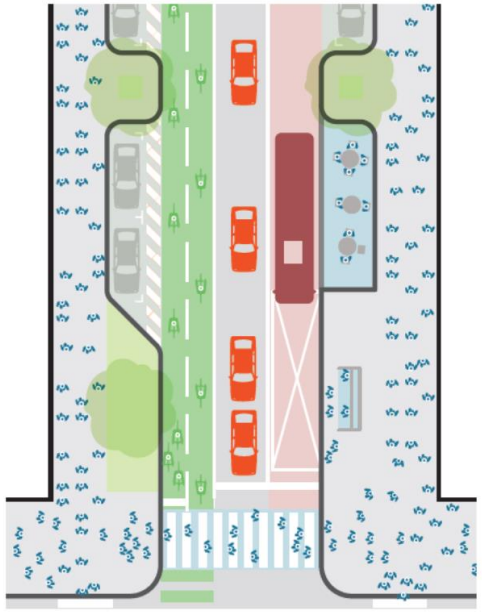
[Road Diets (Roadway Configuration)]







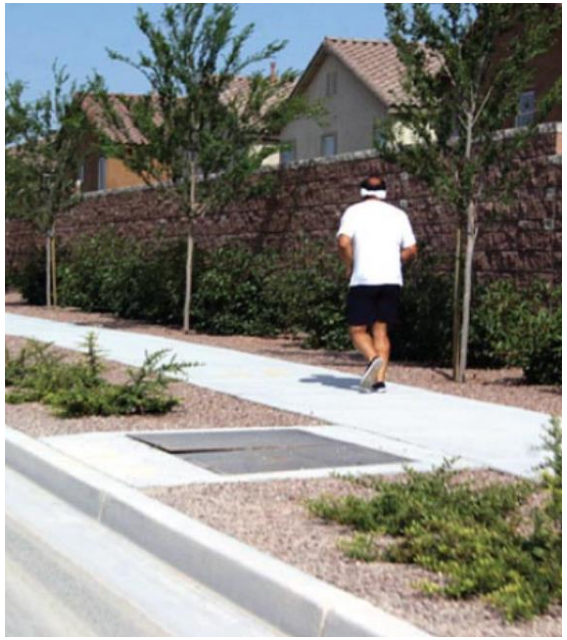


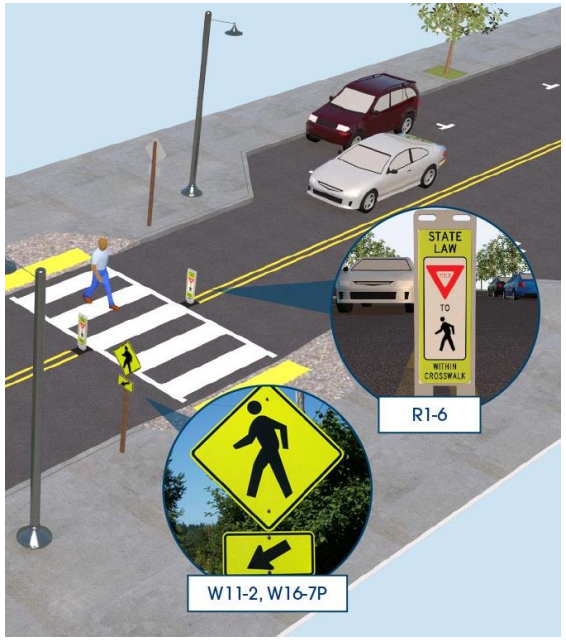


Safety Countermeasures

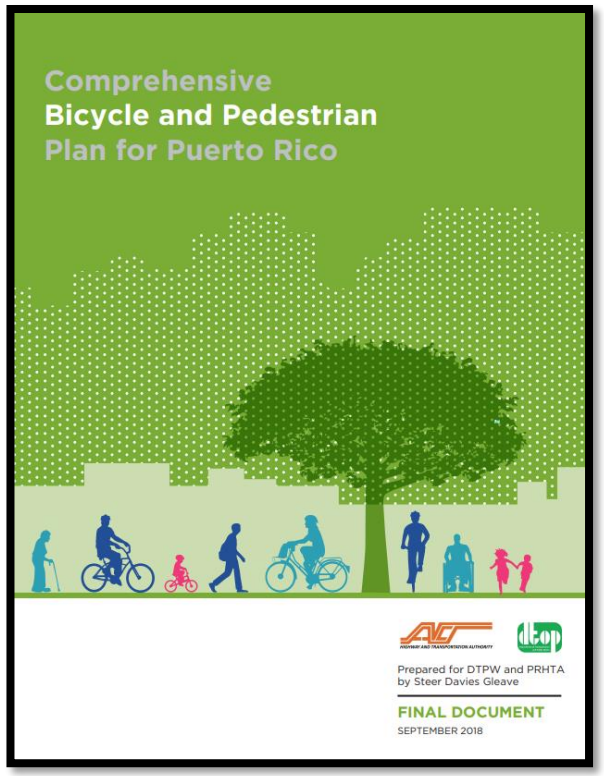
Walkways

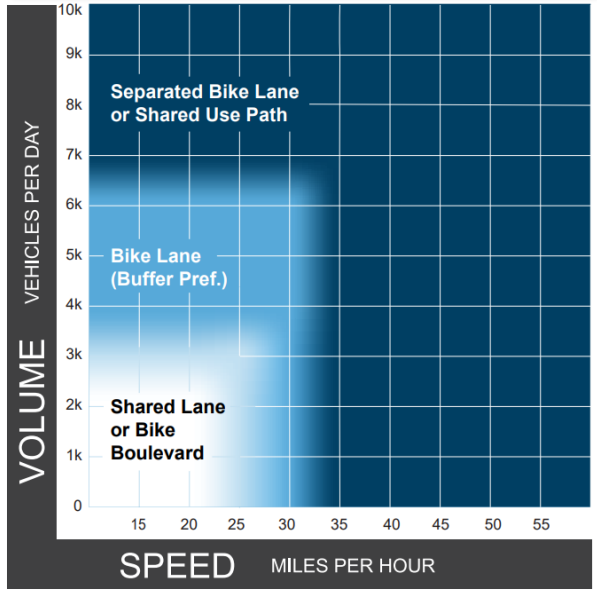
Pedestrian Crossings & Walkways



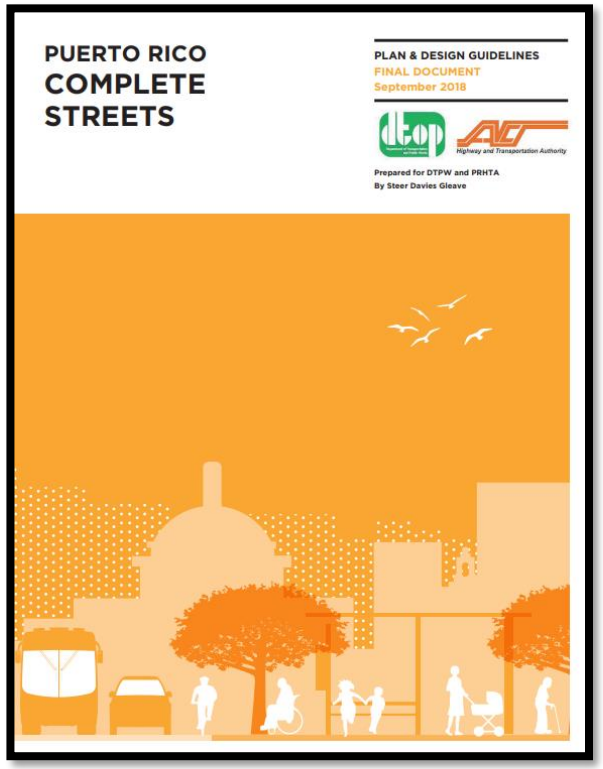


VRU Assessment Strategies





Source: FHWA bikeway selection guide



Source: PR Complete Streets Plan & Design Guidelines

Complete Street Vision

Successful urban roads should provide reliable major routes through cities with vibrant, safe, secure and well maintained urban environments, and make shops and services easily accessible. Urban Streets Complete Street vision includes:

- Maintain automobile priority but improve provisions for other modes;
- Reduce width of travel lanes where appropriate;
- Comfortable and sheltered waiting areas for transit users;
- Comfortable sidewalk width of 1.5 - 2.1 meters /5-7 feet;
- Crossings to match wider pedestrian network, including at mid-block where appropriate;
- Buffered, separated or off-road bikeways (Class I, II or IV – for Class definitons see Bikeways, Section 3 Part B);
- High quality landscape character;
- Provide shade trees along sidewalks and bikeways; and
- Provide street lighting that relates to pedestrians and cyclists.

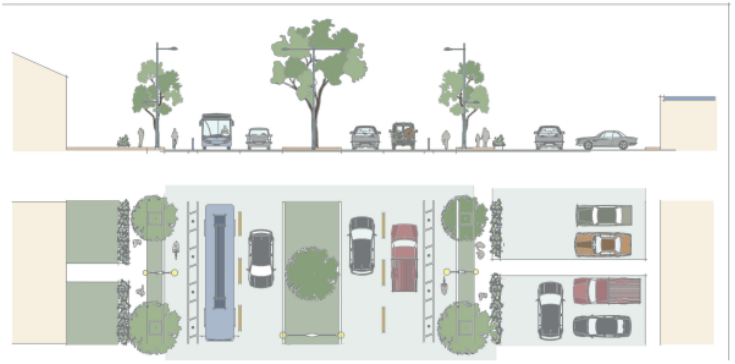
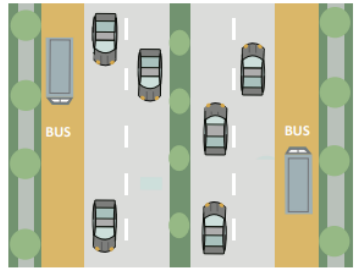
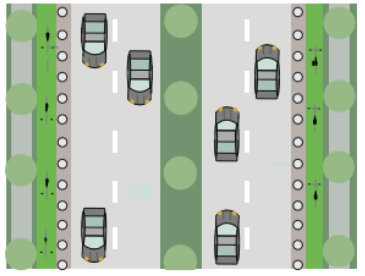


Figure 2.5: Urban Road Complete Street Vision

Source: SDG



Transit priority



Non-motorized priority

VRU Assessment Strategies

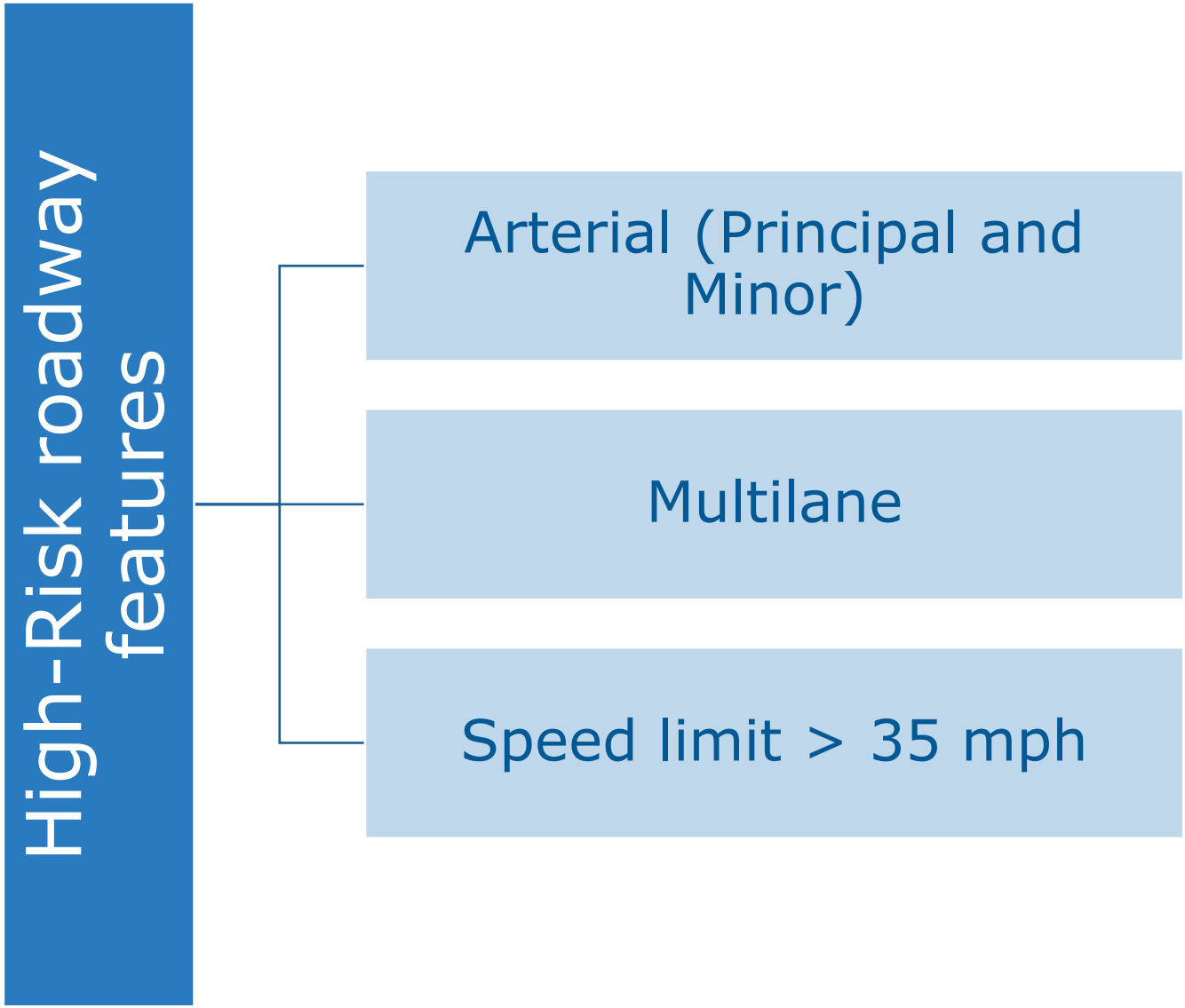
Project Development

Bicycle and pedestrian considerations a full component of Puerto Rico project planning and development.

- **Pedestrian and Bicycle data** consideration
- Include ped and bike **performance measures** as part of project selection processes
- Advanced implementation plan from pedestrian and **bicycle plan and complete streets** guidelines
- **Design** directives to include ped and bike criteria and potential measures
- Include **ped and bike contract** language for all design and construction projects (**RFPs**)
- Include ped and bike needs in traffic control plans (**MOT & detours**)

VRU Assessment Strategies

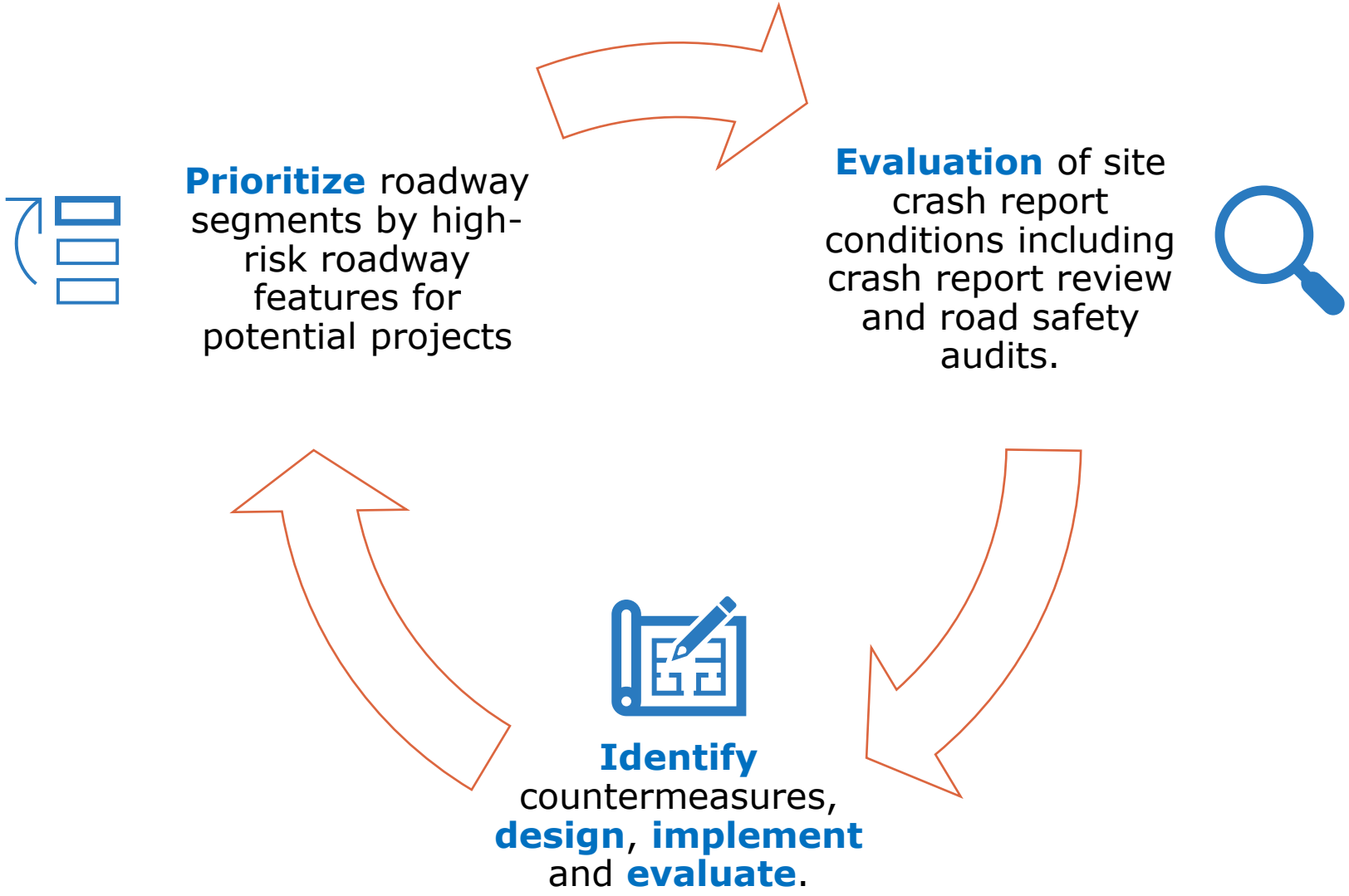
Systemic approach



Intersection – (i.e., pedestrian push buttons and proper time to cross, ADA ramps, sidewalks)

Segments – Road diets, speed management such as traffic calming, roundabouts, mid block crossings, sidewalks repairs, protected bike lanes, shared use path, and pedestrian and bikes signage

VRU Potential Projects



The Safe System Approach

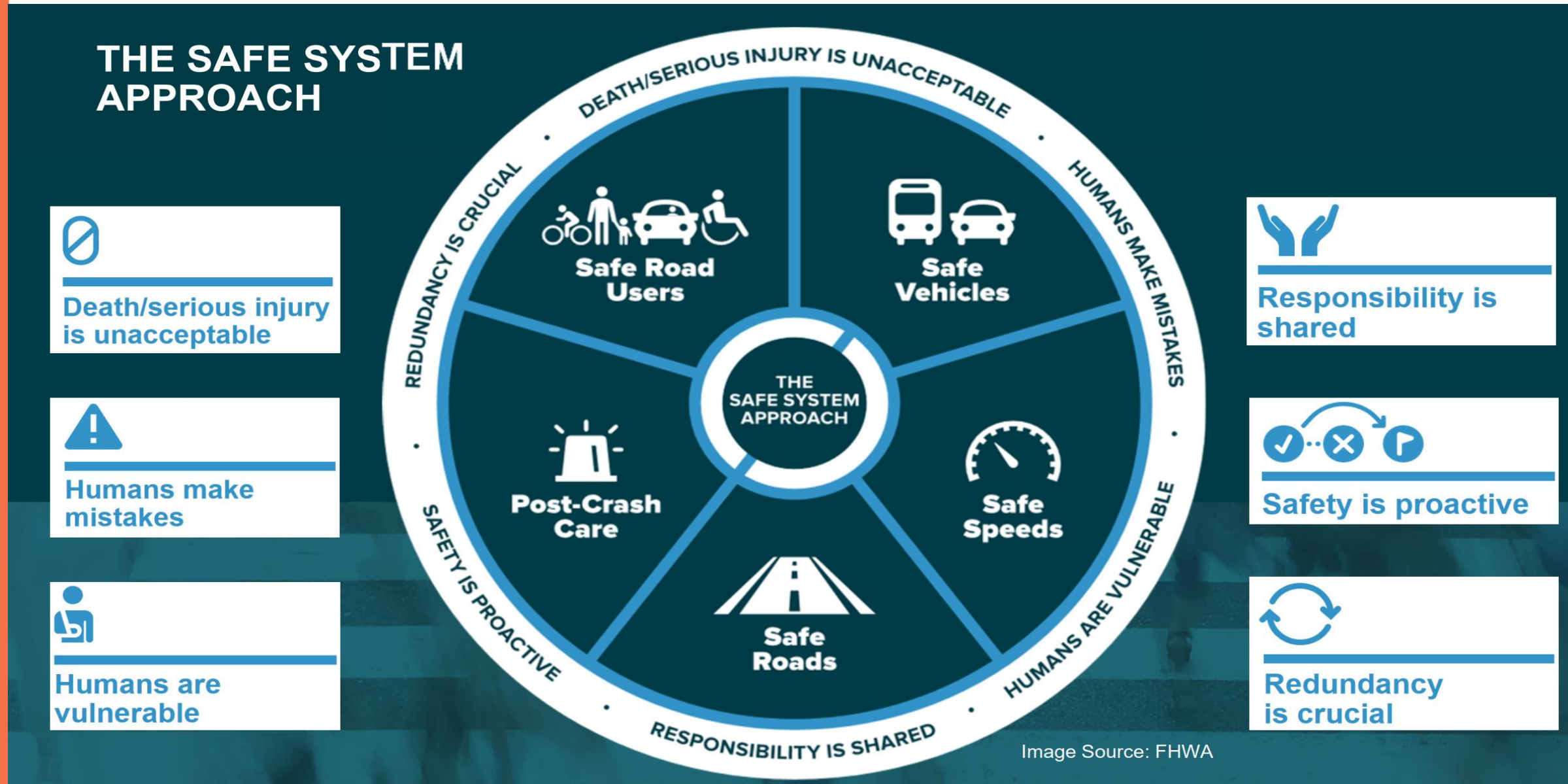


Image Source: FHWA

Responsibility is Shared

15 MINUTES BREAK

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Encuesta - Grupos consultivos en seguridad vial (Región Sur)

Thank You!

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Appendix C Consultation Meeting Notes

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

Para

Cc

De

Fecha 29 de agosto de 2023

Proyecto Nº del Proyecto

Memorando

Notas Reunión Región Este – New SHSP 24-28 & Vulnerable Road Users Assessment

A continuación, los comentarios recibidos de los participantes durante el segundo tema discutido relacionado con los usuarios vulnerables:

- Durante la presentación se mencionó que existe la creencia de que en Puerto Rico casi no se camina, pero eso no va acorde con los datos de choques con peatones. A esto personal de Patrullaje de la Policía comenta que se debe tomar en consideración que, en los últimos años con el aumento en el costo de la gasolina, muchos se han visto obligados a utilizar menos el vehículo. Esto al igual que los adultos mayores optan por caminar.
- Entre los presentes, conversaron sobre cómo se estaba trabajando con la educación a nuevos conductores y a aquellos con licencia de aprendizaje. Comentaron que en el Municipio de Caguas están trabajando en un P.E.S.E.T. (Parque Educativo para la Seguridad en el Tránsito) en el Complejo Deportivo del Este para estudiantes de escuela elemental e intermedia.
- Se presentaron las horas durante las cuales se reporta la mayor cantidad de accidentes, siendo éstas entre las 6pm y las 6am. Una de las principales y posibles causas se le atribuye a la falta iluminación en las carreteras, lo que llevó a mencionar que se debe hacer el esfuerzo de reunirse con LUMA (ya que gran parte de las luminarias son responsabilidad de la agencia) para ver de qué manera se puede atender la situación. Por otra parte, personal de Caguas comentó sobre la iniciativa que han estado trabajando como proyecto piloto con la instalación de postes solares en las áreas de las urbanizaciones. Comentan que se podría considerar trabajar ese tipo de iniciativa con fondos de FHWA.
  Se comentó sobre la situación de la PR-142 que queda bajo la jurisdicción de 3 municipios y los riesgos de seguridad que incluyen falta de iluminación, falta de marcado de pavimento (incluyendo ojos de gato), resultando en la falta de orientación en los conductores.
- Se mencionó dentro de la conversación la alternativa de comunicarle a ACT las situaciones identificadas para solicitar, a través de la agencia fondos federales para este tipo de mejoras.
- Dentro de los participantes se mencionó que para los análisis de las situaciones que ocurren en los municipios, se debe tener en consideración aquellos municipios que reciben flujo de personas de otros municipios en busca de servicios o ya sea para cruzar hacia su destino.
- Un detalle que se mencionó por parte de los participantes es que los nuevos procesos de agencias reguladoras como la OGPe y la JP han hecho que los permisos de uso se otorguen de manera expedita, en muchas ocasiones obviando o no permitiendo que se realicen los análisis correspondientes del impacto que pueden tener esos negocios con relación a la transportación y la seguridad. Por ejemplo, en gobiernos anteriores y previo al Reglamento Conjunto se tenía el tiempo para consultar a las agencias

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correspondientes de seguridad y dependiendo el tipo de negocio se les informaba de ciertos requerimientos que debían cumplir, como cantidad de estacionamientos correspondientes, debían evidenciar que eran funcionales, entre otros. Con el proceso actual, muchos de esos pasos no representan prioridad o no se establecen los requerimientos correspondientes. Estas situaciones pueden traer como consecuencia que, al no tener estacionamientos funcionales, tener estacionamientos que salen en reversa a las carreteras, al no poder proveer seguridad al cliente dentro de un perímetro para acceder a su vehículo, pueden representar situaciones de seguridad tanto a conductores como a usuarios vulnerables. Por otra parte, se menciona que existe un Reglamento de Infraestructura Pública de la JP que muy pocas veces es puesto en ejecución.

- Del mismo modo, se habló sobre el Paseo Lineal Cagüitas en Caguas y sobre proyectos de calles completas en el municipio. Y que para lograr dichos proyectos aunque entienden que los fondos disponibles son competitivos, apartan fondos propios para parear.
- Se habló sobre la falta de implementación del Plan y Guía de Calles Completas y del Plan Peatonal y Ciclista por parte de la ACT en sus proyectos grandes. Se abundó sobre la problemática cultural que existe en las disciplinas de planificación y diseño, y cómo éstas están más enfocadas en los conductores. En esta discusión también se añadió información sobre la disponibilidad de fondos para la generación de planes de seguridad vial municipales.
- También se discutió sobre el uso de la hora pico del tráfico para realizar mejoras de construcción y cómo se podrían planificar mejor los trabajos para afectar lo menos posible. En ese caso, se mencionó que a través del Centro de Manejo del Tránsito de la ACT se establecen los horarios a los contratistas y hay un problema con su cumplimiento con lo establecido.
- Como parte de la discusión de diversos temas, se recomendó que las multas para conductores sean más elevadas de modo que puedan tener un mayor efecto en modificar las conductas como el uso del celular, viajar a exceso de velocidad, y conducir bajo los efectos del alcohol.
- Durante la discusión final, luego de llenar la encuesta, a modo general se llegó al a conclusión de que estos son retos que van a continuar, pero que se debe continuar con los esfuerzos que se están llevando a cabo de campañas de concientización, de educación, ya que es un proceso lento, pero que a largo plazo debe dar resultados. Mientras, personal del Municipio de Caguas menciona que dentro de los retos que se enfrentan al momento de tratar de implantar las guías y diseños de calles completas y de mejoras para tratar de mejorar la seguridad en el transporte, es la adquisición de fondos y la educación en general.

Para	Metric Engineering of Puerto Rico	**Memorando**	
Cc			
De	Steer		
Fecha	5 de septiembre de 2023		
Proyecto	Strategic Highway Safety Plan (SHSP)	Nº del Proyecto	23757302

Notas de Reunión Grupos Consultivos: Región Sur

New SHSP 24-28 & Vulnerable Road Users Assessment

La reunión de grupos consultivos para la región Oeste de ACT junto a los municipios con alta incidencia de fatalidades se llevó a cabo el martes, 5 de septiembre de 2023. Dicha reunión contó con la participación de personal de manejo de emergencias, planificación municipal, policía municipal y estatal, la Comisión para la Seguridad en el Tránsito, F.I.E.S.T.A., y otras oficinas municipales.

- La actividad comenzó con una presentación por parte del equipo del Plan Estratégico de Seguridad Vial (SHSP) en donde se compartieron datos de la región del oeste con relación a choques. Además, se compartieron mejores prácticas relacionadas a la seguridad vial.
- Para muchos participantes era la primera vez que escuchaban sobre el SHSP.
- Con relación a las nuevas áreas de énfasis los participantes comentaron:
  - **Manejo de Velocidades**
    - **Motociclistas:** Tienen un grave problema con los motociclistas ya que estos no llevan cascos y manejan a altas velocidades. Consideran que esto es un problema a nivel isla.
  - **Conductores bajo los efectos de sustancias controladas**
    - **Política de Exámenes de Alcohol en la Sangre:** En términos de las políticas que serían necesarias revisar en este aspecto, se habló que no se ha podido aprobar la ley para hacer análisis de sangre a las personas que son partes de un accidente para detectar drogas y alcohol.
      - En ausencia de un análisis que determine los niveles de alcohol en la sangre, ya sea porque el acusado se niega a hacerse la prueba u otras razones, se trabaja con la descripción de los hechos de los agentes y otros testigos de la escena.
    - **Cannabis Medicinal:** Existe un problema en el caso del cannabis medicinal ya que los agentes entienden que la política que tienen con relación al mismo es muy laxa. Los agentes se encuentran en muchos casos que los fiscales desestiman este tipo de casos.
  - **Salida del Carril**
    - **Motoras:** Los jóvenes se han movido a la utilización de motoras en vez de automóviles que tienden a ser más seguros. Esto debido al alza en los precios de la gasolina y porque tienden a ser más baratos.
      - Las personas no están utilizando cascos, ni gafas de seguridad.
      - Los guardias no tienen la potestad de confiscar las motoras en algunas ocasiones.
    - **Políticas para Motociclista:** Se indicó que la ley para los motociclistas es muy laxa y que deberían ser más rigurosos en el momento de dar los endosos para las licencias y tablillas.
      - Si la persona no cuenta con un endoso que no se le otorgue la motora.

- Con relación a la Integración de las Comunicaciones los participantes comentaron:
  - **Enforque de Sistema Seguro**
    - En muchas ocasiones las barreras de seguridad que se integran a los diseños no están hechos para proteger la vida de las personas si no más bien para proteger elementos en una estructura física.

- Con relación a los datos preliminares presentados, los participantes comentaron:
  - **Comentarios Generales**
    - Hay que considerar que todos los conductores son peatones en algún momento.
    - En Puerto Rico existe una población de edad avanzada muy grande.
    - Los participantes indicaron que las personas mayores estaban acostumbradas a ir a los lugares en carros públicos.
  - **Infraestructura Peatonal**
    - Los puentes peatonales pueden ser un problema para las personas con impedimento ya que se les hace muy difícil transitar por ellos.
    - Las estructuras de la carretera no ayudan a proteger al peatón. Por ejemplo, las aceras del casco urbano de Mayagüez son difícil para que una persona en silla de ruedas pueda transitar ya que están obstruidas por postes de luz, entre otros objetos.
  - **Vehículos Off-Road**: Se están otorgando tablillas a vehículos como por ejemplo los *Four Tracks*, carros de golf y los Can-Am y estos son vehículos que no están preparados para correr en las carreteas del País. Los participantes entendieron importante que se le informara al gobierno federal sobre el uso de estos vehículos en Puerto Rico ya que estos no están aprobados por los manufactureros para estar en la carretera. Además, se debe investigar el procedimiento de la otorgación de tablillas de estos vehículos.
  - **Política de Identificación de Peatones y Ciclistas**: Se sugirió como parte de las políticas a analizar que se revise el uso obligatorio de una identificación provista por el gobierno. Actualmente los oficiales tienen dificultades al intervenir a peatones y ciclistas, que están haciendo mal uso de las vías, ya que estos no muestran una identificación. Esto crea un problema ya que si se rehúsan a identificarse o dan un nombre falso imposibilita el que se les pueda llevar a un tribunal.
    - Se sugirió que en vez de llevar un mensaje punitivo acerca de esta medida que el mensaje que se lleve sea relacionado a la seguridad del peatón y el ciclista; por ejemplo, Si hay un accidente y usted tiene una identificación es más fácil poder identificarlo y darle la atención necesaria.
    - La ley 22 faculta a las bicicletas a transitar por las carreteras por el carril derecho, lo más cercano al paseo posible. Hay ciclistas que no siguen las leyes de tránsito y como los cobija esta ley los puede intervenir, pero no los pueden procesar.
  - **Aguadilla PR 107 – PR 110:** En estas carreteras la infraestructura construida no permite la construcción de los proyectos que atienden las metodologías identificadas ya que se tendría que expropiar los comercios y los municipios en el oeste no tienen el dinero para hacerlo.
  - **PR 402 – PR 115**: Estas carreteras carecen de iluminación. En la PR 115 ocurren muchos accidentes con motociclistas.
  - **Respuesta a los Accidentes:** Hay una ley que indica que si hay un accidente en la carretera los conductores que transitan la vía tienen que tomar el carril izquierdo y/o bajar la velocidad. El problema que existe en Puerto Rico es que las personas desconocen esa ley o no hacen caso y transitan cerca de los accidentes con altas velocidades impactando en muchas ocasiones a las personas que están atendiendo la emergencia.
    - Las personas indican que hay mucho desconocimiento de esta ley y que hay que promoverla.

- **Falta de Educación y Respeto hacia los Policías**: Se entró en una discusión sobre cómo ya las personas y los jóvenes no tienen respeto por los oficiales. En el pasado los oficiales iban a las escuelas a dar charlas y orientar a los estudiantes sobre la seguridad y esto se debería retomar.
  - Se aclaró que la policía tiene un programa de educaciones en las escuelas del oeste, pero no dan abasto para todas las solicitudes que tienen.
  - Además, se indicó que en el municipio de Arecibo existe un parque de para la seguridad en el tránsito y que es gratuito para el público.
  - Se sugirió que se hiciera un plan estratégico para lograr que todas las escuelas de área reciban una orientación sobre la seguridad en el tránsito.
- **Estrategias de Calles Seguras**
  - Increasing Attentiveness & Awareness
    - En Korea como las personas están siempre mirando a sus celulares y no miran hacia arriba para ver las luces de tránsito, se implementó un sistema de luces que se cambia de roja a verde para que las personas sepan cuando cruzar la calle.
  - Proven Safety Countermeasures
    - En el oeste tienen problemas en donde las personas que chocan de frente con la vaya de seguridad se la entierran y mueren.
    - Safety Countermeasures
  - **Señalización:** Obras públicas en el oeste hacen los rótulos de tránsito a mano. Este proceso no es automatizado y toma mucho tiempo.
  - Pedestrian Road Flashing Beacon
    - Los policías deben tener el poder de intervenir a las personas que no respetan las leyes de tránsito y no le dan derecho al paso a los peatones.

Para	Metric Engineering of Puerto Rico	**Memorando**	
Cc			
De	Steer		
Fecha	7 de septiembre de 2023		
Proyecto	Strategic Highway Safety Plan (SHSP)	Nº del Proyecto	23757302

Notas de Reunión Grupos Consultivos: Región Norte y Metro

New SHSP 24-28 & Vulnerable Road Users Assessment

La reunión de grupos consultivos para la región Norte y Metro de ACT junto a los municipios con alta incidencia de fatalidades se llevó a cabo el jueves, 7 de septiembre de 2023. Dicha reunión contó con la participación de personal de manejo de emergencias, planificación municipal, policía municipal y estatal, la Comisión para la Seguridad en el Tránsito, F.I.E.S.T.A., y otras oficinas municipales.

A continuación, los comentarios recibidos de los participantes durante el segundo tema discutido relacionado con los usuarios vulnerables:

- Personal del Municipio de Manatí comenta sobre cuán avanzado se encuentra el Plan de Ciclistas y Peatones en cuanto a la implantación de proyectos y qué tan vigente es al momento. Comenta que se está desarrollando un Paseo Lineal en el área norte, de Quebradillas a Hatillo. El problema es que la infraestructura se encuentra en mal estado y el traspaso de éstas es un proceso complicado ya que el mantenimiento se presume que les corresponde a las agencias gubernamentales y muchos de los municipios se encuentran en la disposición de tomar el manejo de los activos. También menciona que la cantidad de ciclistas ha aumentado y muchas soluciones pueden encontrarse al resolver asuntos técnicos que no se atienden, como por ejemplo el mantenimiento.
- El Municipio de Toa Baja comenta sobre la disponibilidad de información para los municipios sobre las áreas de mayor incidencia ya que al momento es muy complicado obtenerla o no se tiene conocimiento de dónde conseguirla. Tuvieron la experiencia reciente de que necesitaban datos para preparar la propuesta de Safety4All. Tener una mayor comunicación con los municipios sobre esos datos y las áreas dónde enfocar los esfuerzos. Se mencionó que el Plan de seguridad vial estatal puede ser una herramienta para los municipios y que deberían realizar talleres educativos a los municipios para conocer cómo realizar un plan de seguridad municipal. También mencionaron que consideran que el MPO debe ser más proactivo con los municipios para llevarles la información de los recursos que se tienen disponibles de datos, así como los recursos disponibles para la solicitud de fondos. Safety4All es una oportunidad que tienen los municipios para poder comenzar a atender estos asuntos ya que son fondos para la preparación de un plan de acción de seguridad. En ese mismo tema se comenta que CST ya no es parte de las reuniones del MPO y que puede ser una buena oportunidad para que los municipios sugieran la inclusión de ellos nuevamente ya que son un buen recurso que incluye la obtención de datos. Se sugiere incluir el Safety4All como parte del SHSP.
- El Municipio de San Juan comentó sobre los proyectos que tienen como el Paseo Lineal en Miramar que están trabajando junto con el Distrito de Convenciones; proyectos de calles completas para las áreas de las Ave. Ponce de León, Ave. Gándara, Ave. Universidad, De Diego; fondos solicitados a FTA para mejoras

de aceras que incluye toda la infraestructura dentro del radio de las paradas del trolley (tienen 9 en funcionamiento); con fondos ordinarios están trabajando mejoras en las aceras; tienen un proyecto piloto de semáforos inteligentes en el área de Condado; en el desarrollo de una aplicación para el sistema de transporte colectivo; tienen fondos solicitados de CDBG-DR. Relacionado con el Safety4All se mencionan datos relacionados sobre el tiempo para realizar el plan (1 año), el tiempo para la implantación (2 años) y que puede incluir el modelaje. CST hace el comentario que ellos pueden ayudar a complementar con la parte educativa de los proyectos.

- El municipio de Toa Baja preguntó si está disponible el mapa interactivo mencionado en la reunión, se le contestó que no ya que los resultados son preliminares hasta que se firme el plan.

Para	Metric Engineering of Puerto Rico	**Memorando**	
Cc			
De	Steer		
Fecha	8 de septiembre de 2023		
Proyecto	Strategic Highway Safety Plan (SHSP)	Nº del Proyecto	23757302

Notas de Reunión Grupos Consultivos: Región Sur

New SHSP 24-28 & Vulnerable Road Users Assessment

La reunión de grupos consultivos para la región Sur de ACT junto a los municipios con alta incidencia de fatalidades se llevó a cabo el viernes, 8 de septiembre de 2023. Dicha reunión contó con la participación de personal de manejo de emergencias, planificación municipal, policía municipal y estatal, la Comisión para la Seguridad en el Tránsito, F.I.E.S.T.A., y otras oficinas municipales.

A continuación, los comentarios recibidos de los participantes durante el segundo tema discutido relacionado con los usuarios vulnerables:

- **Cumplimiento de la Ley**
  - Indicaron que, en Puerto Rico, aunque se hagan cumplir la ley, si el gobierno continúa desautorizando las personas no respetaran. Esto debido a que a pesar de que la policía hace su trabajo de multar, el gobierno continúa dando exención a las multas, incluso a pesar de haber una cantidad alta de multa de tránsito en deuda.
  - Se trajo a discusión la siguiente pregunta “Si la ley establece que hay un límite de velocidad de 65mph entre todas las carreteras de Puerto Rico, ¿Por qué permiten carros con un mayor límite de velocidad?”. Seguido a esto se mencionó que se debería hacer una ley para que no lleguen carros a Puerto Rico con una velocidad mayor a 65mph y confiscar los carros modificados.
  - Se mencionó que las personas no respetan a los policías y no les importa recibir las multas.
  - Mencionaron que los jinetes necesitan regulación, como a los peatones en Estado Unidos.

- **Esfuerzos educativos**
  - Expusieron que los esfuerzos educativos no funcionan, y trajeron la pregunta de ¿por qué si los conductores de Emergencias médicas tienen que estar tomando clases obligatorias de educación continua sobre las leyes de tránsito, por qué no se les impone a los conductores los mismo?
  - Añadieron que debido a que la educación continua es para profesionales de la ley, los conductores desconocen los cambios más recientes en las leyes.
  - Se habló que en el año 2005 la ACT se llevó a los fiscales de Ponce para adiestrarlos sobre los procesos, se debería realizar los mismo nuevamente.

- **Infraestructura Vial**
  - Indicaron que hay un problema de señalización y dieron el ejemplo de que en el municipio de Guayama en la PR-52, cerca del peaje por la salida del Albergue Olímpico, en la carretera menciona que la velocidad máxima es 65mph mientras que en el peaje menciona que es 55 mph.

- Hablaron de que la iluminación, el marcado, rotulación es importante ya que se ha tenido accidentes fatales debido a estos factores.
- Expresaron que los puentes peatonales no están pensados para las personas con impedimentos y mayores.
- Mencionaron que las carreteras pueden estar repavimentadas, pero no están marcadas por lo que es un problema al dividir el espacio del peatón o ciclistas de los mismo conductores.
- Comentaron que los hoyos en las carreteras pueden ser un problema de seguridad, por lo que las agencias que destruyan las carreteras deberían repavimentarlas nuevamente.
- Comentaron que se busca que el sistema de transportación sea funcional, no algo estético.
- Se discutió que hay muchas carreteras donde se inundan cuando llueve. Ejemplo: PR-52 km 5.5 y PR-2 Km 2.20.
- Mencionaron que se debe realizar una mejora de toda la infraestructura peatonal de manera general.

- **Conductores bajo los efectos de sustancias controladas**
  - Indicaron que en las carreteras hay muchas personas manejando medicadas con Cannabis, las cuales tienen un gran historial de choques debido a esta razón.
  - Mencionaron que el caso del hermano de Arcángel hecho para atrás todos los esfuerzos y el mensaje sobre 'Si guías borracho, serás arrestado". Ya que se probó que, aunque se guíe borracho y maten a alguien en el proceso, pueden salir en libertad.
  - Añadieron que un problema técnico en el informe policiaco puede hacer que una persona quede en libertad.
  - Comentaron que los fiscales y abogados hacen lo que quieran con los policías en la corte, cuando son casos por manejar borracho.

- **Manejo de Emergencia**
  - Mencionaron un problema con los carros de EMS donde les están cobrando las multas de peajes cuando pasan a salvar una vida. Debido a esto, se han visto con menos vehículos ya que no les renuevan los marbetes hasta que se encuentre a la persona que manejó el vehículo para que pueda pagar. Esto debido a que al ser un automóvil del gobierno no se puede pagar una multa con el dinero público. Se añadió que las ambulancias deberían tener un sello que les permita pasar por los peajes sin ser multados.
  - Expresaron que se deben incluir en el informe 991 la razón del porque el vehículo de emergencia no llega a tiempo a la emergencia.

- **Comentarios Generales**
  - Puntualizaron que el tema del ganado en las carreteras es un problema, ya que se han presentado accidentes graves con ganado. Estas carreteras han sido señalizadas para los conductores, pero no han puesta vallas para que el ganado no cruce, por lo que deberían tener las vallas en consideración.
  - Indicaron que la burocracia es un problema ya que se echan la responsabilidades unos a otros.
  - Añadieron que hay que seguir transmitiendo el mensaje de que a las personas mayores no se les puede encerrar. Las estadísticas son reales, muchos viejitos son los que caminan en las carreteras de Puerto Rico.
  - Puntualizaron que a pesar de que la mayoría de los motociclistas respetan las leyes de tránsito, en el área montañosa (Orocovis) los motociclistas con motoras de todo terreno representan un problema de seguridad.

Appendix D Survey Results

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

VRU Pedestrian Survey Question

What makes walking Puerto Rico Streets more difficult or challenging?

Priority Order	Survey Question	Survey Average Response
1	Poor or no lighting on sidewalks.	4.66
2	Cracked, raised, or any other tripping hazard sidewalks.	4.64
3	Lack of connectivity and continuity of sidewalks on highly congested streets (i.e., high traffic volume)	4.58
4	People speeding on highly congested streets (i.e., high traffic volume).	4.51
5	People speeding on residential streets.	4.47
6	Lack of curb ramps at intersection sidewalks.	4.40
7	Few or no safe crossing points on busy streets (i.e., outside of intersections).	4.39
8	Lack of connectivity and continuity of sidewalks in residential streets.	4.32
9	Drivers not yielding the right of way to pedestrians when they cross the street.	4.30
10	Insufficient time to cross the street.	3.81

VRU Cycling Survey Question

What makes cycling on Puerto Rico streets more difficult or challenging?

Priority Order	Survey Question	Survey Average Response
1	Lack of dedicated bicycle lanes.	4.60
2	Lack of cycling infrastructure near workplaces.	4.58
3	Drivers do not respect or protect cyclists (e.g., speeding vehicles, failure to yield).	4.33
4	Cyclists do not obey applicable traffic rules.	4.24
5	The topography of many streets in Puerto Rico (e.g., hills) makes it challenging to use them.	3.63
6	High temperatures.	3.31

VRU Location to Prioritize Survey Question

What types of places/streets are the most important for mobility improvements?

Priority Order	Survey Question	Survey Average Response
1	Areas with a higher population of elderly individuals, disabled individuals, low-income residents, and/or those who depend on public transportation.	4.68
2	Streets where fatalities and serious injuries have occurred.	4.59
3	Streets that connect people to public transportation/bus stops.	4.58
4	Streets that connect families and children to schools.	4.57
5	Residential streets that lack sidewalks or walking paths.	4.48
6	Streets that connect local businesses (e.g., local supermarkets, stores, and/or services) to neighborhoods/communities.	4.48
7	Areas where the majority of people live and/or work.	4.46
8	Along and through busy streets (i.e., high vehicular traffic volume).	4.35
9	Streets that connect people to parks.	4.24
10	Streets that connect people to libraries, community centers, and other community facilities.	4.17

Encuesta - Grupos consultivos en seguridad vial (Región Este)

15 Responses 09:19 Average time to complete Active Status

1. Aceras agrietadas, levantadas o cualquier otro peligro de tropiezo.

15	4.2
Responses	Average Number

2. Falta de conectividad y continuidad de aceras en calles residenciales.

15	4.33
Responses	Average Number

3. Falta de conectividad y continuidad de aceras en calles muy concurridas (i.e., alto volumen vehicular).

15	4.27
Responses	Average Number

4. Pocos o ningún lugar seguro para cruzar calles transitadas (i.e., fuera de intersecciones).

15	4.53
Responses	Average Number

5. Conductores no ceden el paso al peatón cuando cruzan la calle.

15	4.67
Responses	Average Number

6. Falta de rampas en las aceras de las intersecciones.

15	4.07
Responses	Average Number

7. Personas conduciendo a exceso de velocidad en calles muy concurridas (i.e., alto volumen vehicular).

15	4.53
Responses	Average Number

8. Personas conduciendo a exceso de velocidad en calles residenciales.

15	4.53
Responses	Average Number

9. Pobre o ninguna iluminación en las aceras.

15	4.73
Responses	Average Number

10. No hay tiempo suficiente para cruzar la calle.

15	4.07
Responses	Average Number

11. Opcional

6
Responses

Latest Responses
"Estacionamiento de impedidos ocupados por personas sin ...

12. Temperaturas altas.

15
Responses

3.33
Average Number

13. La topografía de muchas calles en Puerto Rico (i.e., cuestas) hace difícil el usarla.

15
Responses

3.6
Average Number

14. Falta de carriles exclusivos de bicicleta.

15
Responses

4.6
Average Number

15. Falta de infraestructura ciclista cerca de los lugares de trabajo.

15
Responses

4.4
Average Number

16. Conductores no respetan ni protegen al ciclista (i.e., exceso de velocidad de vehículos, no ceden al paso)

15
Responses

4.53
Average Number

17. Ciclistas no respetan las normas de tránsito aplicables.

15
Responses

4.2
Average Number

18. Opcional

3
Responses

Latest Responses
"Los ciclistas y conductores necesitan más educación para c...

19. Calles que conectan familias y niños con las escuelas.

15
Responses

4.6
Average Number

20. Calles que conectan a las personas con el transporte público/paradas de autobús.

15
Responses

4.6
Average Number

21. Áreas con mayor poblacion de envejecientes, discapacitados, bajos ingresos y/o que dependen de transporte público.

15
Responses

4.6
Average Number

22. Calles donde han ocurrido fatalidades y heridos graves.

15
Responses

4.73
Average Number

23. Calles que conectan comercios (i.e. supermercados locales, tiendas y/o servicios locales) con barrios/comunidades.

15
Responses

4.4
Average Number

24. Zonas donde vive y/o trabaja la mayoría de la gente.

15
Responses

4.6
Average Number

25. Calles que conectan a la gente con los parques.

15
Responses

4.27
Average Number

26. Calles que conectan a las personas con bibliotecas, centros comunitarios y otras instalaciones comunitarias.

15
Responses

4.2
Average Number

27. A lo largo y a través de calles concurridas (i.e., alto volumen vehicular).

15
Responses

4.6
Average Number

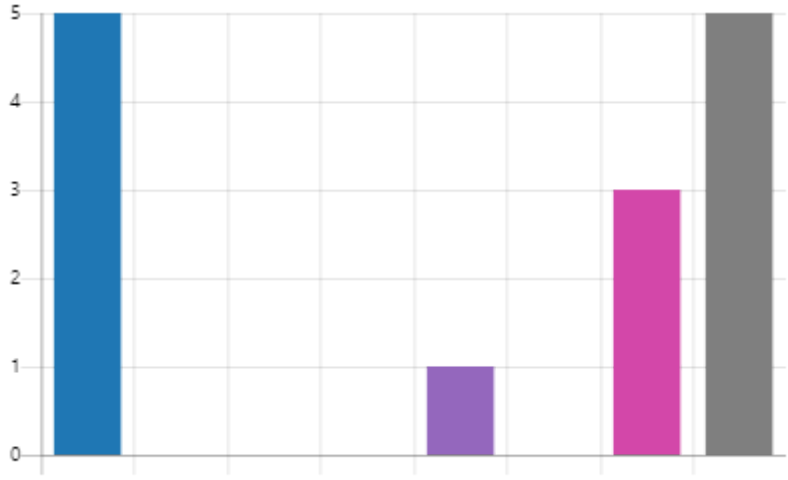
28. Calles residenciales que carecen de aceras o senderos para caminar.

15
Responses

4.33
Average Number

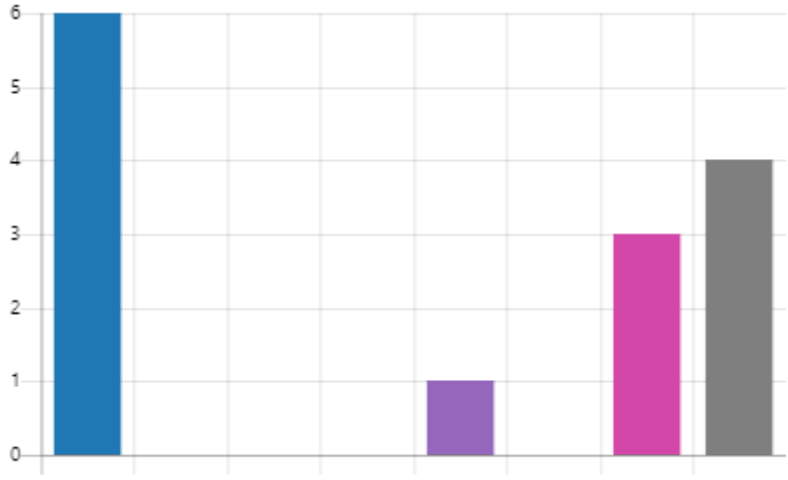
29. ¿En cual municipio vives?

Caguas	5
Loíza	0
Río Grande	0
Maunabo	0
San Lorenzo	1
Las Piedras	0
Fajardo	3
Other	5



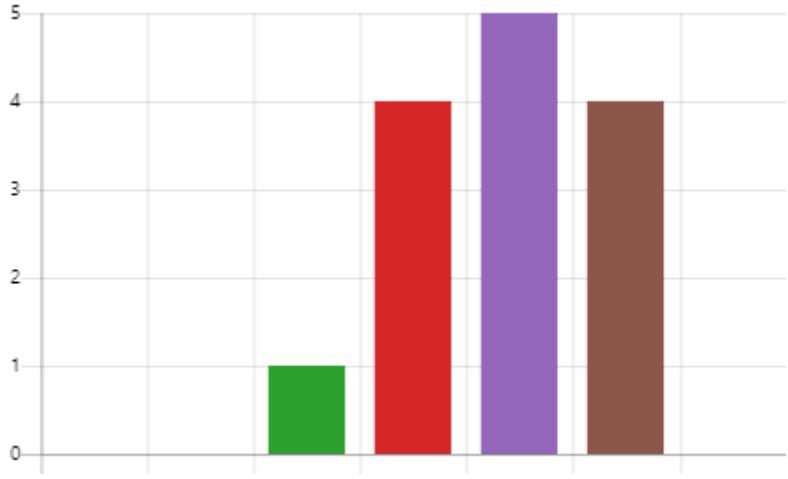
30. ¿En cual municipio trabajas o estudias?

Caguas	6
Loíza	0
Río Grande	0
Maunabo	0
San Lorenzo	1
Las Piedras	0
Fajardo	3
Other	4



31. ¿Cual es tu edad?

Menor de 18	0
18-24	0
25-34	1
35-44	4
45-54	5
55-65	4
Mayor de 65	0



32. ¿Cuál es tu género?

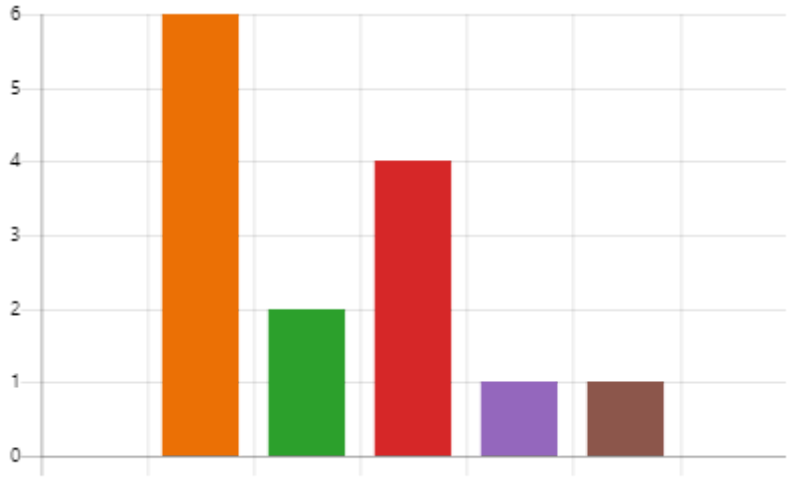
Mujer	7
Hombre	7
Other	0

33. ¿Cuál es tu nivel mas alto de educación?

Diploma de cuarto año o men...	0
Grado técnico o asociado	1
Título universatario de bachill...	8
Estudios graduados	5
Other	0

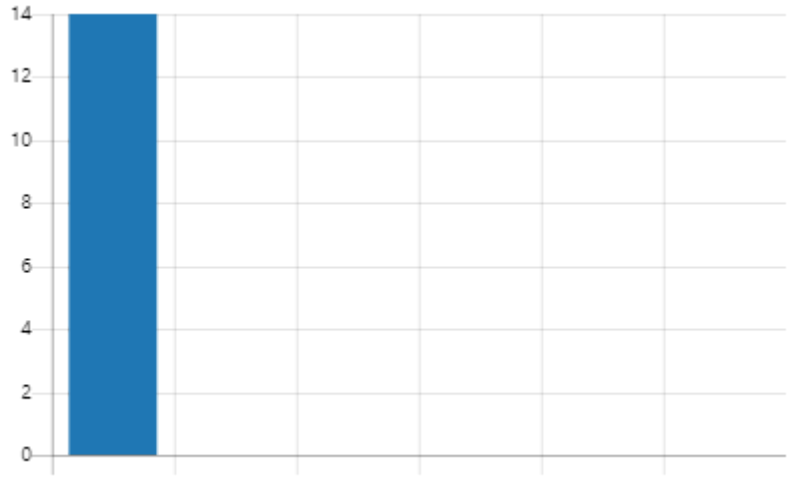
34. ¿Cuál es tu ingreso anual?

Menor de $9,000	0
9,000 - $24,999	6
$25,000 - $41,499	2
$41,500 - $61,499	4
$61,500 - $79,999	1
$80,000 - $100,000	1
Mayor de $100,000	0



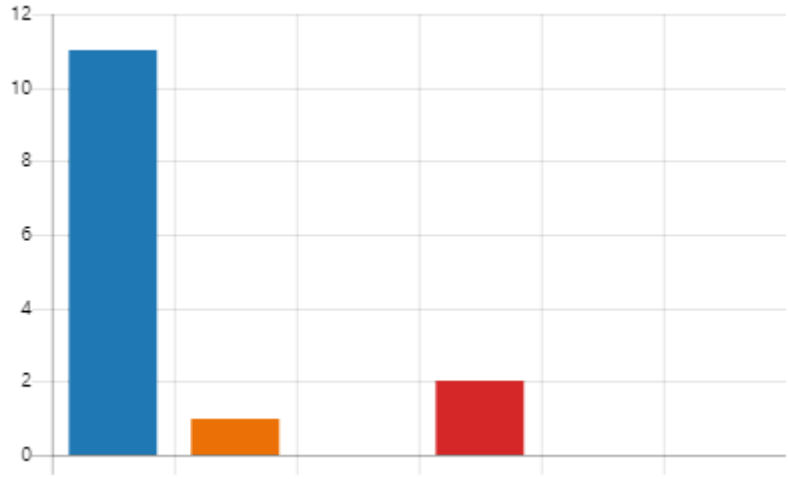
35. ¿Tienes alguna discapacidad?

No	14
Si - relacionado con la audición	0
Si - relacionado con la visión	0
Si - relacionado con la movilid...	0
Si - problemas cognitivos o in...	0
Other	0



36. ¿Vives con alguien que tiene alguna discapacidad?

No	11
Si - relacionado con la audición	1
Si - relacionado con la visión	0
Si - relacionado con la movilid...	2
Si - problemas cognitivos o in...	0
Other	0



37. Por favor exprese cualquier idea o sugerencia sobre cómo mejor atender la seguridad vial en Puerto Rico.

5
Responses

Latest Responses

"*Utilizar más frecuente las redes sociales para la educación...*

Encuesta - Grupos consultivos en seguridad vial (Región Oeste)

10 Responses 05:32 Average time to complete Active Status

1. Aceras agrietadas, levantadas o cualquier otro peligro de tropiezo.

10	4.8
Responses	Average Number

2. Falta de conectividad y continuidad de aceras en calles residenciales.

10	4.7
Responses	Average Number

3. Falta de conectividad y continuidad de aceras en calles muy concurridas (i.e., alto volumen vehicular).

10	4.9
Responses	Average Number

4. Pocos o ningún lugar seguro para cruzar calles transitadas (i.e., fuera de intersecciones).

10	4.9
Responses	Average Number

5. Conductores no ceden el paso al peatón cuando cruzan la calle.

10	4.4
Responses	Average Number

6. Falta de rampas en las aceras de las intersecciones.

10	4.4
Responses	Average Number

7. Personas conduciendo a exceso de velocidad en calles muy concurridas (i.e., alto volumen vehicular).

10	4.5
Responses	Average Number

8. Personas conduciendo a exceso de velocidad en calles residenciales.

10	4.8
Responses	Average Number

9. Pobre o ninguna iluminación en las aceras.

10	4.9
Responses	Average Number

10. No hay tiempo suficiente para cruzar la calle.

10	4
Responses	Average Number

11. Opcional

1
Responses

Latest Responses
"*Falta de rotulación, cruces peatonales y alumbrado.*"

12. Temperaturas altas.

10
Responses

3.3
Average Number

13. La topografía de muchas calles en Puerto Rico (i.e., cuestas) hace difícil el usarla.

10
Responses

4
Average Number

14. Falta de carriles exclusivos de bicicleta.

10
Responses

4.9
Average Number

15. Falta de infraestructura ciclista cerca de los lugares de trabajo.

10
Responses

4.7
Average Number

16. Conductores no respetan ni protegen al ciclista (i.e., exceso de velocidad de vehículos, no ceden al paso)

10
Responses

4.6
Average Number

17. Ciclistas no respetan las normas de tránsito aplicables.

10	4.1
Responses	Average Number

18. Opcional

0	
Responses	Latest Responses

19. Calles que conectan familias y niños con las escuelas.

10	4.5
Responses	Average Number

20. Calles que conectan a las personas con el transporte público/paradas de autobús.

10	4.1
Responses	Average Number

21. Áreas con mayor poblacion de envejecientes, discapacitados, bajos ingresos y/o que dependen de transporte público.

10	4.4
Responses	Average Number

22. Calles donde han ocurrido fatalidades y heridos graves.

10	4.5
Responses	Average Number

23. Calles que conectan comercios (i.e. supermercados locales, tiendas y/o servicios locales) con barrios/comunidades.

10	4.4
Responses	Average Number

24. Zonas donde vive y/o trabaja la mayoría de la gente.

10	4.5
Responses	Average Number

25. Calles que conectan a la gente con los parques.

10	3.9
Responses	Average Number

26. Calles que conectan a las personas con bibliotecas, centros comunitarios y otras instalaciones comunitarias.

10	4
Responses	Average Number

27. A lo largo y a través de calles concurridas (i.e., alto volumen vehicular).

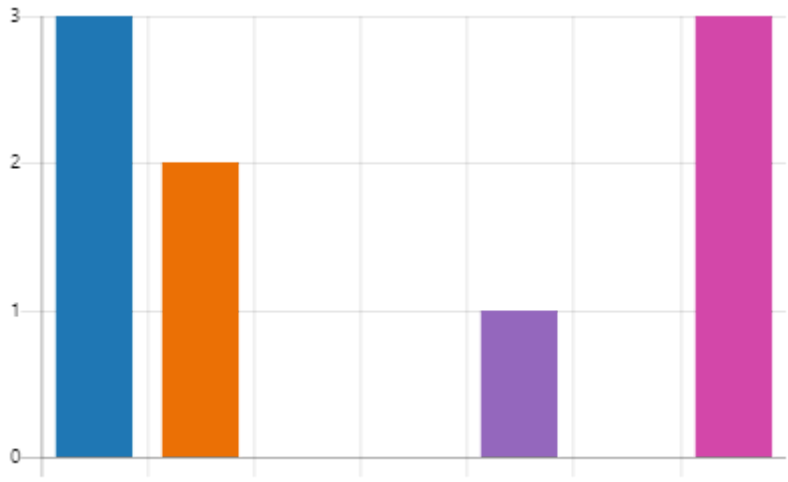
10	4.5
Responses	Average Number

28. Calles residenciales que carecen de aceras o senderos para caminar.

10	4.2
Responses	Average Number

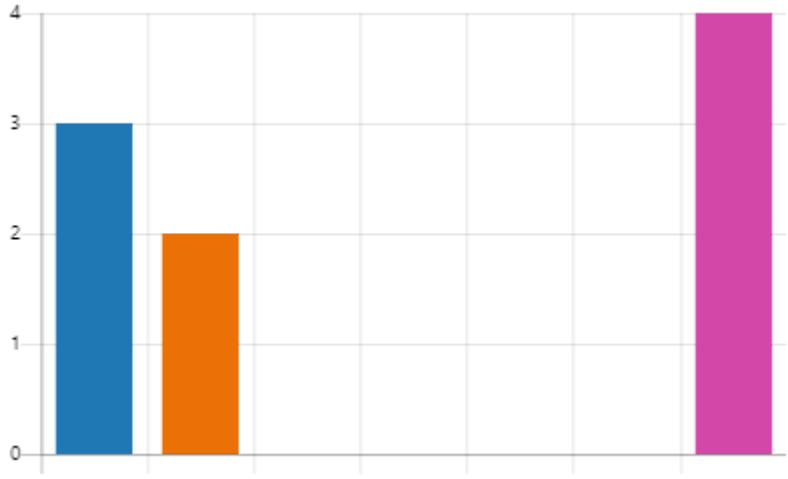
29. ¿En cual municipio vives?

Mayagüez	3
Aguadilla	2
Rincón	0
Quebradillas	0
Añasco	1
Isabela	0
Other	3



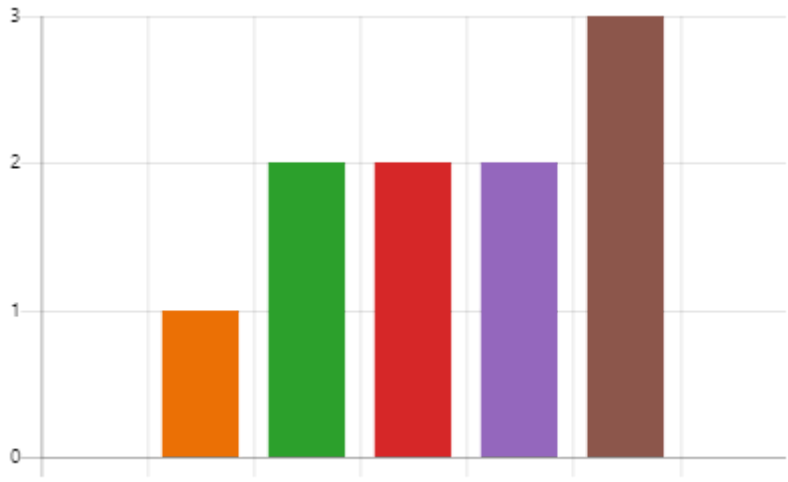
30. ¿En cual municipio trabajas o estudias?

Mayagüez	3
Aguadilla	2
Rincón	0
Quebradillas	0
Añasco	0
Isabela	0
Other	4



31. ¿Cual es tu edad?

Menor de 18	0
18-24	1
25-34	2
35-44	2
45-54	2
55-65	3
Mayor de 65	0



32. ¿Cuál es tu género?

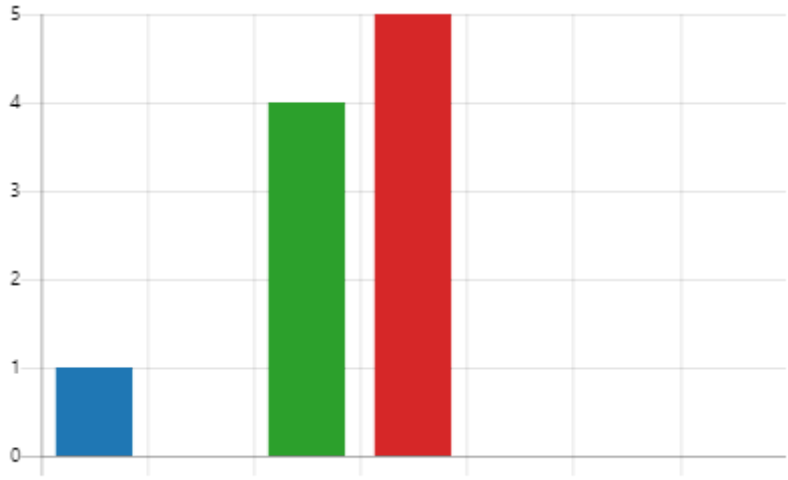
Mujer	1
Hombre	9
Other	0

33. ¿Cuál es tu nivel mas alto de educación?

Diploma de cuarto año o men...	1
Grado técnico o asociado	2
Título universatario de bachill...	3
Estudios graduados	4
Other	0

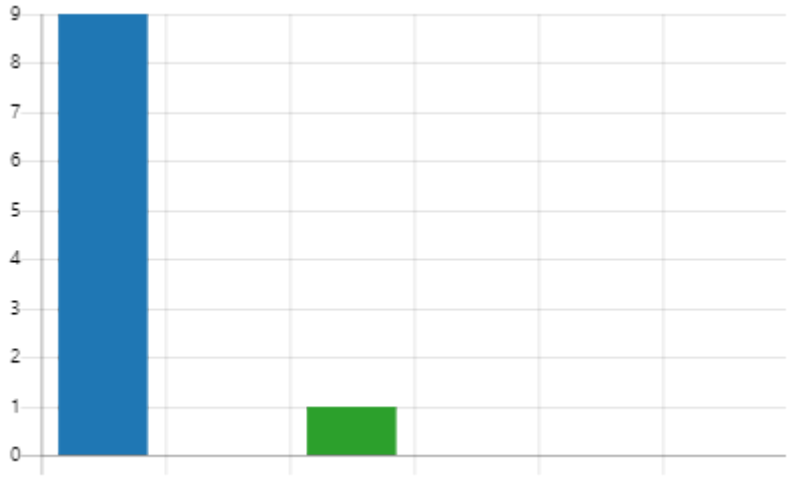
34. ¿Cuál es tu ingreso anual?

Menor de $9,000	1
9,000 - $24,999	0
$25,000 - $41,499	4
$41,500 - $61,499	5
$61,500 - $79,999	0
$80,000 - $100,000	0
Mayor de $100,000	0



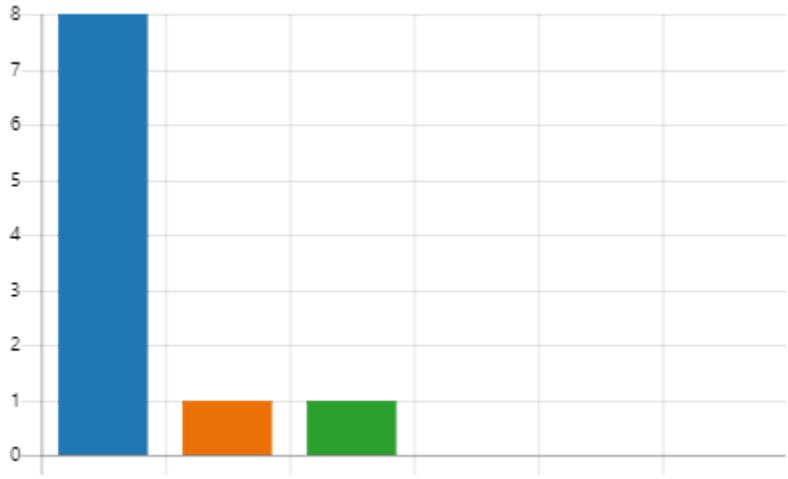
35. ¿Tienes alguna discapacidad?

No	9
Si - relacionado con la audición	0
Si - relacionado con la visión	1
Si - relacionado con la movilid...	0
Si - problemas cognitivos o in...	0
Other	0



36. ¿Vives con alguien que tiene alguna discapacidad?

No	8
Si - relacionado con la audición	1
Si - relacionado con la visión	1
Si - relacionado con la movilid...	0
Si - problemas cognitivos o in...	0
Other	0



37. Por favor exprese cualquier idea o sugerencia sobre cómo mejor atender la seguridad vial en Puerto Rico.

0
Responses

Latest Responses

Encuesta - Grupos consultivos en seguridad vial (Región Norte y Metro)

26 Responses 06:08 Average time to complete Active Status

1. Aceras agrietadas, levantadas o cualquier otro peligro de tropiezo.

26	4.46
Responses	Average Number

2. Falta de conectividad y continuidad de aceras en calles residenciales.

26	4.42
Responses	Average Number

3. Falta de conectividad y continuidad de aceras en calles muy concurridas (i.e., alto volumen vehicular).

26	4.42
Responses	Average Number

4. Pocos o ningún lugar seguro para cruzar calles transitadas (i.e., fuera de intersecciones).

26	4.5
Responses	Average Number

5. Conductores no ceden el paso al peatón cuando cruzan la calle.

26	4.54
Responses	Average Number

6. Falta de rampas en las aceras de las intersecciones.

26	4.38
Responses	Average Number

7. Personas conduciendo a exceso de velocidad en calles muy concurridas (i.e., alto volumen vehicular).

26	4.77
Responses	Average Number

8. Personas conduciendo a exceso de velocidad en calles residenciales.

26	4.46
Responses	Average Number

9. Pobre o ninguna iluminación en las aceras.

26	4.62
Responses	Average Number

10. No hay tiempo suficiente para cruzar la calle.

26	4.15
Responses	Average Number

11. Opcional

9
Responses

Latest Responses
"*Falta de rotulación antes del cruce* "

12. Temperaturas altas.

26
Responses

3.5
Average Number

13. La topografía de muchas calles en Puerto Rico (i.e., cuestas) hace difícil el usarla.

26
Responses

4
Average Number

14. Falta de carriles exclusivos de bicicleta.

26
Responses

4.77
Average Number

15. Falta de infraestructura ciclista cerca de los lugares de trabajo.

26
Responses

4.65
Average Number

16. Conductores no respetan ni protegen al ciclista (i.e., exceso de velocidad de vehículos, no ceden al paso)

26
Responses

4.73
Average Number

17. Ciclistas no respetan las normas de tránsito aplicables.

26	4.38
Responses	Average Number

18. Opcional

3	Latest Responses
Responses	"*Transitan de noche y la falta de alumbrado los pone en rie...*
	"*Se debe enmendar la ley en cuanto a k el ciclista discurra ...*

19. Calles que conectan familias y niños con las escuelas.

26	4.62
Responses	Average Number

20. Calles que conectan a las personas con el transporte público/paradas de autobús.

26	4.65
Responses	Average Number

21. Áreas con mayor poblacion de envejecientes, discapacitados, bajos ingresos y/o que dependen de transporte público.

26	4.77
Responses	Average Number

22. Calles donde han ocurrido fatalidades y heridos graves.

26	4.65
Responses	Average Number

23. Calles que conectan comercios (i.e. supermercados locales, tiendas y/o servicios locales) con barrios/comunidades.

26	4.62
Responses	Average Number

24. Zonas donde vive y/o trabaja la mayoría de la gente.

26	4.69
Responses	Average Number

25. Calles que conectan a la gente con los parques.

26	4.46
Responses	Average Number

26. Calles que conectan a las personas con bibliotecas, centros comunitarios y otras instalaciones comunitarias.

26	4.27
Responses	Average Number

27. A lo largo y a través de calles concurridas (i.e., alto volumen vehicular).

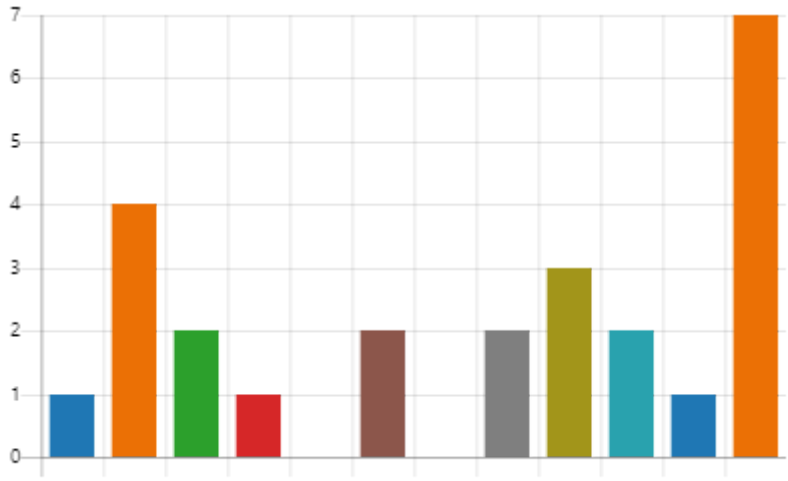
26	4.46
Responses	Average Number

28. Calles residenciales que carecen de aceras o senderos para caminar.

26	4.54
Responses	Average Number

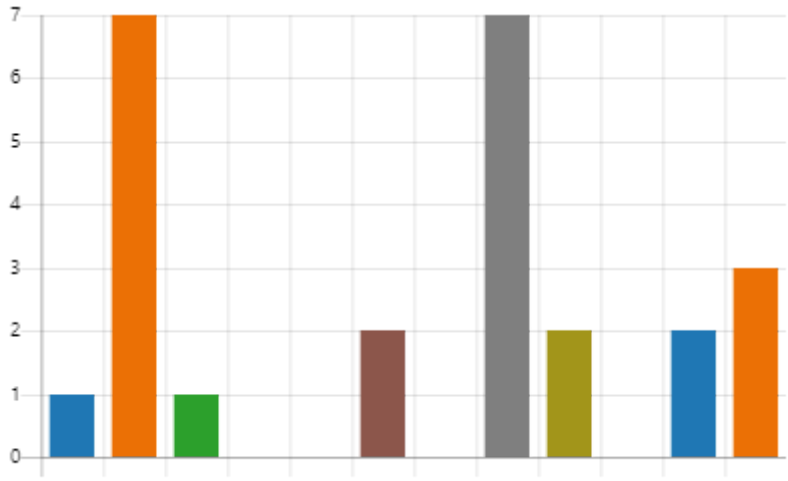
29. ¿En cual municipio vives?

Hatillo	1
Toa Baja	4
Vega Alta	2
Arecibo	1
Camuy	0
Manatí	2
Dorado	0
San Juan	2
Bayamon	3
Carolina	2
Cataño	1
Other	7



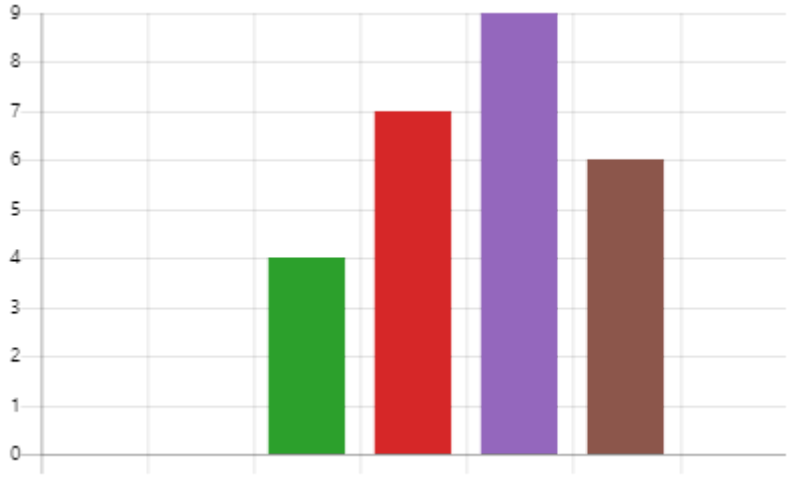
30. ¿En cual municipio trabajas o estudias?

Hatillo	1
Toa Baja	7
Vega Alta	1
Arecibo	0
Camuy	0
Manatí	2
Dorado	0
San Juan	7
Bayamon	2
Carolina	0
Cataño	2
Other	3



31. ¿Cual es tu edad?

Menor de 18	0
18-24	0
25-34	4
35-44	7
45-54	9
55-65	6
Mayor de 65	0



32. ¿Cuál es tu género?

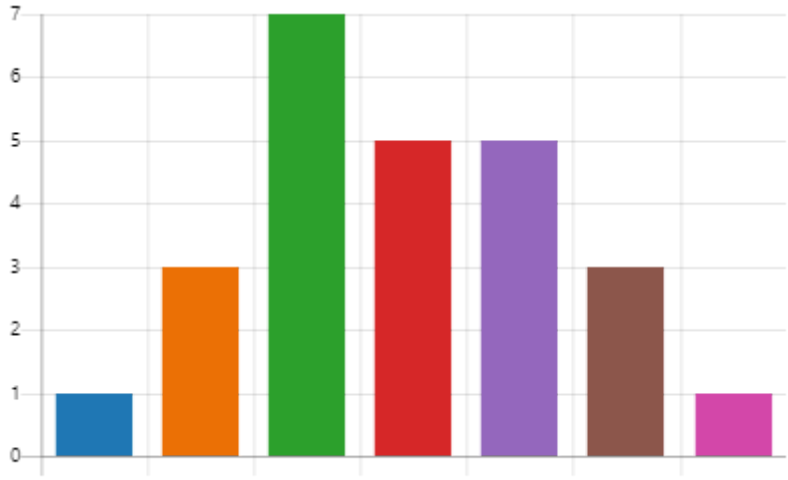
Mujer	15
Hombre	11
Other	0

33. ¿Cuál es tu nivel mas alto de educación?

Diploma de cuarto año o men...	1
Grado técnico o asociado	4
Título universatario de bachill...	6
Estudios graduados	14
Other	1

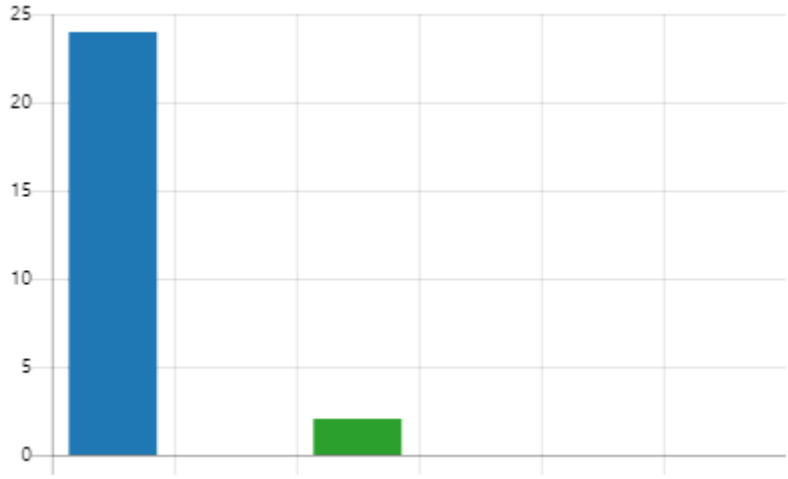
34. ¿Cuál es tu ingreso anual?

Menor de $9,000	1
9,000 - $24,999	3
$25,000 - $41,499	7
$41,500 - $61,499	5
$61,500 - $79,999	5
$80,000 - $100,000	3
Mayor de $100,000	1



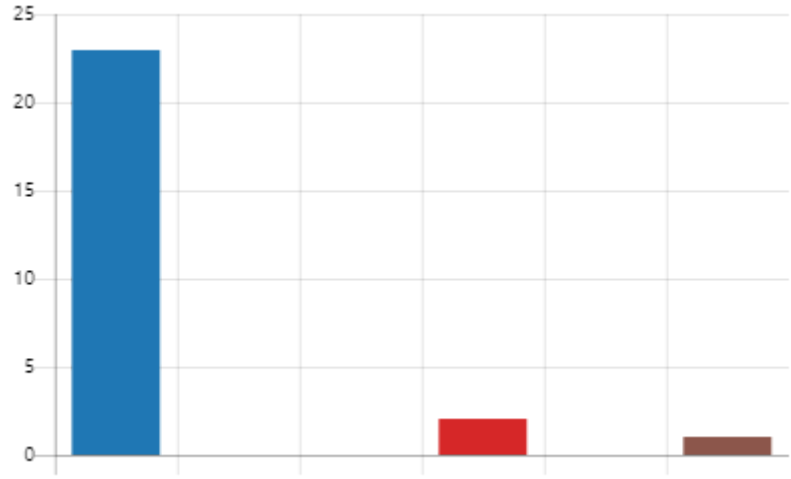
35. ¿Tienes alguna discapacidad?

No	24
Si - relacionado con la audición	0
Si - relacionado con la visión	2
Si - relacionado con la movilid...	0
Si - problemas cognitivos o in...	0
Other	0



36. ¿Vives con alguien que tiene alguna discapacidad?

No	23
Si - relacionado con la audición	0
Si - relacionado con la visión	0
Si - relacionado con la movilid...	2
Si - problemas cognitivos o in...	0
Other	1



37. Por favor exprese cualquier idea o sugerencia sobre cómo mejor atender la seguridad vial en Puerto Rico.

8
Responses

Latest Responses

"Departamento de Obras públicas tiene que trabajar con la...

Encuesta - Grupos consultivos en seguridad vial (Región Sur)

9 Responses 07:57 Average time to complete Active Status

1. Aceras agrietadas, levantadas o cualquier otro peligro de tropiezo.

9	4.56
Responses	Average Number

2. Falta de conectividad y continuidad de aceras en calles residenciales.

9	4.11
Responses	Average Number

3. Falta de conectividad y continuidad de aceras en calles muy concurridas (i.e., alto volumen vehicular).

9	4.56
Responses	Average Number

4. Pocos o ningún lugar seguro para cruzar calles transitadas (i.e., fuera de intersecciones).

9	4.78
Responses	Average Number

5. Conductores no ceden el paso al peatón cuando cruzan la calle.

9	4
Responses	Average Number

6. Falta de rampas en las aceras de las intersecciones.

9	4.11
Responses	Average Number

7. Personas conduciendo a exceso de velocidad en calles muy concurridas (i.e., alto volumen vehicular).

9	4.33
Responses	Average Number

8. Personas conduciendo a exceso de velocidad en calles residenciales.

9	4.22
Responses	Average Number

9. Pobre o ninguna iluminación en las aceras.

9	4.89
Responses	Average Number

10. No hay tiempo suficiente para cruzar la calle.

9	4.33
Responses	Average Number

11. Opcional

4
Responses

Latest Responses

"Falta de señalización Pobre cantidad de cruces peatonales...

"Chalas educativas compulsarías tanto para los conductore...

12. Temperaturas altas.

9
Responses

2.89
Average Number

13. La topografía de muchas calles en Puerto Rico (i.e., cuestas) hace difícil el usarla.

9
Responses

3
Average Number

14. Falta de carriles exclusivos de bicicleta.

9
Responses

4.33
Average Number

15. Falta de infraestructura ciclista cerca de los lugares de trabajo.

9
Responses

4.22
Average Number

16. Conductores no respetan ni protegen al ciclista (i.e., exceso de velocidad de vehículos, no ceden al paso)

9
Responses

4.67
Average Number

17. Ciclistas no respetan las normas de tránsito aplicables.

9	4.56
Responses	Average Number

18. Opcional

1	
Responses	Latest Responses

19. Calles que conectan familias y niños con las escuelas.

9	4.44
Responses	Average Number

20. Calles que conectan a las personas con el transporte público/paradas de autobús.

9	4.22
Responses	Average Number

21. Áreas con mayor poblacion de envejecientes, discapacitados, bajos ingresos y/o que dependen de transporte público.

9	4.78
Responses	Average Number

22. Calles donde han ocurrido fatalidades y heridos graves.

9	4.78
Responses	Average Number

23. Calles que conectan comercios (i.e. supermercados locales, tiendas y/o servicios locales) con barrios/comunidades.

9	4.67
Responses	Average Number

24. Zonas donde vive y/o trabaja la mayoría de la gente.

9	4.56
Responses	Average Number

25. Calles que conectan a la gente con los parques.

9	4.44
Responses	Average Number

26. Calles que conectan a las personas con bibliotecas, centros comunitarios y otras instalaciones comunitarias.

9	4.22
Responses	Average Number

27. A lo largo y a través de calles concurridas (i.e., alto volumen vehicular).

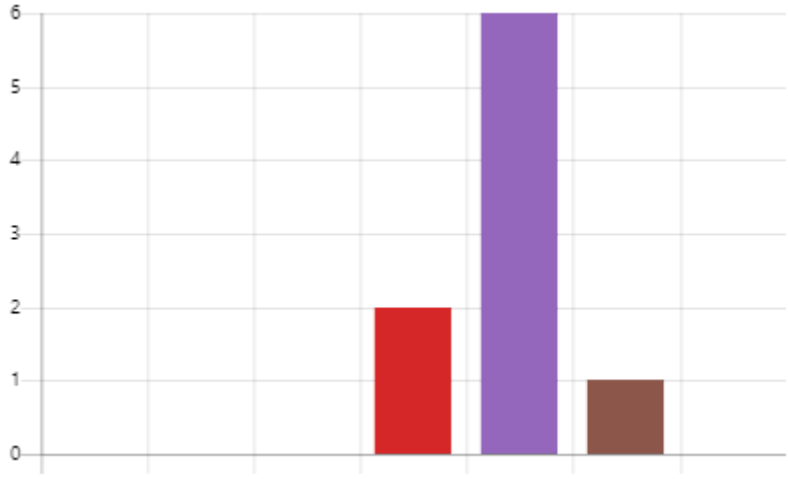
9	4.67
Responses	Average Number

28. Calles residenciales que carecen de aceras o senderos para caminar.

9	4.56
Responses	Average Number

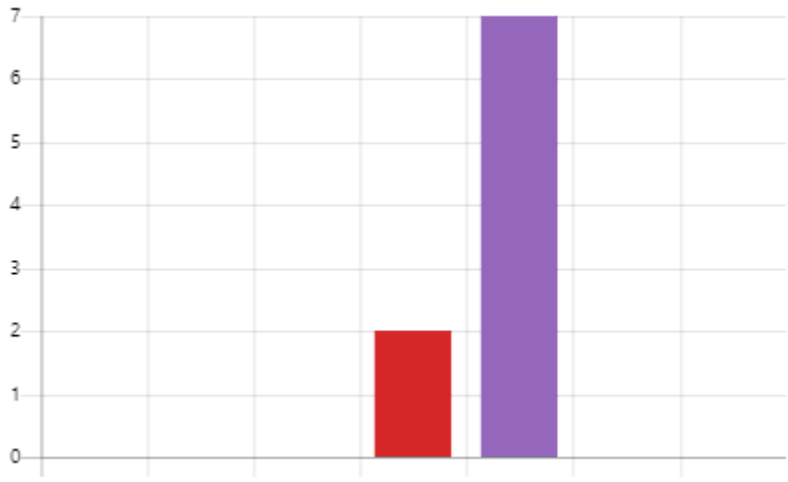
29. ¿En cual municipio vives?

Arroyo	0
Cayey	0
Coamo	0
Juana Diaz	2
Ponce	6
Villalba	1
Other	0



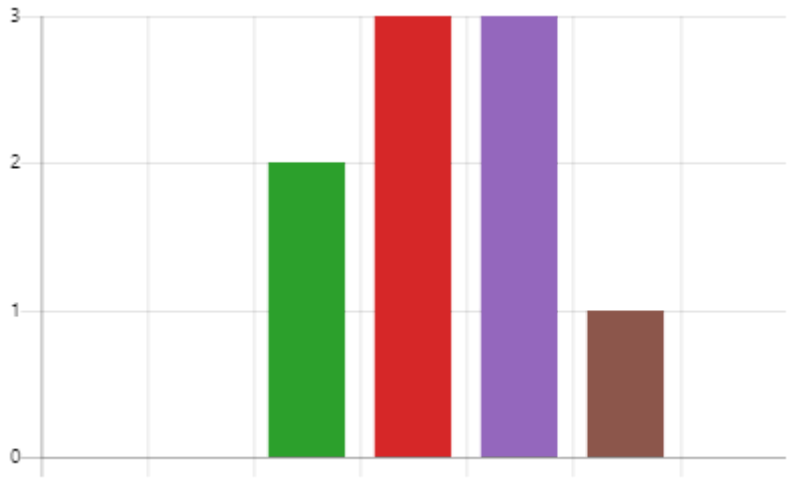
30. ¿En cual municipio trabajas o estudias?

Arroyo	0
Cayey	0
Coamo	0
Juana Diaz	2
Ponce	7
Villalba	0
Other	0



31. ¿Cual es tu edad?

Menor de 18	0
18-24	0
25-34	2
35-44	3
45-54	3
55-65	1
Mayor de 65	0



32. ¿Cuál es tu género?

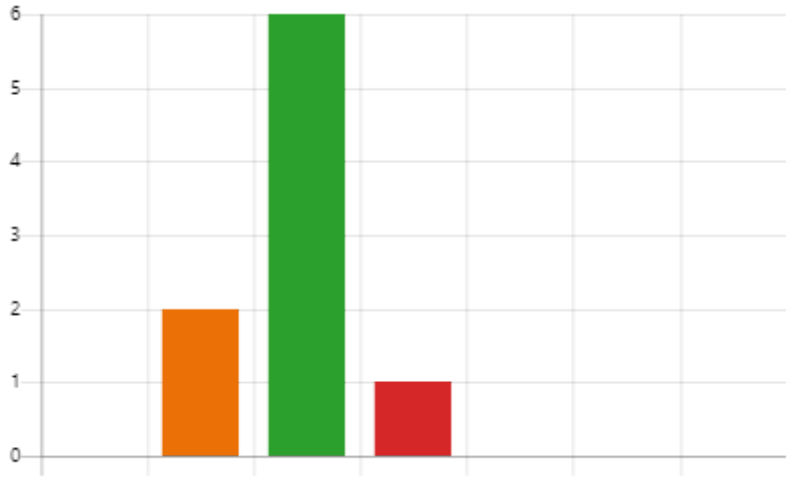
Mujer	1
Hombre	8
Other	0

33. ¿Cuál es tu nivel mas alto de educación?

Diploma de cuarto año o men...	0
Grado técnico o asociado	0
Título universatario de bachill...	5
Estudios graduados	3
Other	1

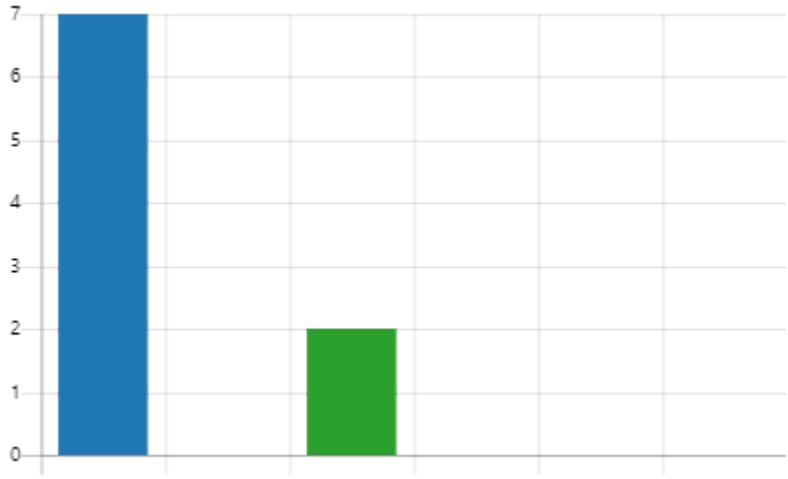
34. ¿Cuál es tu ingreso anual?

Menor de $9,000	0
9,000 - $24,999	2
$25,000 - $41,499	6
$41,500 - $61,499	1
$61,500 - $79,999	0
$80,000 - $100,000	0
Mayor de $100,000	0



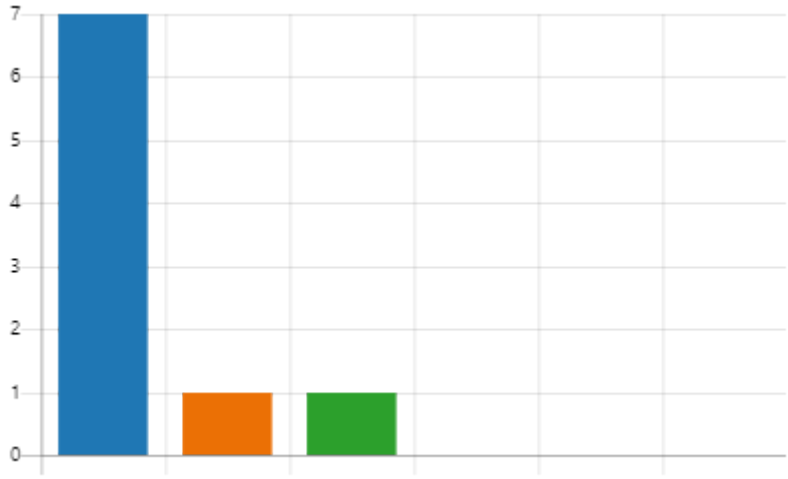
35. ¿Tienes alguna discapacidad?

No	7
Si - relacionado con la audición	0
Si - relacionado con la visión	2
Si - relacionado con la movilid...	0
Si - problemas cognitivos o in...	0
Other	0



36. ¿Vives con alguien que tiene alguna discapacidad?

No	7
Si - relacionado con la audición	1
Si - relacionado con la visión	1
Si - relacionado con la movilid...	0
Si - problemas cognitivos o in...	0
Other	0



37. Por favor exprese cualquier idea o sugerencia sobre cómo mejor atender la seguridad vial en Puerto Rico.

2
Responses

Latest Responses

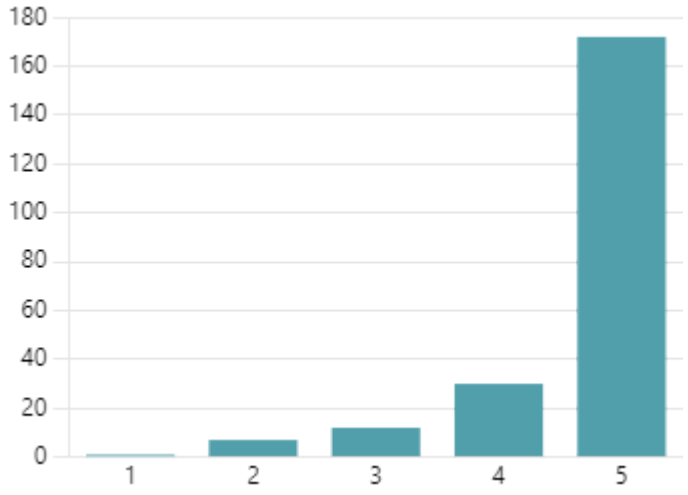
"*Compromiso* "

Encuesta general sobre usuarios vulnerables

222	16:38	Active
Responses	Average time to complete	Status

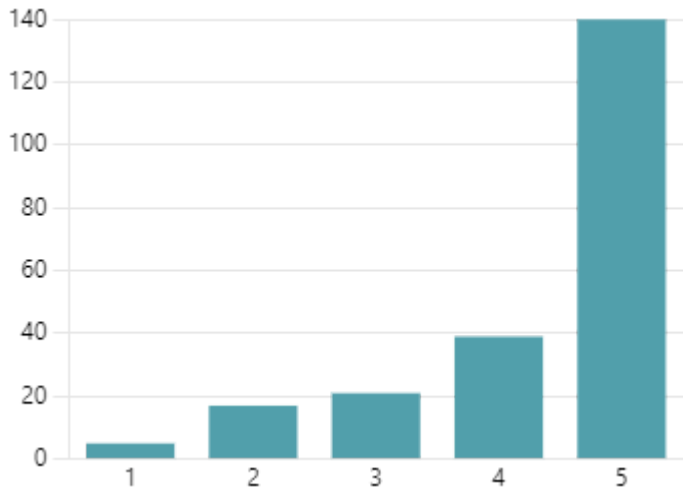
1. Aceras agrietadas, levantadas o cualquier otro peligro de tropiezo.

4.64
Average Rating



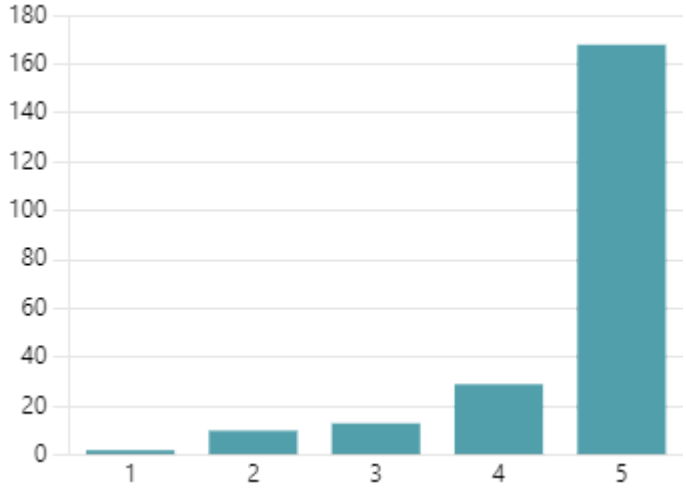
2. Falta de conectividad y continuidad de aceras en calles residenciales.

4.32
Average Rating



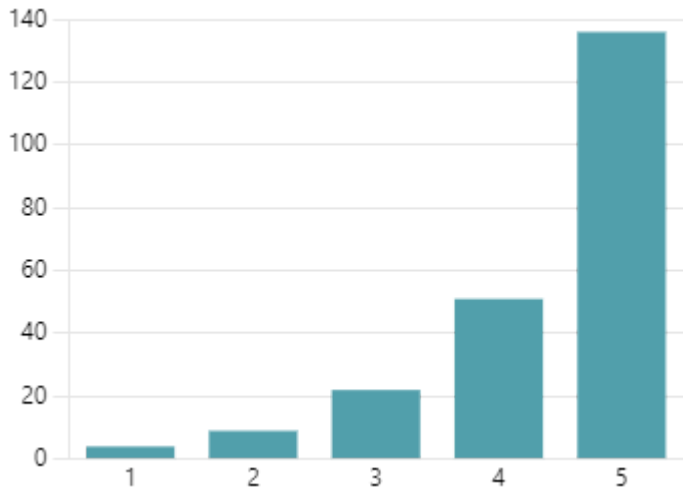
3. Falta de conectividad y continuidad de aceras en calles muy concurridas (i.e., alto volumen vehicular).

4.58
Average Rating



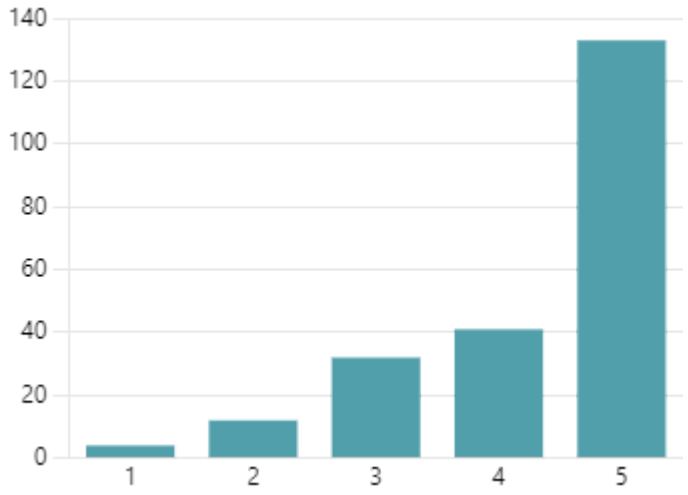
4. Pocos o ningún lugar seguro para cruzar calles transitadas (i.e., fuera de intersecciones).

4.38
Average Rating



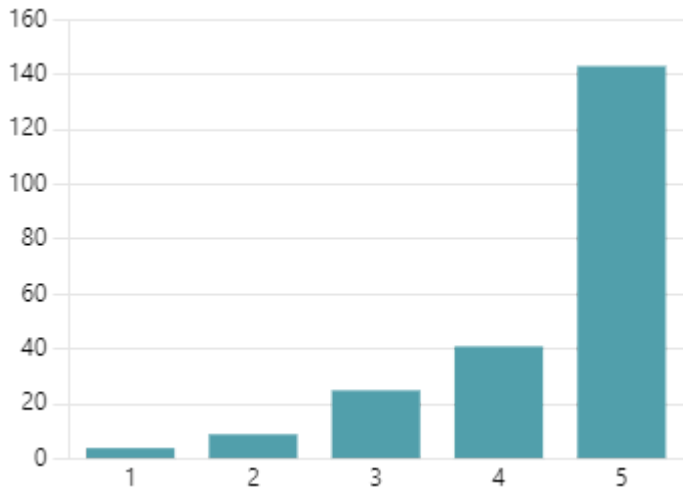
5. Conductores no ceden el paso al peatón cuando cruzan la calle.

4.29
Average Rating



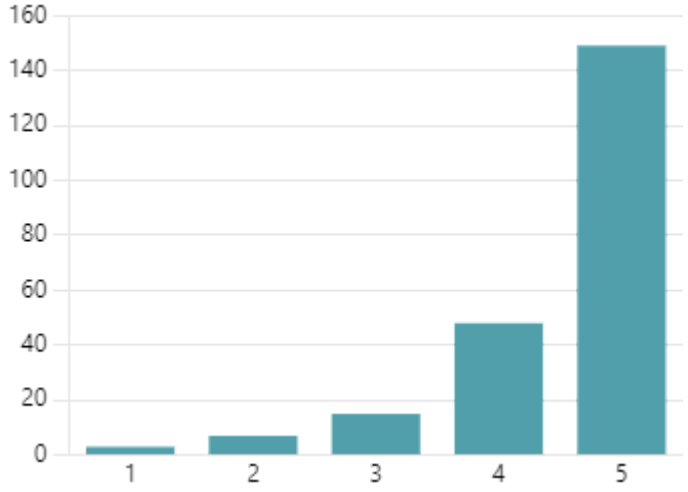
6. Falta de rampas en las aceras de las intersecciones.

4.40
Average Rating



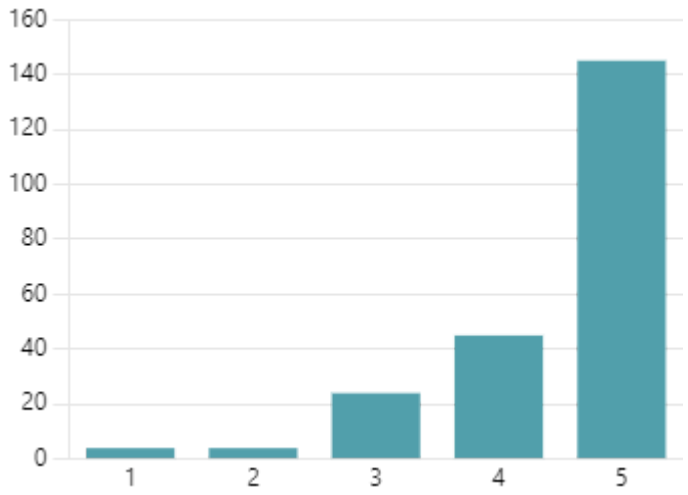
7. Personas conduciendo a exceso de velocidad en calles muy concurridas (i.e., alto volumen vehicular).

4.50
Average Rating



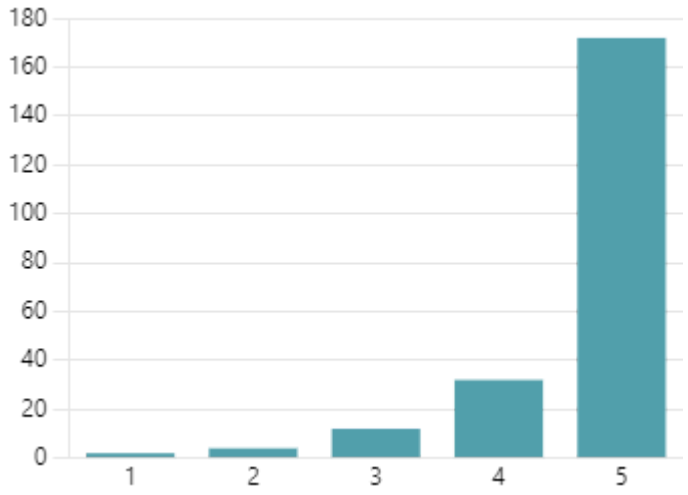
8. Personas conduciendo a exceso de velocidad en calles residenciales.

4.46
Average Rating



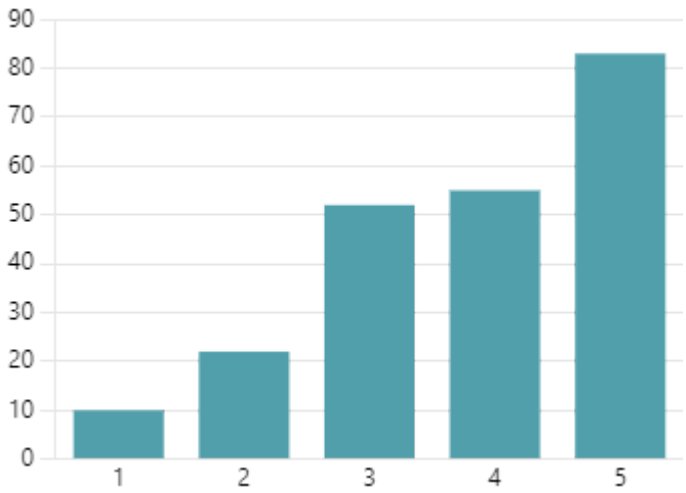
9. Pobre o ninguna iluminación en las aceras.

4.66
Average Rating



10. No hay tiempo suficiente para cruzar la calle.

3.81
Average Rating



11. Opcional

89
Responses

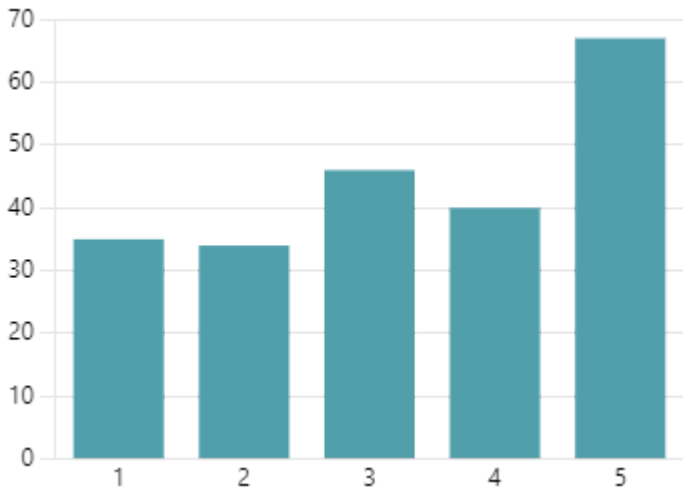
Latest Responses
"Falta de puentes peatonales en buenas condiciones en avenida...

↻ Update

50 respondents (**60**%) answered **LAS** for this question.

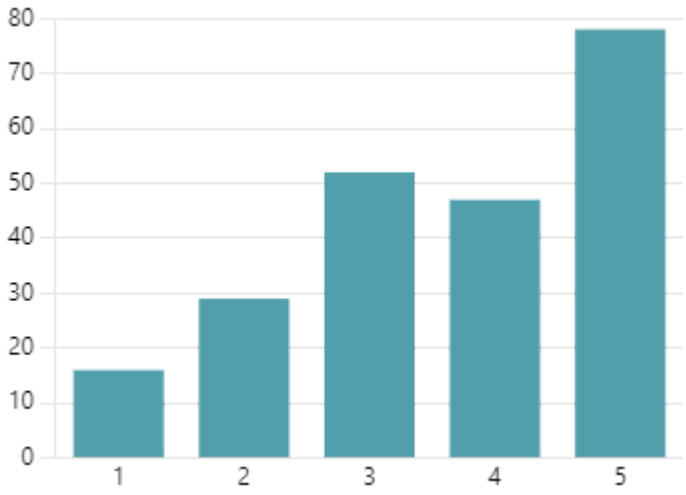
12. Temperaturas altas.

3.32
Average Rating



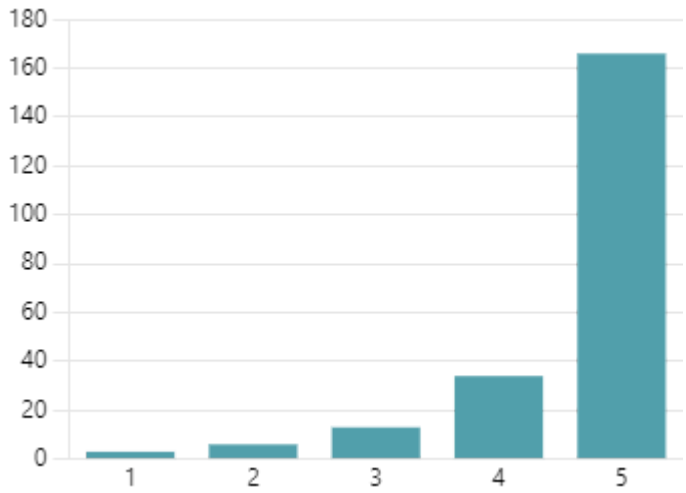
13. La topografía de muchas calles en Puerto Rico (i.e., cuestas) hace difícil el usarla.

3.64
Average Rating



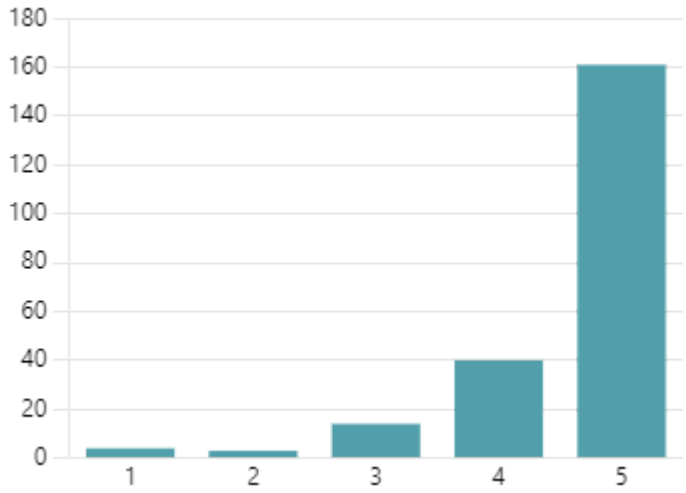
14. Falta de carriles exclusivos de bicicleta.

4.59
Average Rating



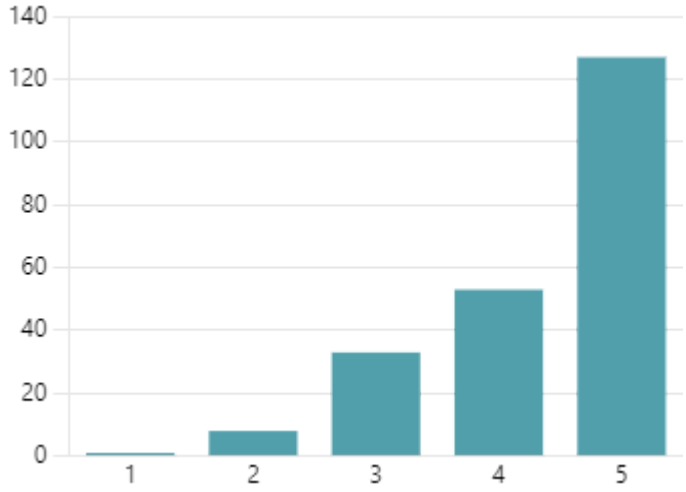
15. Falta de infraestructura ciclista cerca de los lugares de trabajo.

4.58
Average Rating



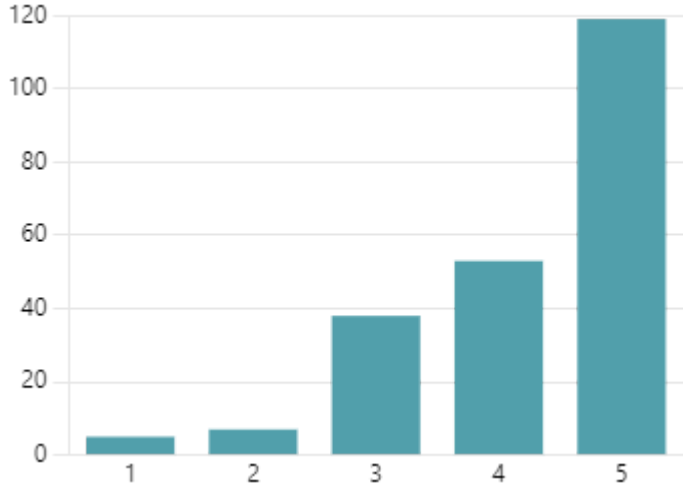
16. Conductores no respetan ni protegen al ciclista (i.e., exceso de velocidad de vehículos, no ceden al paso)

4.34
Average Rating



17. Ciclistas no respetan las normas de tránsito aplicables.

4.23
Average Rating



18. Opcional

39
Responses

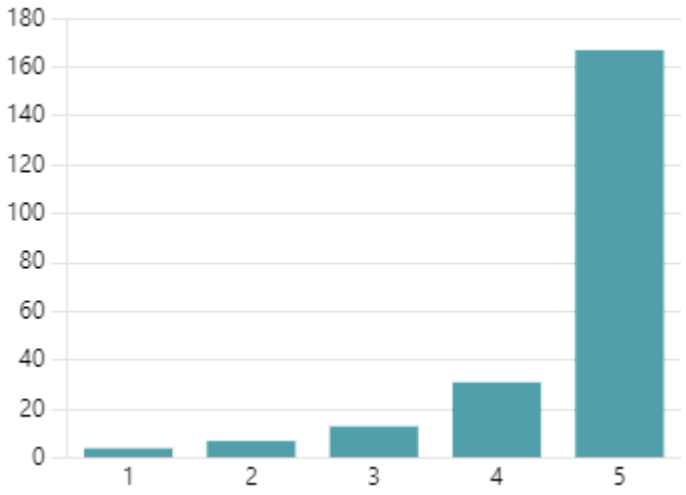
Latest Responses
"Policías deben de aplicar la ley de tránsito a los ciclistas que vi...

Update

25 respondents (**71**%) answered **LA** for this question.

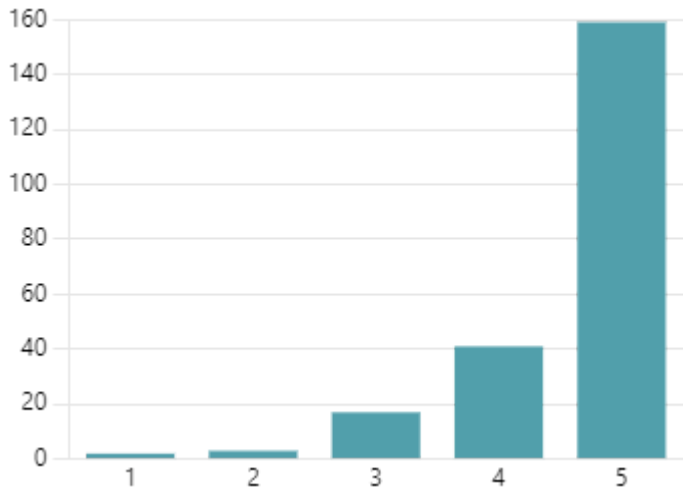
19. Calles que conectan familias y niños con las escuelas.

4.58
Average Rating



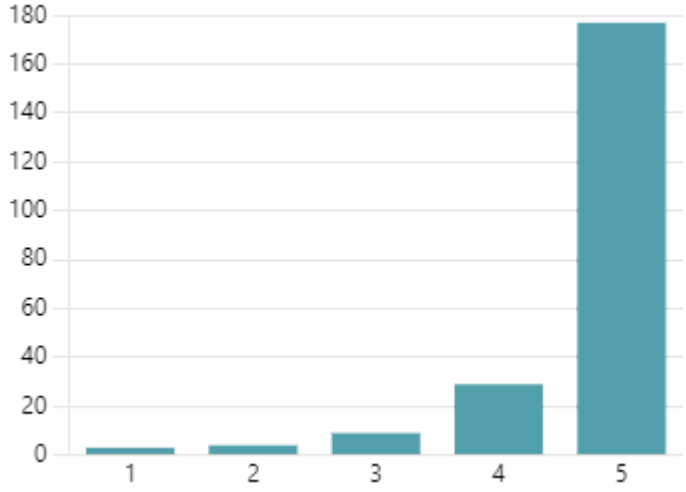
20. Calles que conectan a las personas con el transporte público/paradas de autobús.

4.59
Average Rating



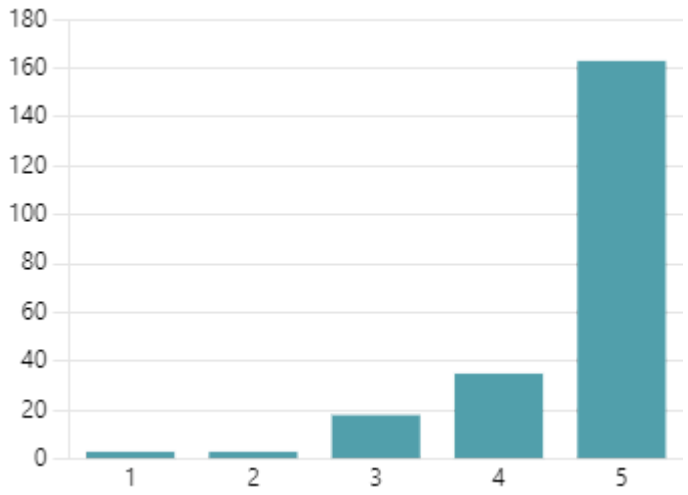
21. Áreas con mayor poblacion de envejecientes, discapacitados, bajos ingresos y/o que dependen de transporte público.

4.68
Average Rating



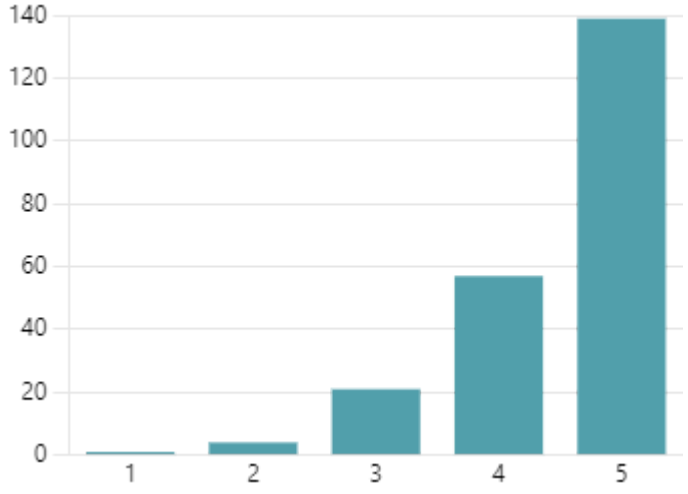
22. Calles donde han ocurrido fatalidades y heridos graves.

4.59
Average Rating



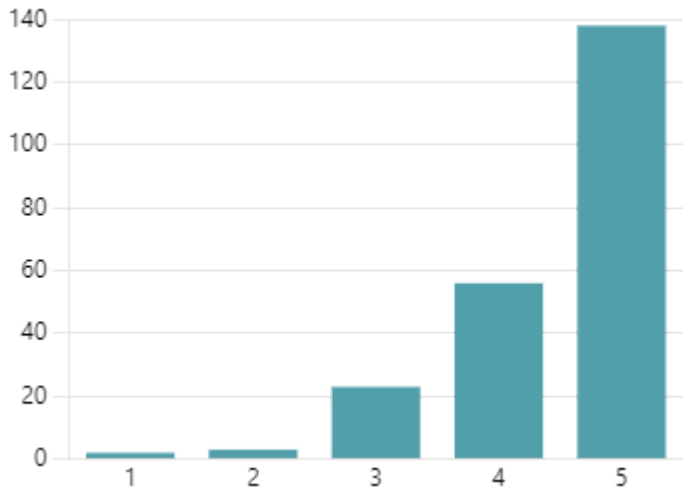
23. Calles que conectan comercios (i.e. supermercados locales, tiendas y/o servicios locales) con barrios/comunidades.

4.48
Average Rating



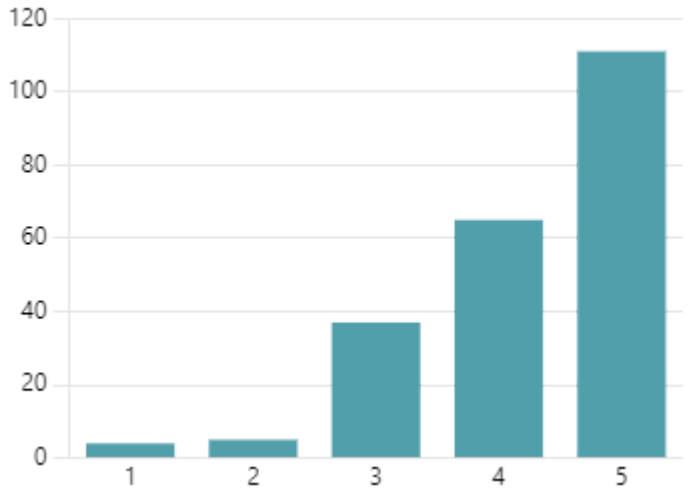
24. Zonas donde vive y/o trabaja la mayoría de la gente.

4.46
Average Rating



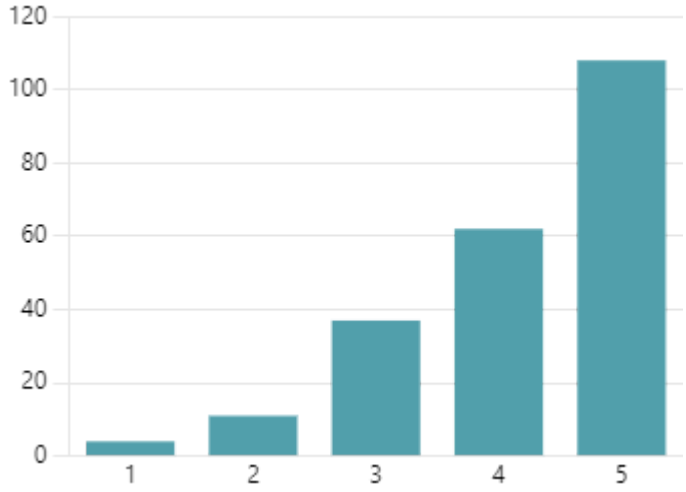
25. Calles que conectan a la gente con los parques.

4.23
Average Rating



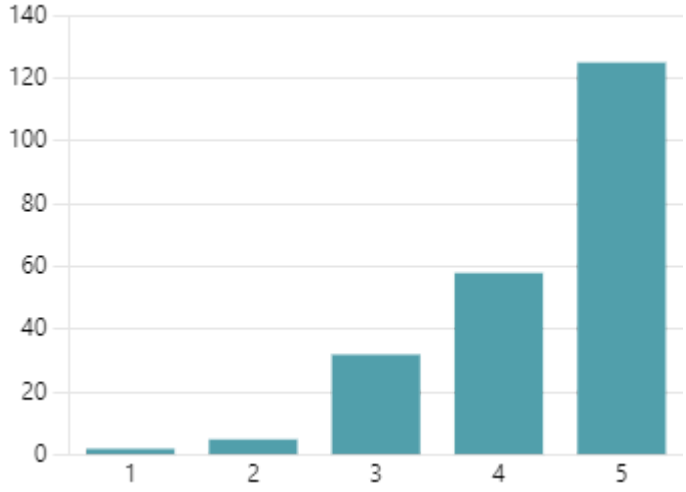
26. Calles que conectan a las personas con bibliotecas, centros comunitarios y otras instalaciones comunitarias.

4.17
Average Rating



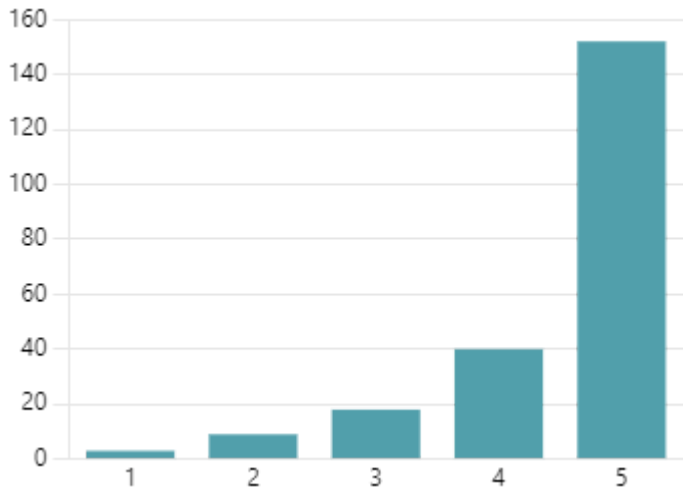
27. A lo largo y a través de calles concurridas (i.e., alto volumen vehicular).

4.35
Average Rating



28. Calles residenciales que carecen de aceras o senderos para caminar.

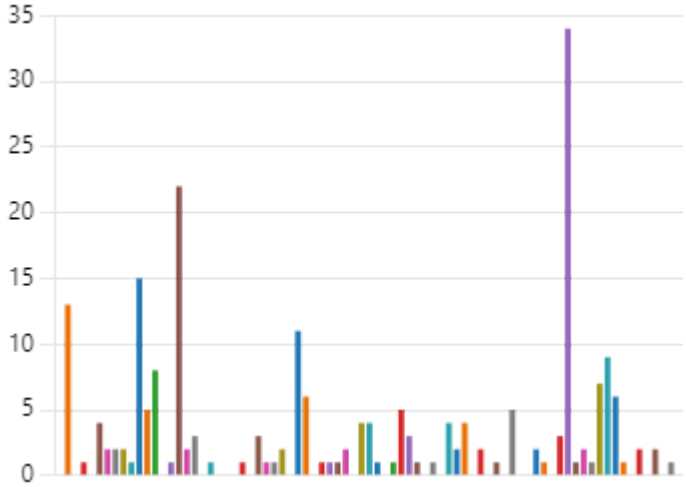
4.48
Average Rating



29. ¿En cual municipio vives?

Adjuntas	0
Aguada	13
Aguadilla	0
Aguas Buenas	1
Aibonito	0
Arecibo	4
Arroyo	2
Añasco	2
Barceloneta	2
Barranquitas	1
Bayamón	15
Cabo Rojo	5
Caguas	8
Camuy	0
Canóvanas	1
Carolina	22
Cataño	2
Cayey	3
Ceiba	0
Ciales	1
Cidra	0
Coamo	0
Comerío	0
Corozal	1
Culebra	0
Dorado	3
Fajardo	1
Florida	1
Guayama	2

Guayanilla	0
Guaynabo	11
Gurabo	6
Guánica	0
Hatillo	1
Hormigueros	1
Humacao	1
Isabela	2
Jayuya	0
Juana Díaz	4
Juncos	4
Lajas	1
Lares	0
Las Marías	1
Las Piedras	5
Loiza	3
Luquillo	1
Manatí	0
Maricao	1
Maunabo	0
Mayagüez	4
Moca	2
Morovis	4
Naguabo	0
Naranjito	2
Orocovis	0
Patillas	1
Peñuelas	0
Ponce	5
Quebradillas	0
Rincón	0

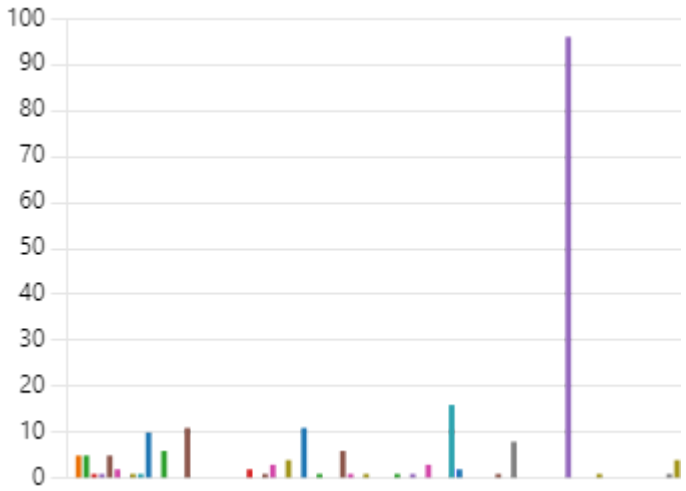


Rio Grande	2
Sabana Grande	1
Salinas	0
San Germán	3
San Juan	34
San Lorenzo	1
San Sebastián	2
Santa Isabel	1
Toa Alta	7
Toa Baja	9
Trujillo Alto	6
Utuado	1
Vega Alta	0
Vega Baja	2
Vieques	0
Villalba	2
Yabucoa	0
Yauco	1
Other	0

30. ¿En cual municipio trabajas o estudias?

Adjuntas	0
Aguada	5
Aguadilla	5
Aguas Buenas	1
Aibonito	1
Arecibo	5
Arroyo	2
Añasco	0
Barceloneta	1
Barranquitas	1
Bayamón	10
Cabo Rojo	0
Caguas	6
Camuy	0
Canóvanas	0
Carolina	11
Cataño	0
Cayey	0
Ceiba	0
Ciales	0
Cidra	0
Coamo	0
Comerío	0
Corozal	2
Culebra	0
Dorado	1
Fajardo	3
Florida	0
Guayama	4

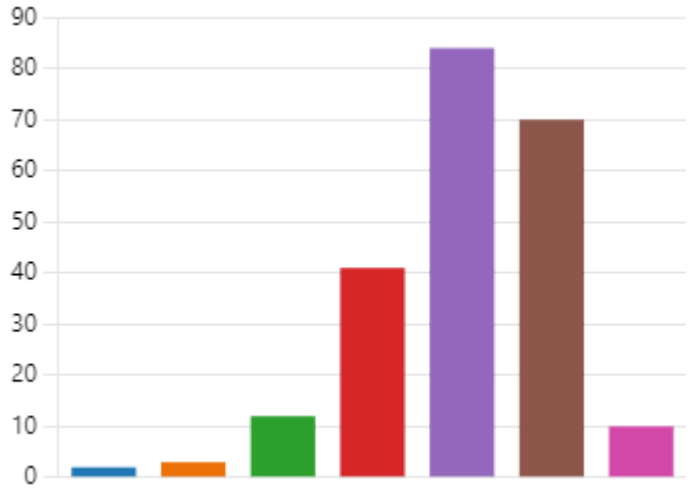
Guayanilla	0
Guaynabo	11
Gurabo	0
Guánica	1
Hatillo	0
Hormigueros	0
Humacao	6
Isabela	1
Jayuya	0
Juana Díaz	1
Juncos	0
Lajas	0
Lares	0
Las Marías	1
Las Piedras	0
Loiza	1
Luquillo	0
Manatí	3
Maricao	0
Maunabo	0
Mayagüez	16
Moca	2
Morovis	0
Naguabo	0
Naranjito	0
Orocovis	0
Patillas	1
Peñuelas	0
Ponce	8
Quebradillas	0
Rincón	0



Rio Grande	0
Sabana Grande	0
Salinas	0
San Germán	0
San Juan	96
San Lorenzo	0
San Sebastián	0
Santa Isabel	0
Toa Alta	1
Toa Baja	0
Trujillo Alto	0
Utuado	0
Vega Alta	0
Vega Baja	0
Vieques	0
Villalba	0
Yabucoa	0
Yauco	1
Other	4

31. ¿Cual es tu edad?

Menor de 18	2
18-24	3
25-34	12
35-44	41
45-54	84
55-65	70
Mayor de 65	10



32. ¿Cuál es tu género?

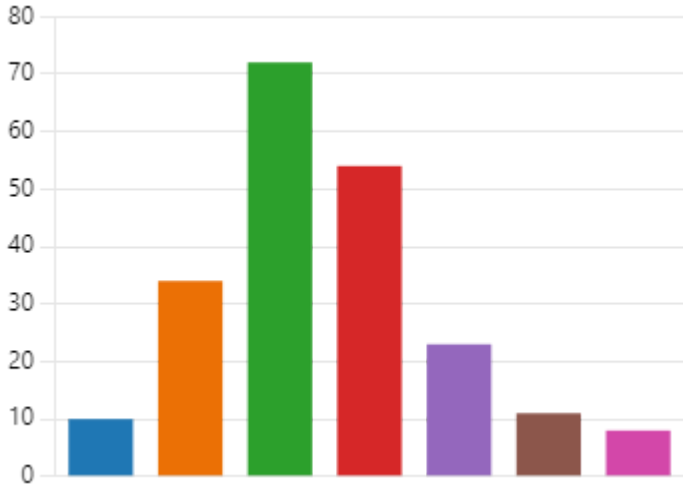
Mujer	128
Hombre	87
Other	1

33. ¿Cuál es tu nivel mas alto de educación?

Diploma de cuarto año o menor	10
Grado técnico o asociado	31
Título universatario de bachiller...	112
Estudios graduados	59
Other	8

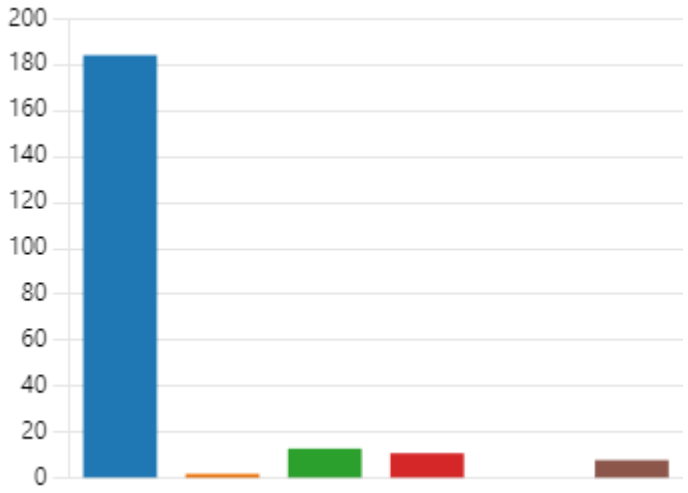
34. ¿Cuál es tu ingreso anual?

Menor de $9,000	10
9,000 - $24,999	34
$25,000 - $41,499	72
$41,500 - $61,499	54
$61,500 - $79,999	23
$80,000 - $100,000	11
Mayor de $100,000	8



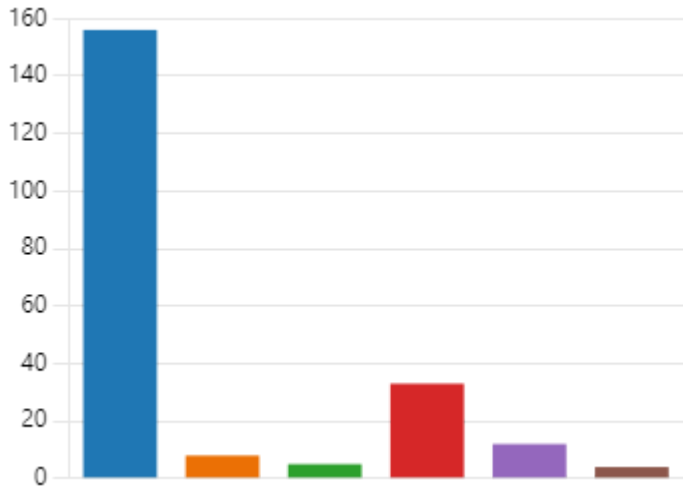
35. ¿Tienes alguna discapacidad?

No	184
Si - relacionado con la audición	2
Si - relacionado con la visión	13
Si - relacionado con la movilidad	11
Si - problemas cognitivos o intel...	0
Other	8



36. ¿Vives con alguien que tiene alguna discapacidad?

No	156
Si - relacionado con la audición	8
Si - relacionado con la visión	5
Si - relacionado con la movilidad	33
Si - problemas cognitivos o intel...	12
Other	4



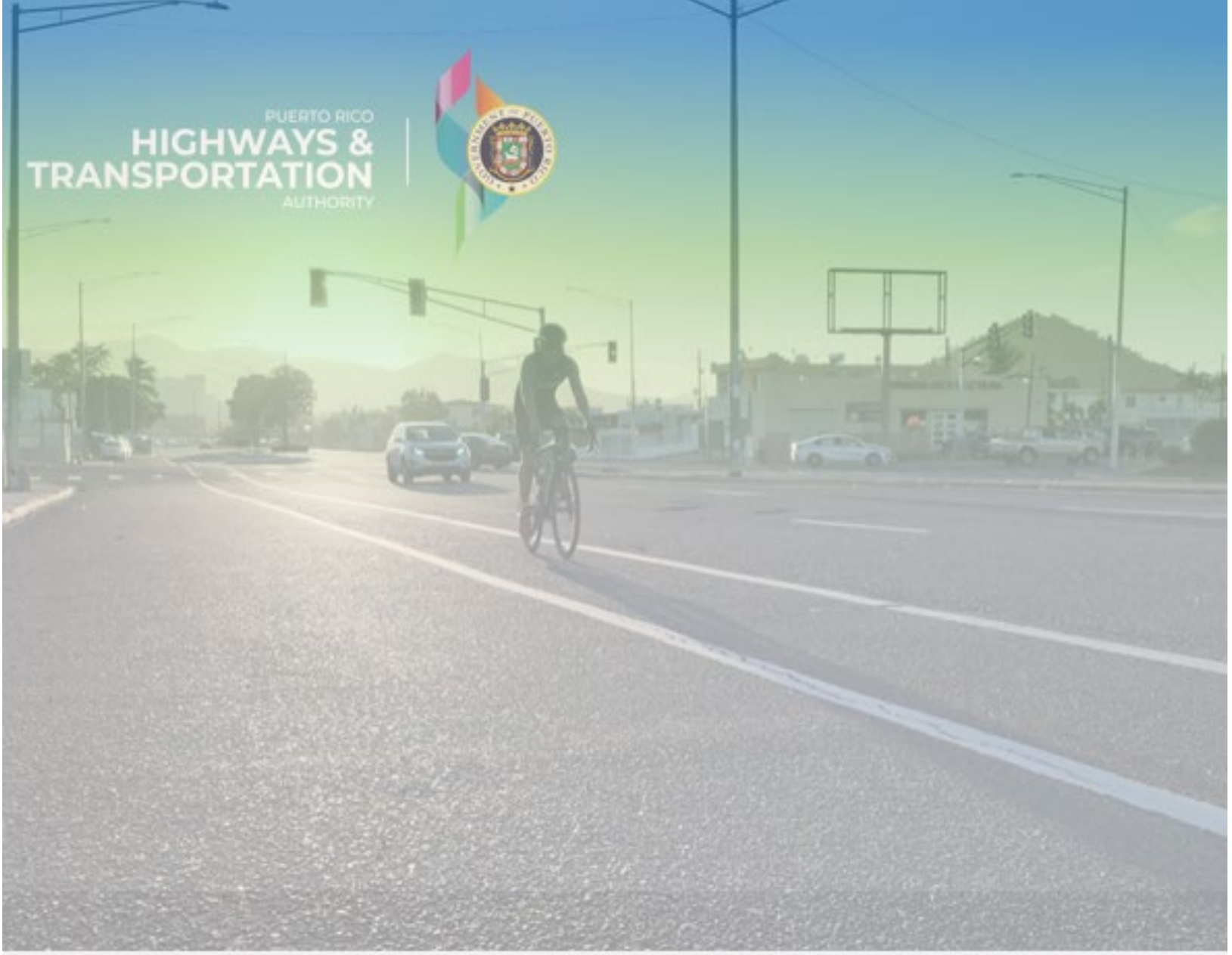
37. Por favor exprese cualquier idea o sugerencia sobre cómo mejor atender la seguridad vial en Puerto Rico.

74
Responses

Latest Responses

↻ Update

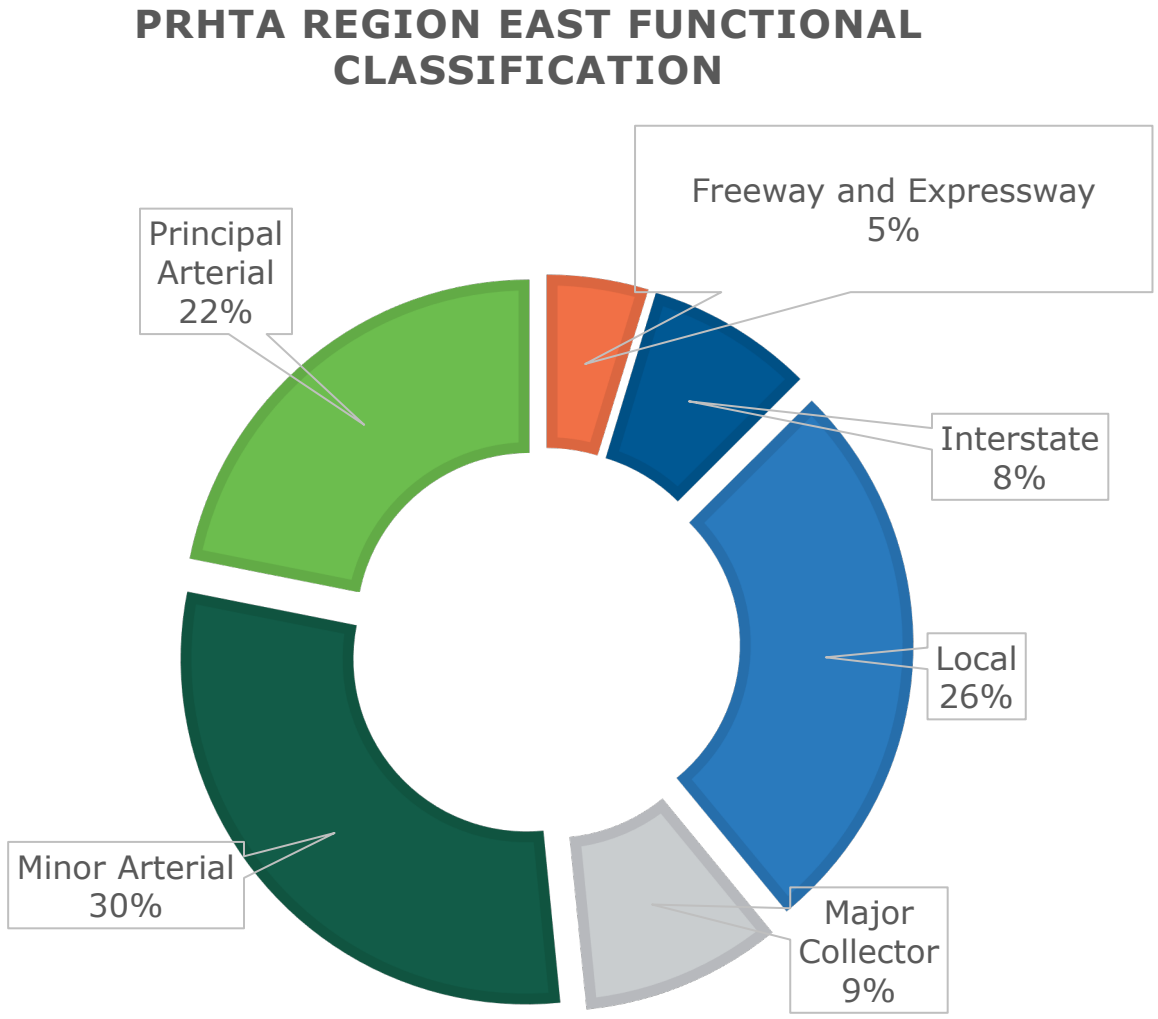
13 respondents (**19**%) answered **aceras** for this question.

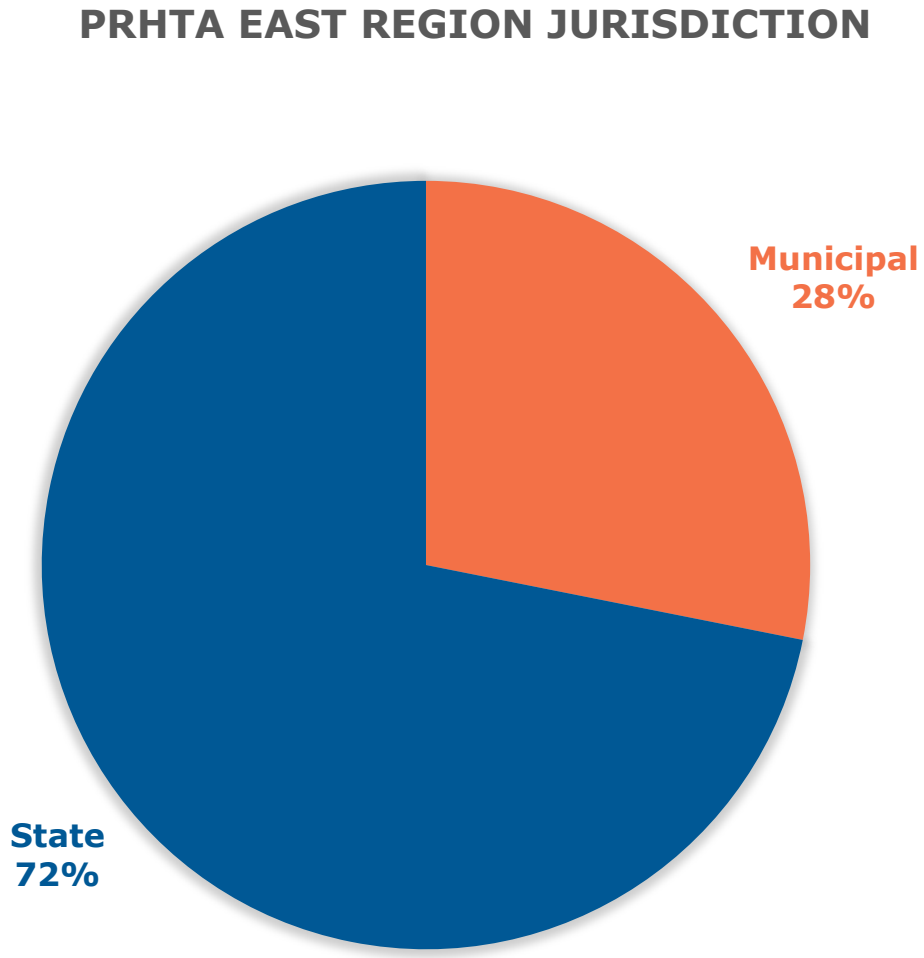


Appendix E Tables and Maps for High-Risk Municipalities

SHSP
STRATEGIC HIGHWAY SAFETY PLAN

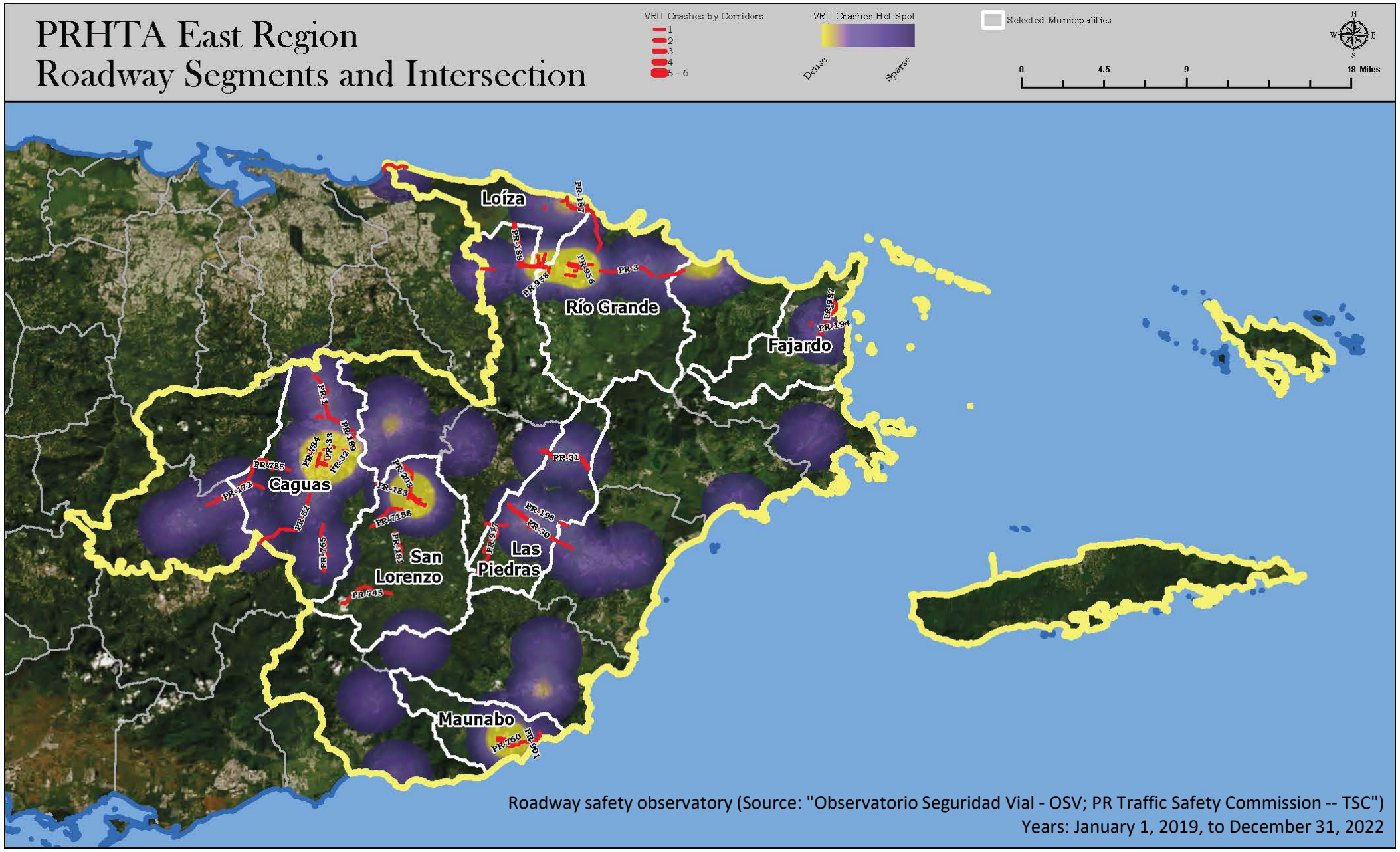
VRU East Region Data Result





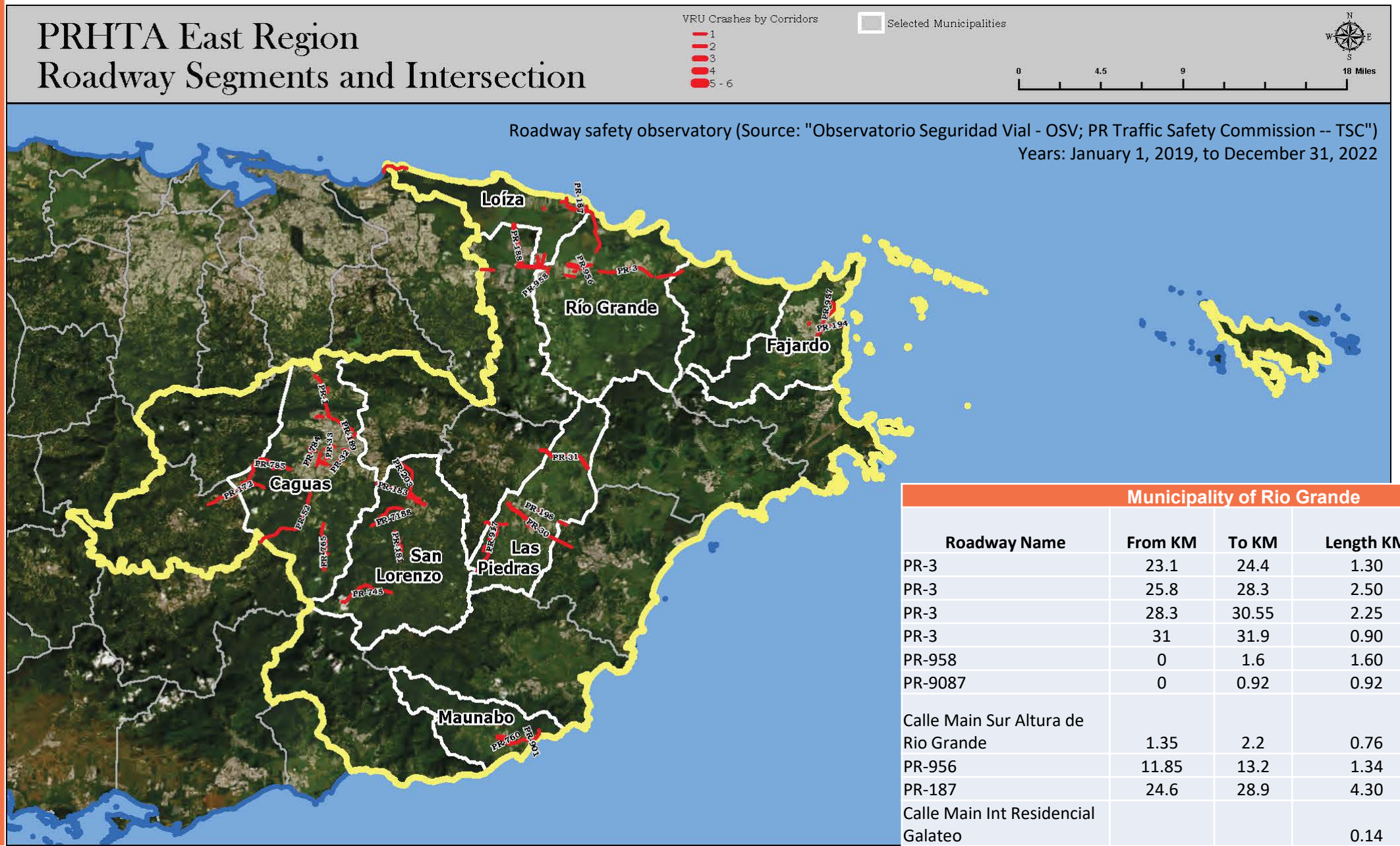
2021 Highway Performance Monitoring System (HPMS) Database - Source: PRHTA Highway System Office

VRU East Region Hot-Spot Map



Roadway safety observatory (Source: "Observatorio Seguridad Vial - OSV; PR Traffic Safety Commission -- TSC")
Years: January 1, 2019, to December 31, 2022

VRU East Region Corridor Map



Municipality of Rio Grande					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-3	23.1	24.4	1.30	2	1
PR-3	25.8	28.3	2.50		1
PR-3	28.3	30.55	2.25	1	
PR-3	31	31.9	0.90	1	
PR-958	0	1.6	1.60		1
PR-9087	0	0.92	0.92		1
Calle Main Sur Altura de Rio Grande	1.35	2.2	0.76	1	
PR-956	11.85	13.2	1.34		1
PR-187	24.6	28.9	4.30		1
Calle Main Int Residencial Galateo			0.14		1

VRU East Region Corridors

Municipality of Loíza					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-187	22.7	24.6	1.9		3
PR-187 & PR-965					1
PR-187 & Calle 6					1
PR-187	4.2	6.7	2.5		1
Calle 18 & Calle 23				1	
Calle 1 (Near PR 3)			1.0		1
Calle 2			0.2		1
Calle 7 & Calle 3					1

Municipality of Rio Grande					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-3	23.1	24.4	1.30	2	1
PR-3	25.8	28.3	2.50		1
PR-3	28.3	30.55	2.25	1	
PR-3	31	31.9	0.90	1	
PR-958	0	1.6	1.60		1
PR-9087	0	0.92	0.92		1
Calle Main Sur Altura de Rio Grande	1.35	2.2	0.76	1	
PR-956	11.85	13.2	1.34		1
PR-187	24.6	28.9	4.30		1
Calle Main Int Residencial Galateo			0.14		1

Municipality of Maunabo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-760	0	1.55	1.55		3
PR-901 & residential (KM 13.4)					1
PR-3	105.8	105.4	0.40	1	

Municipality of San Lorenzo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-9931	0	0.98	0.98	1	2
PR-745	0	5.3	5.30	1	
PR-7188	0	4.2	4.20		1
PR-203	3.4	7.1	3.70	1	
PR-183	5.47	8.5	3.03	1	
PR-181	24.8	28.1	3.30	1	
PR-181	33.6	34.6	1.00		1

VRU East Region Corridors

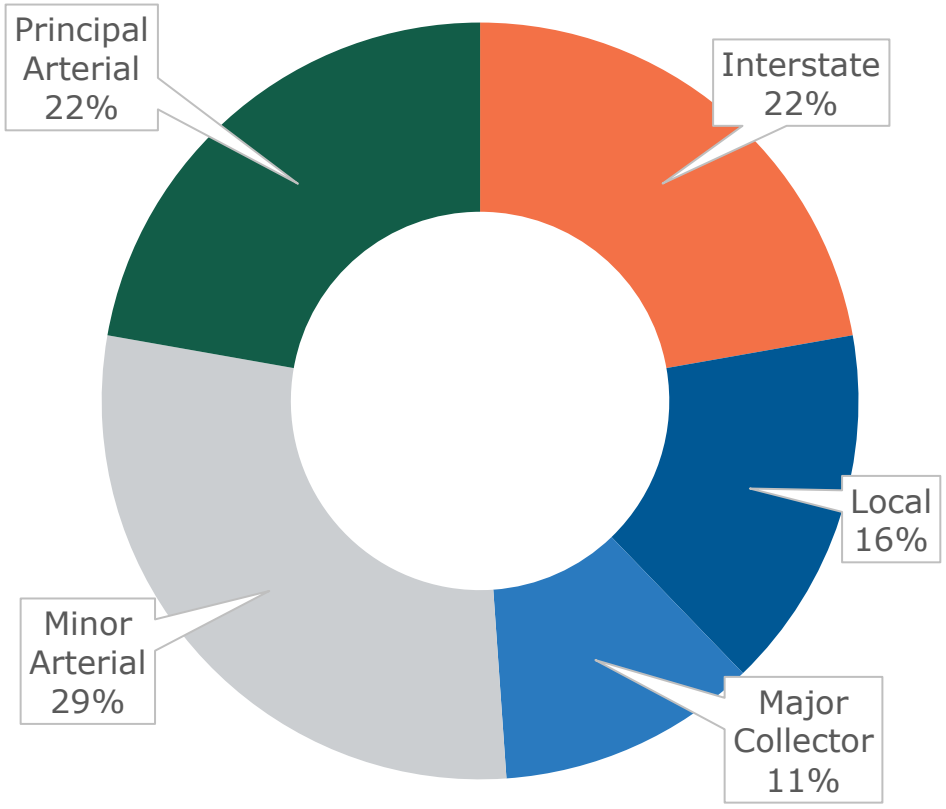
Municipality of Caguas					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-32	2.6	2.95	0.35	1	2
PR-784 & PR-156				2	
PR-34	0.9	1.6	0.70		2
PR-172	19.3	22.3	1.30	1	1
PR-34 (KM 0.15) & Calle 9				1	
PR-30	0	2.9	2.90	1	
PR-785	0	6.5	6.43		1
PR-32	4.81	5.3	0.49		1
Calle Esperanza Urb Villa Esperanza	0	0.55	0.56	1	
Calle San Ramon & Calle San Isidro				1	
Calle K & PR-33					1
Calle Dr. Goyco	0.3	0.63	0.37		1
Calle Dr. Goyco	1.35	1.56	0.19		1
PR-765	3	8.2	5.20		1
PR-52	19.35	20.5	1.15	1	
PR-52	23.1	30.2	7.10		1
PR-1	28.1	30	1.90		1
PR-1	30	30.5	0.50		1
PR-1	30.5	31.9	1.40		1
PR-156	57.85	58.4	0.55		1
Calle Via San Luis			0.36		1
Calle Padial & Ave. José Mercado				1	
Calle Parque del Condado			0.61		1
M13 residential / Cerca de Estacionamiento Walmart			0.06		1

Municipality of Las Piedras					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-31	14.9	19.6	4.70	2	
PR-30	19.3	21.9	2.60	1	1
PR-917 & PR-183					1
PR-30	21.9	25.9	4.00		1
Calle Eulogio Reyes			0.63		1
M44 Calle 1			0.18	1	

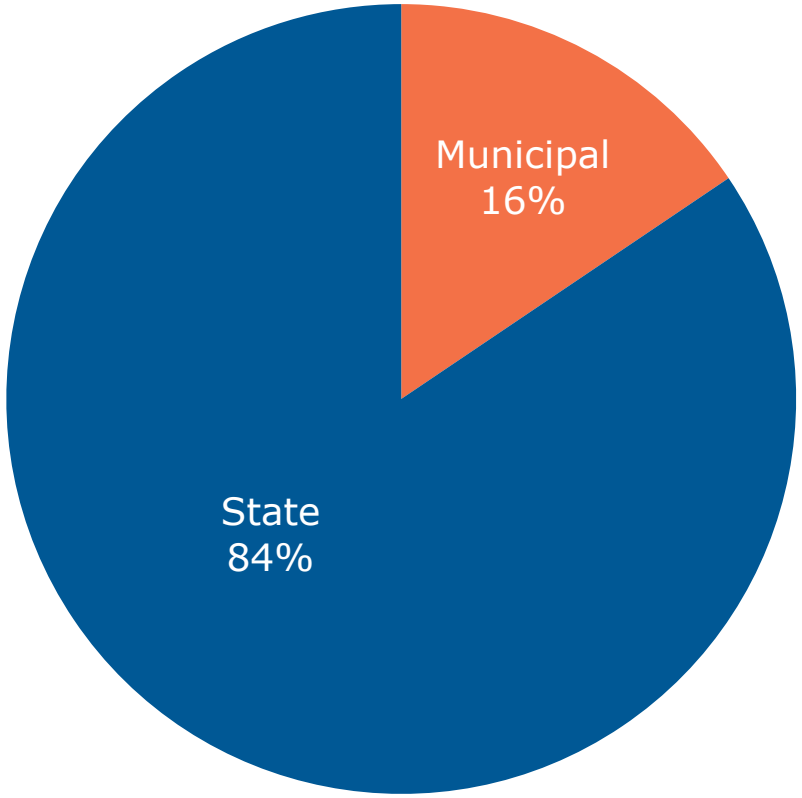
Municipality of Fajardo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
Calle Cometa & Calle Tablazo					1
Avenida Marcelino Gotay	0	0.96	0.96		1
PR-987	0.1	0.5	0.4		1
PR-987	0.5	3.8	3.3	1	
PR-195	2.1	2.8	0.7	1	
Calle 10 & Avenida A (Calle A Veve Calzada)					1

VRU West Region Data Results

PRHTA West Region Functional Classification

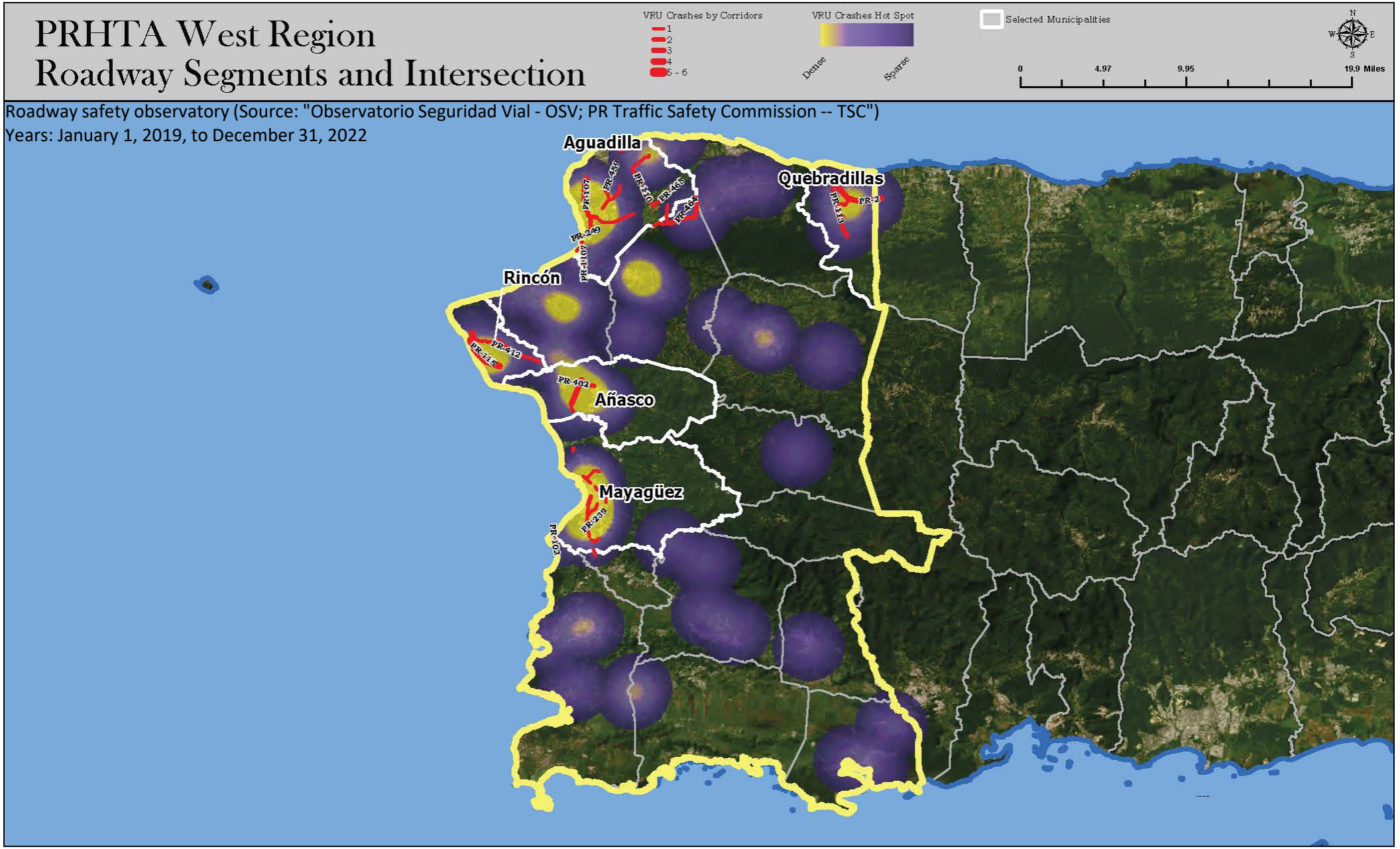


PRHTA West Region Jurisdiction

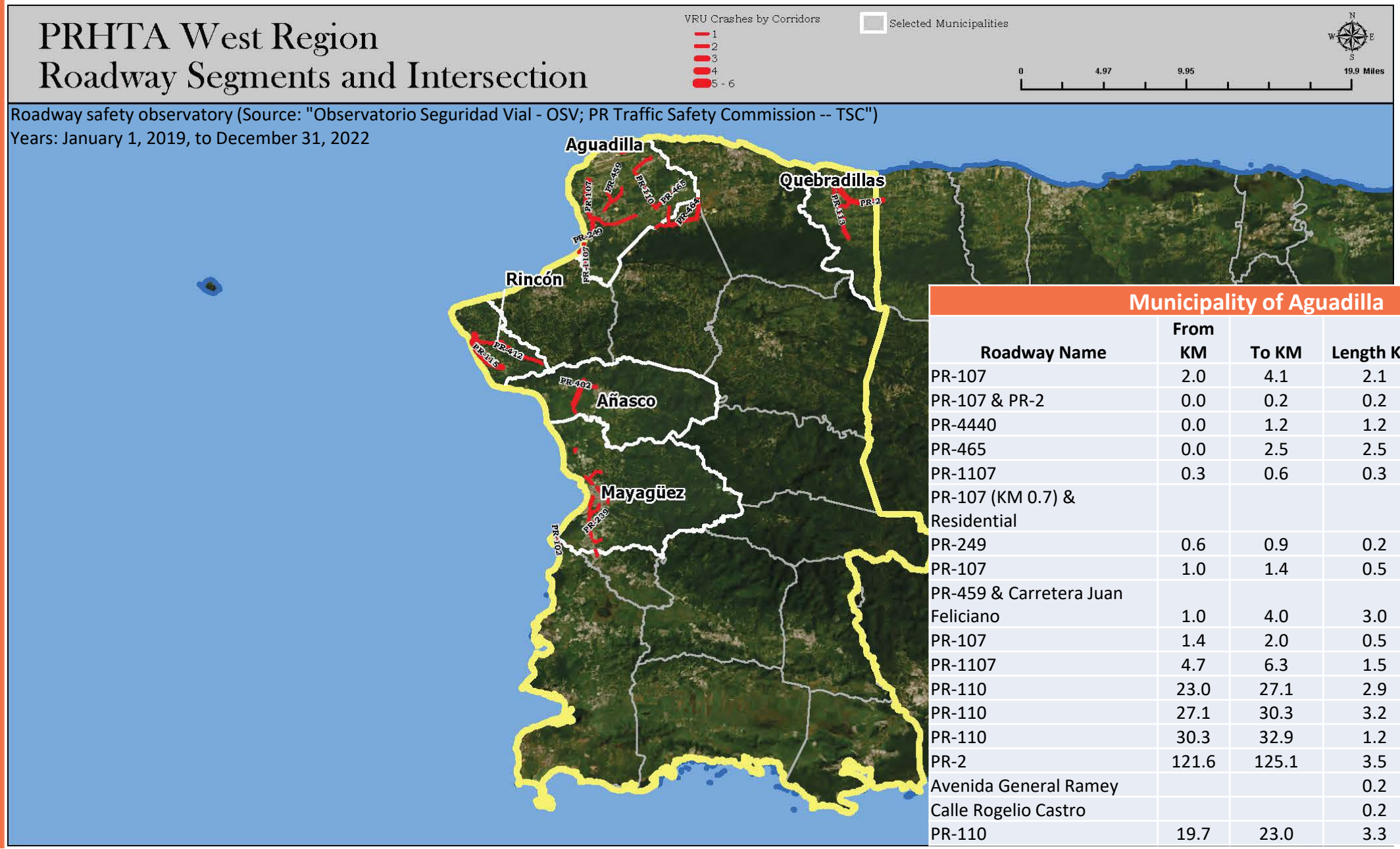


2021 Highway Performance Monitoring System (HPMS) Database - Source: PRHTA Highway System Office

VRU West Region Hot-Spot Map



VRU West Region Corridor Map



Municipality of Aguadilla

Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-107	2.0	4.1	2.1		3
PR-107 & PR-2	0.0	0.2	0.2	1	1
PR-4440	0.0	1.2	1.2		1
PR-465	0.0	2.5	2.5		1
PR-1107	0.3	0.6	0.3	1	
PR-107 (KM 0.7) & Residential					1
PR-249	0.6	0.9	0.2		1
PR-107	1.0	1.4	0.5	1	
PR-459 & Carretera Juan Feliciano	1.0	4.0	3.0		1
PR-107	1.4	2.0	0.5	1	
PR-1107	4.7	6.3	1.5		1
PR-110	23.0	27.1	2.9		1
PR-110	27.1	30.3	3.2		1
PR-110	30.3	32.9	1.2		1
PR-2	121.6	125.1	3.5	1	
Avenida General Ramey			0.2		1
Calle Rogelio Castro			0.2		1
PR-110	19.7	23.0	3.3		1

VRU West Region Corridors

Municipality of Aguadilla					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-107	2.0	4.1	2.1		3
PR-107 & PR-2	0.0	0.2	0.2	1	1
PR-4440	0.0	1.2	1.2		1
PR-465	0.0	2.5	2.5		1
PR-1107	0.3	0.6	0.3	1	
PR-107 (KM 0.7) & Residential					1
PR-249	0.6	0.9	0.2		1
PR-107	1.0	1.4	0.5	1	
PR-459 & Carretera Juan Feliciano	1.0	4.0	3.0		1
PR-107	1.4	2.0	0.5	1	
PR-1107	4.7	6.3	1.5		1
PR-110	23.0	27.1	2.9		1
PR-110	27.1	30.3	3.2		1
PR-110	30.3	32.9	1.2		1
PR-2	121.6	125.1	3.5	1	
Avenida General Ramey			0.2		1
Calle Rogelio Castro			0.2		1
PR-110	19.7	23.0	3.3		1

Municipality of Quebradillas					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-2	96.2	100.9	4.70	2	1
PR-113	13.8	15.85	2.05	1	1
PR-113 & Calle Dama Soto	10.4	13.8	3.40		1
Calle Dama Soto			1.62		1

Municipality of Rincón					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-115	9.1	13.7	4.60	3	1
PR-412	0	8.3	8.30		1
Calle Nueva Final Frente Distrito Rincon			0.28		1

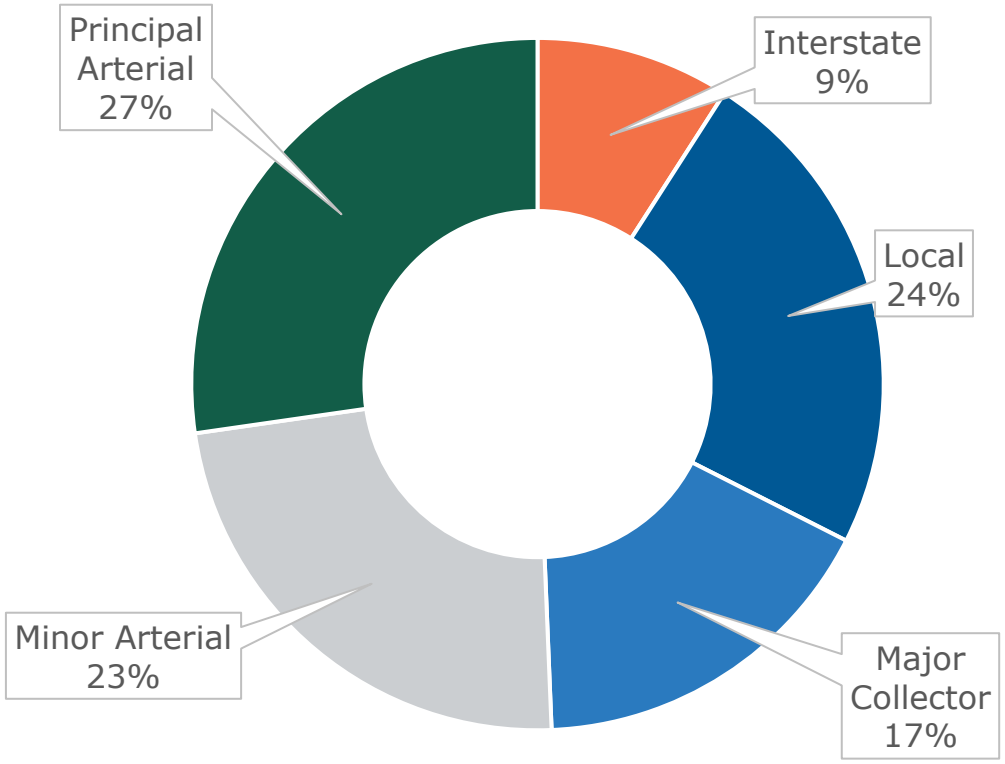
VRU West Region Corridors

Municipality of Mayagüez					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-2	155.0	155.8	0.80	1	1
PR-3108 & PR-2	0.0	1.6	1.59		1
PR-349 & CALLE MÉNDEZ VIGO	0.0	0.5	0.50		1
CALLE 4 HERMANOS & PR-2	0.0	1.1	1.02		1
PR-239	0.3	0.7	0.47	1	
PR-239	2.2	2.5	0.28		1
PR-239	3.5	4.2	0.73		1
PR-2	152.5	153.0	0.50	1	
PR-2	153.0	153.5	0.50	1	
PR-2	155.8	157.4	1.60		1
PR-2	157.9	158.9	1.00	1	
Calle Tenerife			1.05		1
CENTRO COMERCIAL WESTERN PLAZA FRENTE SAM S CLUB			0.35		1
PR-102	7.5	8.9	1.40		1
PR-2	160.2	160.8	0.60		1

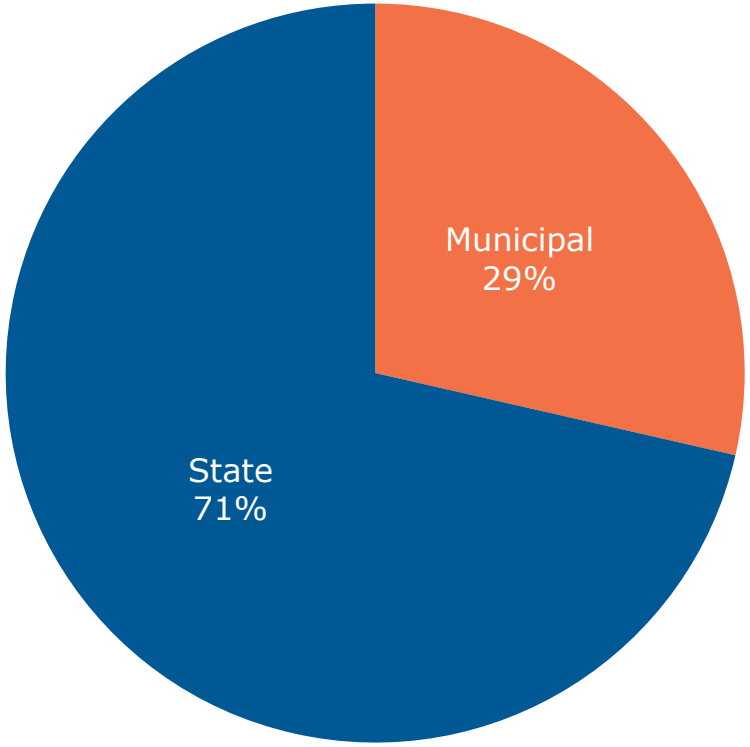
Municipality of Añasco					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-2	142.8	145.3	2.50	1	2
PR-402 & PR-2	2.2	3.6	1.40		2
PR-402	0.05	0.31	0.26		1
PR-402	0.31	0.87	0.56		1
PR-2	145.3	146.1	0.80	1	

VRU North Region Data Results

PRHTA North Region Functional Classification

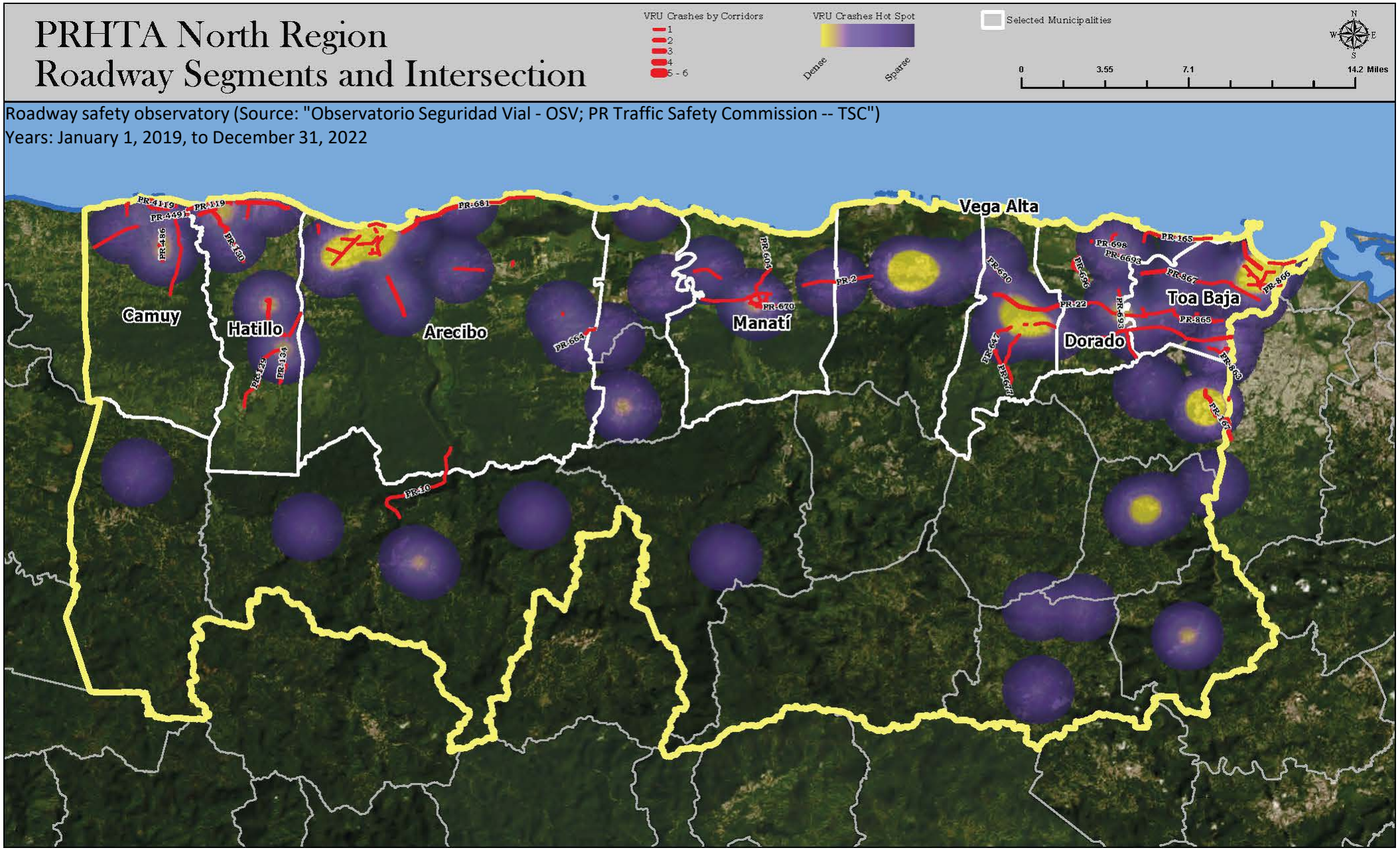


PRHTA North Region Jurisdiction

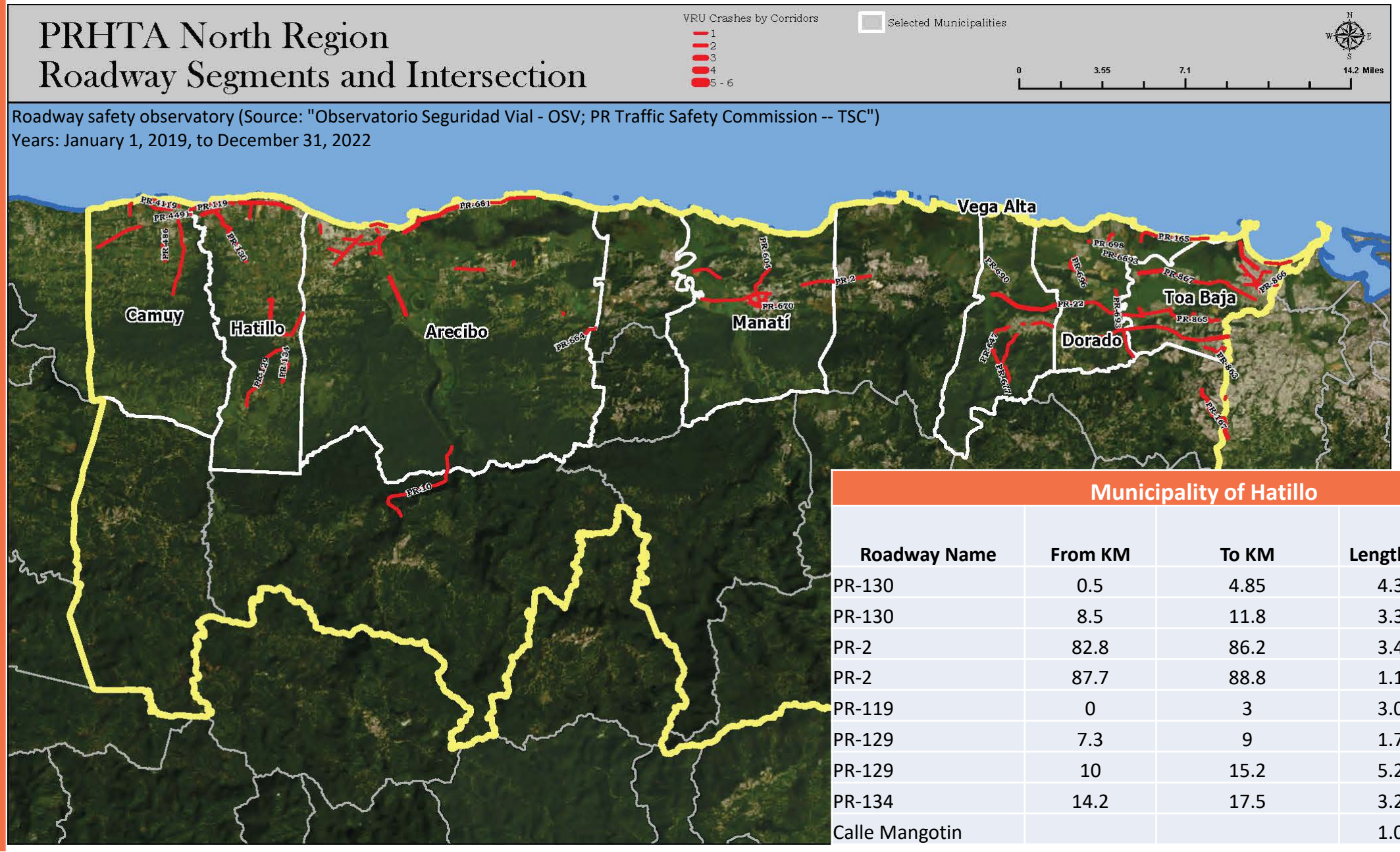


2021 Highway Performance Monitoring System (HPMS) Database - Source: PRHTA Highway System Office

VRU North Region Hot-Spot Map



VRU North Region Corridor Map



Municipality of Hatillo

Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-130	0.5	4.85	4.35	2	
PR-130	8.5	11.8	3.30		2
PR-2	82.8	86.2	3.40	1	1
PR-2	87.7	88.8	1.10		2
PR-119	0	3	3.00		1
PR-129	7.3	9	1.70		1
PR-129	10	15.2	5.20		1
PR-134	14.2	17.5	3.21		1
Calle Mangotin			1.00		1

VRU North Region Corridors

Municipality of Hatillo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-130	0.5	4.85	4.35	2	
PR-130	8.5	11.8	3.30		2
PR-2	82.8	86.2	3.40	1	1
PR-2	87.7	88.8	1.10		2
PR-119	0	3	3.00		1
PR-129	7.3	9	1.70		1
PR-129	10	15.2	5.20		1
PR-134	14.2	17.5	3.21		1
Calle Mangotin			1.00		1

Municipality of Dorado					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-698	0	1	1.0	1	
PR-693 & PR-2 & PR-165	0	1	1.0		1
PR-696	0	2.5	2.5		1
PR-6693	0	1.3	1.3	1	
PR-693	1	3.2	2.2		1
PR-165	20.6	25.5	4.9	1	
PR-22	23.8	27.6	3.8	1	
M26 service/FRENTE DOCTOR CENTER EN PLAZA DORADA			0.0		1

Municipality of Vega Alta					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-22	27.6	32.9	5.3		2
PR-677	0.0	4.1	4.1	1	
PR-6678	0.0	2.7	2.7		1
PR-690	2.2	4.3	2.1	1	
PR-647	10.8	12.8	2.0		1
PR-2	28.7	29.9	1.3		1
PR-2	30.5	30.7	0.2	1	
M73 PR-2 Calle Marginal	29.8	30.0	0.2		1

Municipality of Camuy					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-486	0	2.2	2.2		2
PR-4119	0.2	2.4	2.2	1	
PR-4491	0.45	2.1	1.7		1
PR-2	93	96.2	3.2	1	
Avenida Baltazar Jiménez Méndez			1.5	1	
Calle Cestanillas of Hembville/ CARRETERA MUNICIPAL ESTANCIAS DE MEMBRILLO			0.9	1	
M14 Calle Principal/ CARR. MUNICIPAL BO. PUENTE ZALZA			5.6		1

VRU North Region Corridors

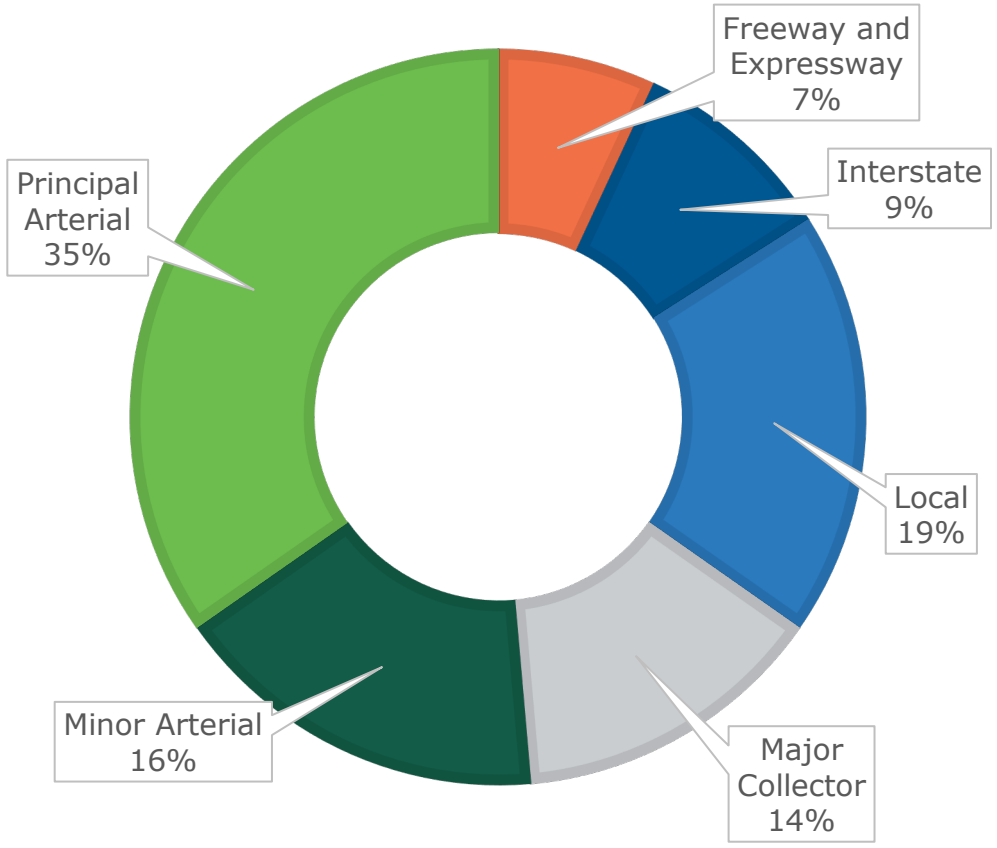
Municipality of Manatí					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-670	0.0	1.9	1.9	2	
PR-604	0.0	4.4	4.4		1
PR-6670 & PR-2 Marginal					1
CALLE M. SÁNCHEZ & PR-670				1	
PR-2	49.6	49.8	0.2		1
PR-2	49.8	50.3	0.5		1
PR-2	50.3	53.4	3.1	1	
PR-22	51.8	53.7	1.9		1
Callejón Morales/CALLEJON LUCHETTI MANATI			0.2	1	
M47 Calle B/LOS LIMONES			0.3		1

Municipality of Arecibo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-681	0.35	4.5	4.1	1	1
PR-10	63.8	66.6	2.8	1	1
Avenida Catalina Santiago Chico	0	0.9	0.5		1
Calle C & Calle D (Avenida los Paseos Olmos)				1	
Avenida Constitucion	0.32	1.8	1.5		1
Avenida Victorio Rojas	0.7	1.77	1.1		1
PR-129 and PR-653	0.75	1.5	0.7		1
PR-129	1.5	2.9	1.4	1	
PR-664	2.3	4.4	2.1		1
PR-129	2.9	3.4	0.5	1	
PR-681	4.5	9.65	5.2		1
PR-10	68.2	70.1	1.4		1
PR-10	45.2	53.3	8.1		
PR-2	68.28	70.13	1.8	1	
PR-2	76.6	76.9	0.3		1
Avenida Industrial			1.1		1
Calle 25 # BS-14			0.3		1
M07 residential / Manantiales			0.1		1

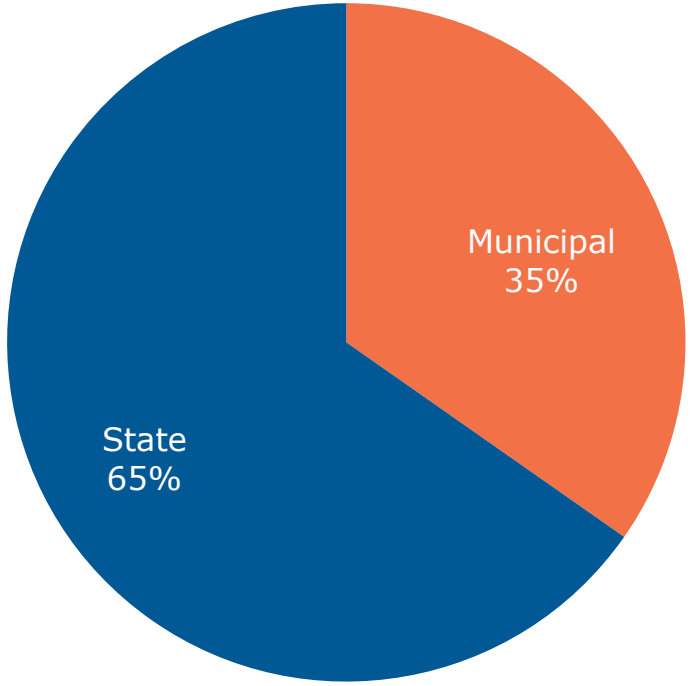
Municipality of Arecibo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-867	4.4	7.8	3.4		2
PR-2	16.4	17.7	1.3	1	1
Boulevard Levittown			2.2	1	1
PR-865	0.0	6.3	6.3		1
AVENIDA RAMON RÍOS ROMÁN & Calle La Milagrosa	0.0	1.2	1.2		1
AVENIDA SABANA SECA	0.0	1.3	1.3		1
PR-863 & Calle José Campeche					1
PR-867	0.8	4.4	3.6		1
AVENIDA SABANA SECA	1.3	2.0	0.8		1
PR-866	5.2	6.4	1.2		1
PR-866	6.4	7.4	1.0		1
PR-2	17.7	18.6	0.9		1
PR-2	18.6	22.0	3.4		1
PR-2	22.0	22.9	0.9		1
PR-22	22.4	23.8	1.4	1	
PR-165	29.9	31.6	1.7		1
Avenida Dr Diego Álvarez Chanca & Calle Dr Agustin Stahl			1.7		1
M70 Calle Jazmin			0.1		1

VRU Metro Region Data Results

PRHTA METRO REGION FUNCTIONAL CLASSIFICATION

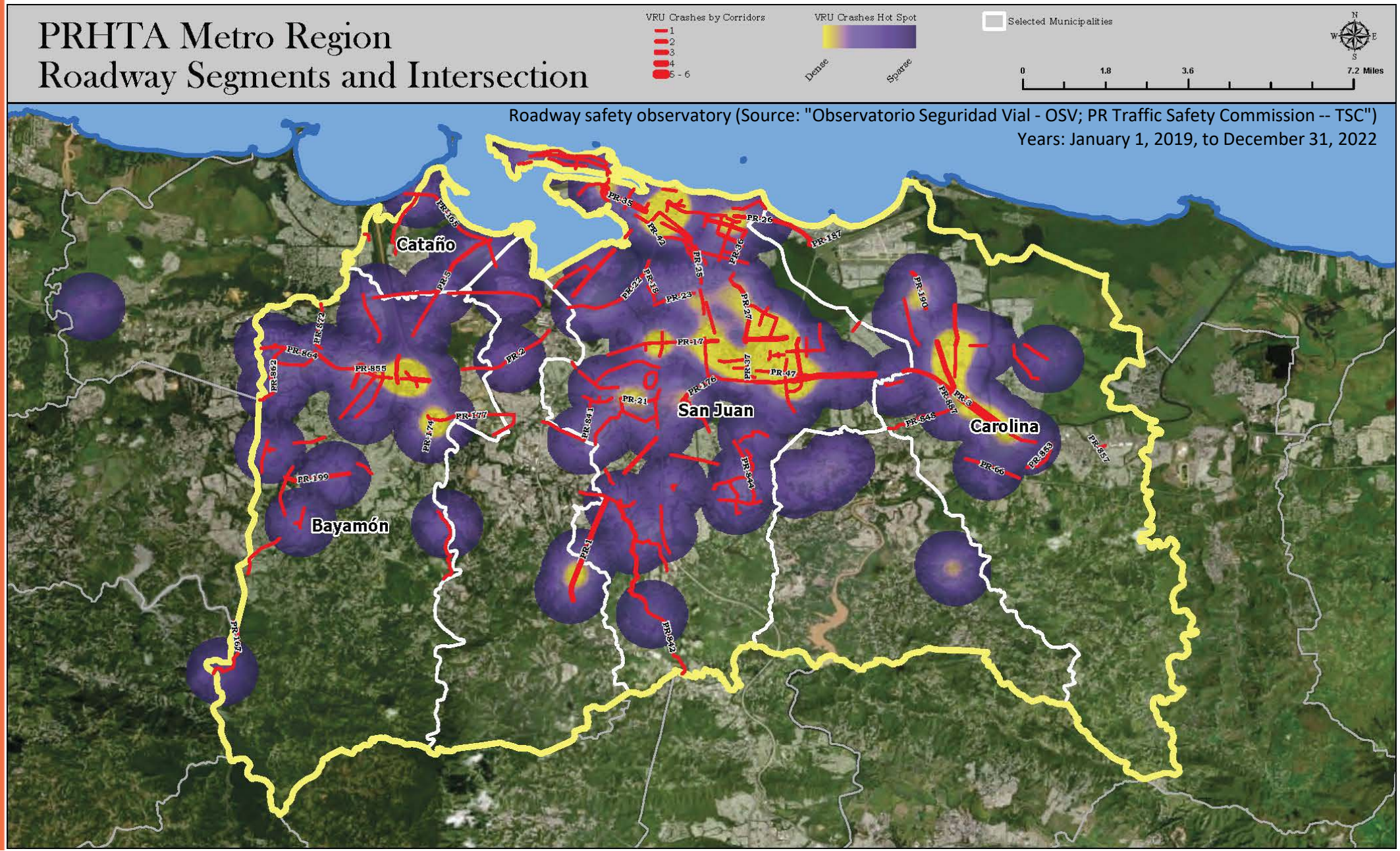


PRHTA Metro Region Jurisdiction

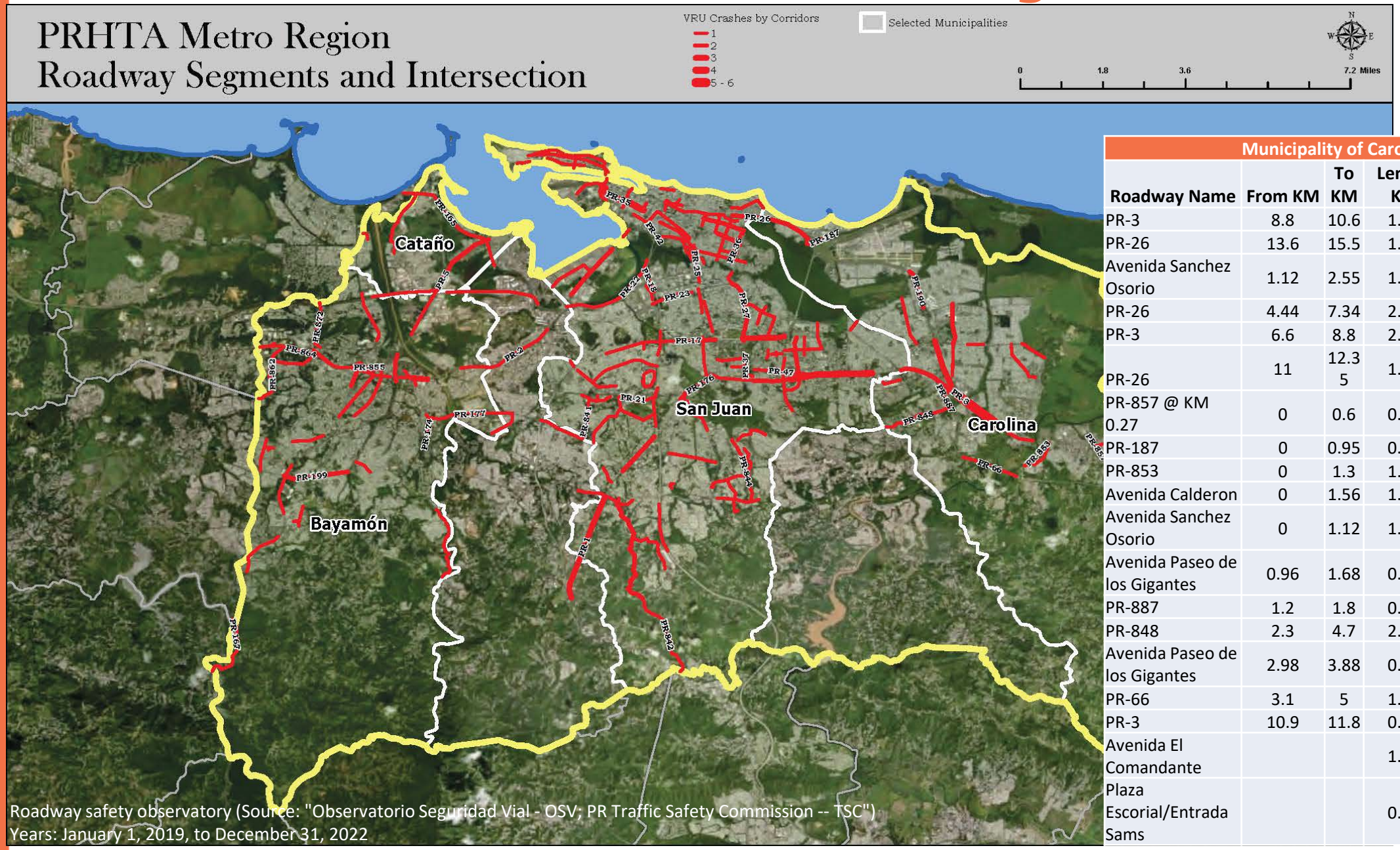


2021 Highway Performance Monitoring System (HPMS) Database - Source: PRHTA Highway System Office

VRU Metro Region Hot-Spot Map



VRU Metro Region Corridor Map



Municipality of Carolina					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-3	8.8	10.6	1.80	5	1
PR-26	13.6	15.5	1.90	3	
Avenida Sanchez Osorio	1.12	2.55	1.40	2	
PR-26	4.44	7.34	2.90	1	1
PR-3	6.6	8.8	2.20	2	
PR-26	11	12.35	1.35	1	1
PR-857 @ KM 0.27	0	0.6	0.60	1	
PR-187	0	0.95	0.95		1
PR-853	0	1.3	1.30		1
Avenida Calderon	0	1.56	1.56		1
Avenida Sanchez Osorio	0	1.12	1.10	1	
Avenida Paseo de los Gigantes	0.96	1.68	0.53	1	
PR-887	1.2	1.8	0.60		1
PR-848	2.3	4.7	2.38		1
Avenida Paseo de los Gigantes	2.98	3.88	0.93		1
PR-66	3.1	5	1.90	1	
PR-3	10.9	11.8	0.90		1
Avenida El Comandante			1.70	1	
Plaza Escorial/Entrada Sams			0.64	1	

VRU Metro Region Corridors

Municipality of Bayamón					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-2	10.4	10.9	0.5	3	
AVENIDA BETANCES	0.0	2.2	0.6	1	1
PR-199	0.8	3.0	2.2	1	1
PR-5	6.7	7.7	1.0	1	1
PR-872	0.0	1.7	1.7		1
PR-855	0.0	1.1	1.1	1	
PR-177	0.0	0.3	0.3		1
PR-864	0.0	2.2	2.1		1
AVENIDA LOS DOMINICOS	0.0	1.4	1.1		1
PR-177	0.3	2.0	1.7		1
PR-839 & PR-2					1
PR-862	1.3	3.6	2.3	1	
AVENIDA PEDRO FLORES/Santa Juanita	1.6	2.2	0.6		1
PR-174	1.6	2.3	0.7		1
PR-5	4.1	5.9	1.7		1
PR-174	5.2	8.2	3.0		1
PR-167	8.6	11.2	2.6	1	
PR-2	10.9	11.3	0.4	1	
PR-2	11.6	12.4	0.8		1
PR-2	12.4	14.5	2.1	1	
PR-167 & PR-829				1	
PR-2	15.9	16.4	0.5		1
PR-167 & PR-199				1	
PR-167	20.5	22.5	2.0		1
PR-167	23.5	25.3	1.8		1
Avenida Caridad del Cobre & Calle 9			0.7		1
Avenida Orquídea			1.6		1
Calle Esteban Padilla Cerca PR 2			0.3		1
M11 Calle 39 & Calle 40 Urb Rexville			0.3		1
M11 Calle Marginal PR-2 & Ave Betances			0.4		1
M11 Calle 11 / Av. Castiglioni			1.1		1
M11 service / Marginal PR-2 Cerca Santa Rosa Mall			0.6		1

Municipality of Carolina					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-3	8.8	10.6	1.80	5	1
PR-26	13.6	15.5	1.90	3	
Avenida Sanchez Osorio	1.12	2.55	1.40	2	
PR-26	4.44	7.34	2.90	1	1
PR-3	6.6	8.8	2.20	2	
PR-26	11	12.35	1.35	1	1
PR-857 @ KM 0.27	0	0.6	0.60	1	
PR-187	0	0.95	0.95		1
PR-853	0	1.3	1.30		1
Avvenida Calderon	0	1.56	1.56		1
Avenida Sanchez Osorio	0	1.12	1.10	1	
Avenida Paseo de los Gigantes	0.96	1.68	0.53	1	
PR-887	1.2	1.8	0.60		1
PR-848	2.3	4.7	2.38		1
Avenida Paseo de los Gigantes	2.98	3.88	0.93		1
PR-66	3.1	5	1.90	1	
PR-3	10.9	11.8	0.90		1
Avenida El Comandante			1.70	1	
Plaza Escorial/Entrada Sams			0.64	1	

VRU Metro Region Corridors

Municipality of San Juan (1/3)					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-35	0.0	1.7	1.7		4
PR-3	2.9	5.6	2.7	3	1
PR-17	6.9	8.3	1.4	1	2
PR-1	17.6	21.3	3.8	1	2
PR-842	0.0	4.1	4.1	1	1
AVENIDA EDUARDO CONDE	1.0	3.0	0.9		2
PR-27	1.4	3.1	1.7	1	1
PR-3	1.7	2.9	1.2	1	1
PR-2	2.3	4.4	2.1	1	1
PR-27	3.1	3.6	0.5	1	1
PR-17	5.6	6.0	0.4	2	
PR-1 & PR-176	12.6	13.3	0.7		2
PR-1	14.9	16.5	1.6	1	1
Calle Juan Peña Reyes			1.4		1
Avenida Gilberto Monroig			1.4		2
PR-841	0.0	3.0	1.4		1
PR-844 & Calle Juan Ramon Jimenez					1
PR-25P	0.0	2.9	2.9		1
PR-25	0.0	2.9	2.9		1
PR-16 & PR-35					1
PR-3	0.0	1.7	1.7		1
PR-18	0.0	1.2	1.2		1
PR-1 & Calle Comercio	0.0	0.3	0.3		1
AVENIDA PUERTO NUEVO & PR-2	0.0	1.6	1.7		1
CALLES GLASS,BELLIS,VERBENA	0.0	1.6	1.7		1
CALLE SICILIA & Calle Astorga					1
CALLE JULIO ANDINO & Calle Ana Otero					1
AVENIDA ITURREGUI	0.0	0.4	0.4		1
AVENIDA GANDARA	0.0	0.9	0.9		1

Municipality of Cataño					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-5	1.5	4.1	2.6	1	1
PR-869 & PR-5				1	
PR-22	11.2	12.7	1.5		1
PR-165 & PR-869				1	
PR-165	34.8	35.5	0.7		1
PR-165	35.5	36.7	1.2	1	
Camino de Valardes			0.3		1

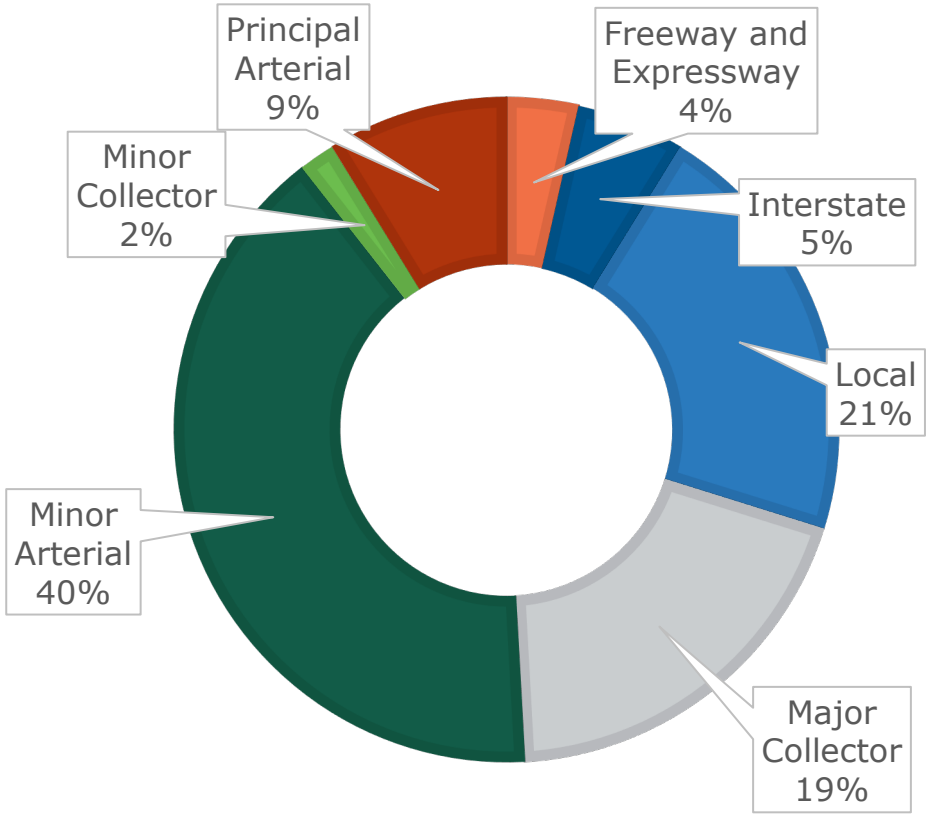
VRU Metro Region Corridors

Municipality of San Juan (2/3)					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
CALLE CUPEY GDENS Y JAZMÍN	0.0	1.5	1.4		1
AVENIDA AMÉRICO MIRANDA	0.0	2.4	2.5		1
CALLE DE DIEGO/ACUARIO & Calle Piedras Negras	0.0	0.7	0.7		1
PR-2 & PR-25	0.3	0.6	0.3		1
PR-27 & Calle Del Parque					1
CALLE LÓPEZ SICARDO	0.6	1.4	0.8		1
PR-37 & Calle Martín Travieso				1	
PR-47	0.9	1.8	0.9		1
PR-36 & Calle Lutz				1	
CALLE SIMÓN MADERA	0.9	1.9	0.9	1	
PR-1	1.0	2.3	1.3		1
PR-21	1.1	2.4	1.3		1
AVENIDA ASHFORD	1.3	2.1	0.4		1
PR-2	1.4	1.7	0.3		1
AVENIDA SAN PATRICIO	1.5	3.2	1.5		1
PR-26 & PR-22	2.1	2.4	0.3	1	
PR-17 & Avenida Andalucía				1	
PR-52	2.4	4.1	1.7		1
PR-35 & Calle Tomas Carrion Maduro	2.4	4.2	1.8		1
PR-26	2.4	4.2	1.7	1	
PR-18 Salida PR-17				1	
PR-21 & Calle Amur					1
PR-37	2.8	4.1	1.3		1
PR-22	2.8	4.8	1.9	1	
AVENIDA DE DIEGO	3.2	5.2	1.7		1
PR-27	3.6	4.1	0.4	1	
PR-17	3.6	4.2	0.6	1	
PR-23	3.9	5.3	1.4	1	
PR-842	4.1	7.4	3.2	1	
PR-17	4.2	4.7	0.5	1	
PR-18	4.6	6.0	1.4		1
PR-17	4.7	5.6	0.9		1

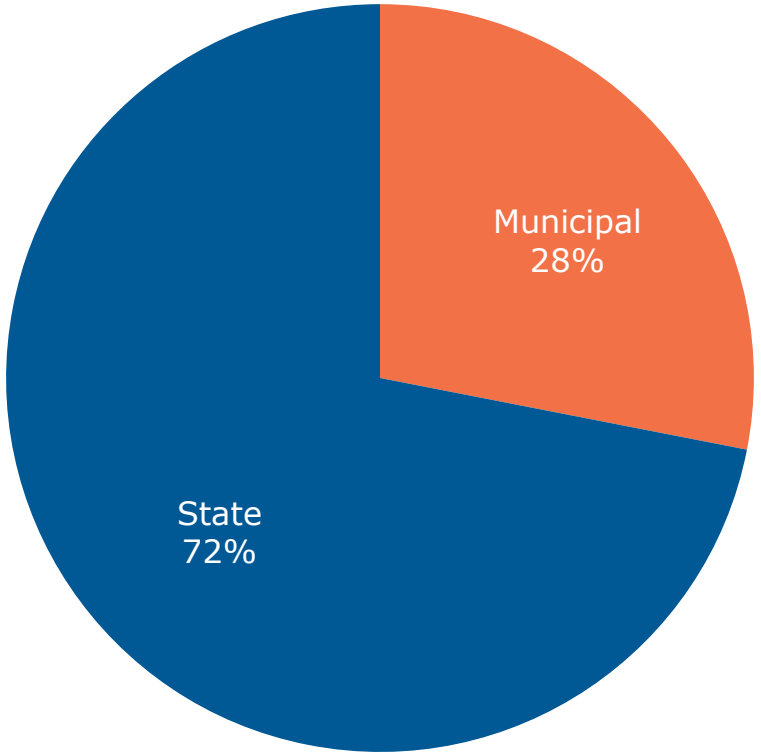
Municipality of San Juan (3/3)					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-22	4.8	6.0	1.3	1	
PR-25	5.1	6.5	1.4	1	
PR-1	6.4	7.9	1.5		1
PR-25 & Calle San Jose	6.8	8.1	1.3	1	
PR-177	8.8	10.4	1.6	1	
PR-25	8.8	9.9	1.1	1	
PR-1	9.0	9.8	0.8		1
PR-199 & PR-842				1	1
PR-199 & Calle Ceciliana				1	
PR-181	65.5	67.4	1.9	1	
Avenida Haydee Rexach			2.0		1
Avenida Hipódromo & Calle Progreso			0.5		1
Calle Cabo Gerardo Mejias/Frente al Banco Popular			0.2	1	
Calle Cortijo & Avenida Eduardo Conde			0.8		1
Calle Hoare & PR-35					1
Calle Jordán			0.2		1
Calle Oskar G Mendoza frebte Residencia K-6			0.3		1
Calle Thimothee & Calle Teruel				1	
Paseo Dr José Celso Barbosa			1.5		1
Calle Dr Rafael López Sicardo			0.3		1
Calle Henna			0.5	1	
Calle Manuel Corchado			0.0		1
Calle Padre Colón			0.4		1
Camino Los Romeros & PR-842				1	
M65 service/ Mult sur 2nd nivel plaza las americas			0.6		1

VRU South Region Data Results

PRHTA SOUTH REGION FUNCTIONAL CLASSIFICATION

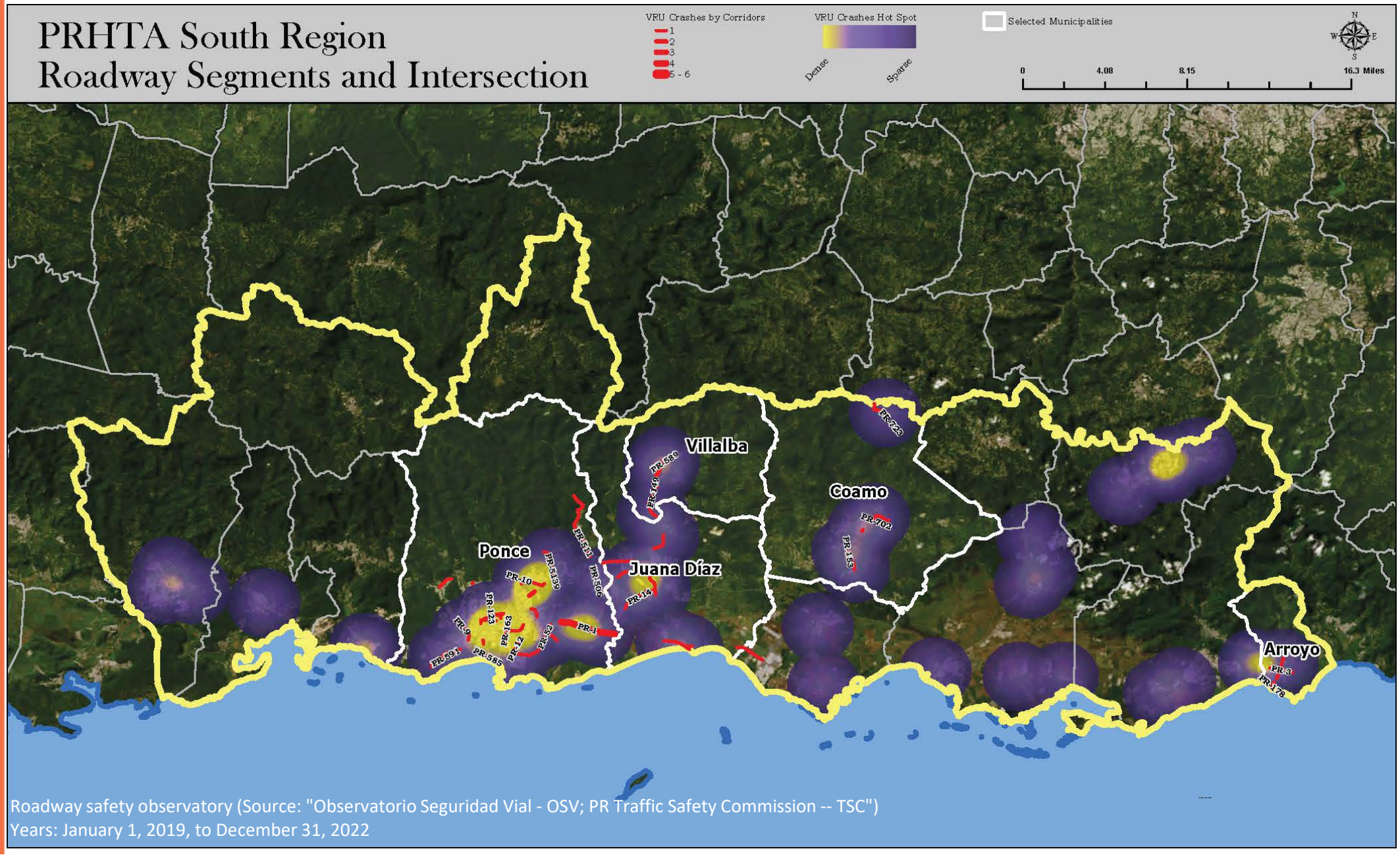


PRHTA SOUTH REGION JURISDICTION



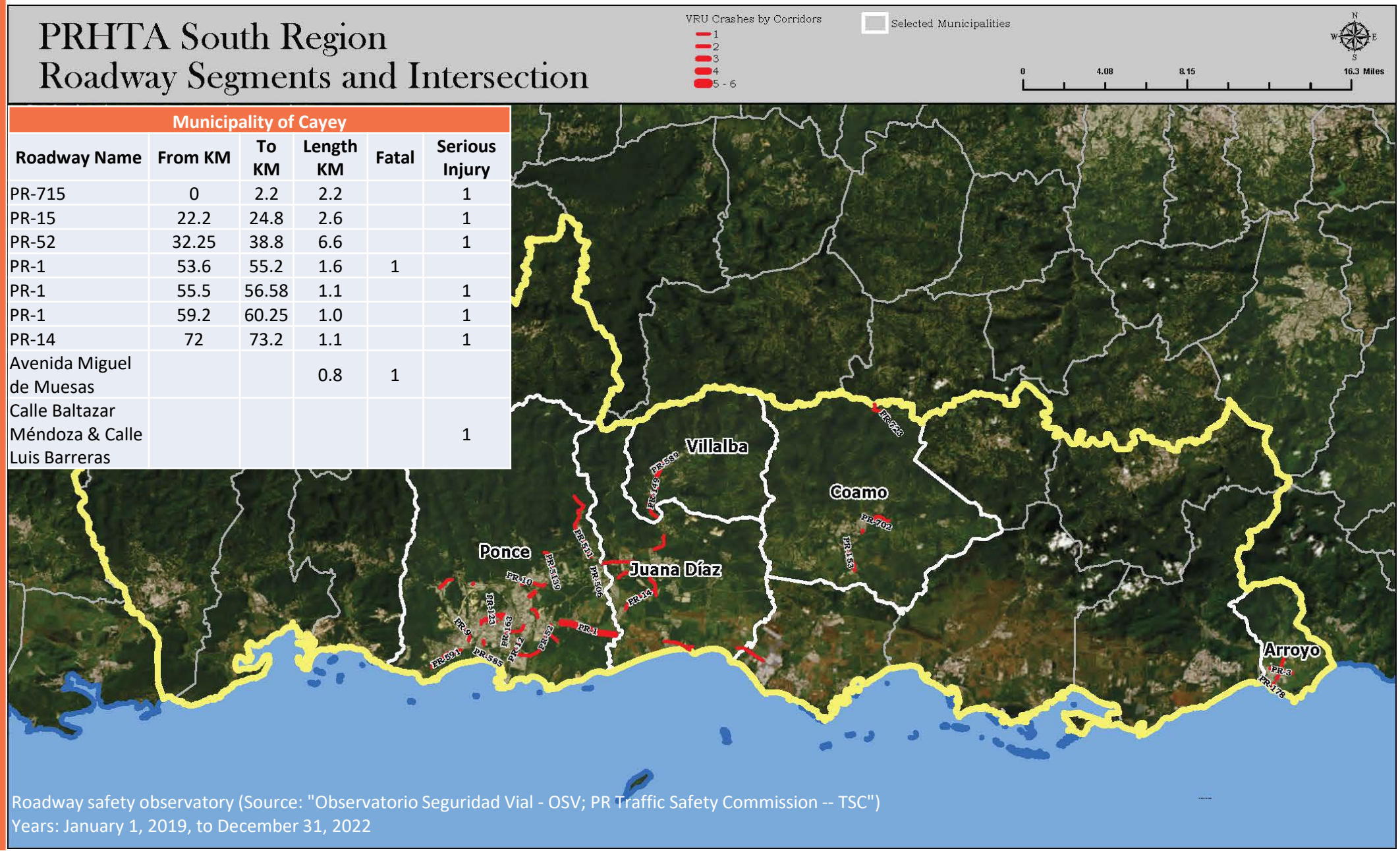
2021 Highway Performance Monitoring System (HPMS) Database - Source: PRHTA Highway System Office

VRU South Region Hot-Spot Map



Roadway safety observatory (Source: "Observatorio Seguridad Vial - OSV; PR Traffic Safety Commission -- TSC")
Years: January 1, 2019, to December 31, 2022

VRU South Region Corridor Map



Municipality of Cayey					
Roadway Name	**From KM**	**To KM**	**Length KM**	**Fatal**	**Serious Injury**
PR-715	0	2.2	2.2		1
PR-15	22.2	24.8	2.6		1
PR-52	32.25	38.8	6.6		1
PR-1	53.6	55.2	1.6	1	
PR-1	55.5	56.58	1.1		1
PR-1	59.2	60.25	1.0		1
PR-14	72	73.2	1.1		1
Avenida Miguel de Muesas			0.8	1	
Calle Baltazar Méndoza & Calle Luis Barreras					1

Roadway safety observatory (Source: "Observatorio Seguridad Vial - OSV; PR Traffic Safety Commission -- TSC")
Years: January 1, 2019, to December 31, 2022

VRU South Region Corridors

Municipality of Cayey					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-715	0	2.2	2.2		1
PR-15	22.2	24.8	2.6		1
PR-52	32.25	38.8	6.6		1
PR-1	53.6	55.2	1.6	1	
PR-1	55.5	56.58	1.1		1
PR-1	59.2	60.25	1.0		1
PR-14	72	73.2	1.1		1
Avenida Miguel de Muesas			0.8	1	
Calle Baltazar Méndoza & Calle Luis Barreras					1

Municipality of Arroyo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-753	0.0	0.6	0.6	1	
PR-178 & PR-3	0.0	0.6	0.6		1
PR-753	0.6	1.1	0.5	1	
PR-178 & Calle A Urb Minima Arroyo	1.5	1.6	0.2		1

Municipality of Juana Díaz					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-510	2.33	5.3	2.9		1
PR-14	9.8	12.6	2.8		1
PR-149	63	64.6	1.6		1
PR-149	66.5	67.6	1.1		1
PR-149	67.6	68.6	1.0		1
PR-52	91.2	93.7	2.5		1
PR-1	112.15	114.4	2.2		1
Calle 1 & Calle A - Bo Patillo			0.1		1

VRU South Region Corridors

Municipality of Ponce					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-1	118.2	122.4	4.2	1	3
PR-14	3.5	4.0	0.5	2	
PR-5139	0.0	2.4	2.4	1	
PR-591	0.0	2.8	2.8		1
CALLE FAGOT	0.0	0.6	0.6		1
CALLE 18	0.0	1.3	1.3		1
PR-585	0.5	0.8	0.3	1	
CALLE VICTORIA	0.5	1.1	0.6		1
PR-163	0.7	1.2	0.5	1	
PR-506	1.0	1.5	0.5	1	
PR-511	1.1	4.0	2.9		1
PR-163 & PR-123	1.2	1.7	0.5		1
CALLE VICTORIA & Calle Torre	1.6	1.9	0.3		1
PR-585	1.9	2.2	0.4	1	
PR-12	2.4	3.6	1.2		1
CALLE FAGOT & PR-10	3.3	4.5	0.6	1	
PR-511	4.0	7.0	3.0	1	
PR-10	4.2	5.4	1.2		1
PR-14	4.7	5.0	0.3	1	
PR-123	6.3	7.3	1.0		1
PR-52	100.6	104.7	4.1		1
Marginal Baramaya			1.2		1
Unnamed near PR-52 at Meas 101.27			1.2		1
M58 Calle Venus			0.7		1
Calle Guadalupe			0.6	1	
M58 Calle Acacia/Urb Valle Alto			0.9		1
M58 Calle 11 Residencia I-40 Urb Madrigal			0.1		1
M58 Calle A/ Res Aristies Chavier			0.2		1

Municipality of Coamo					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-702	0.0	1.3	1.3		1
PR-723	7.6	9.7	2.0		1
PR-153	12.1	12.9	0.8		1
PR-153	13.0	14.3	1.3		1
PR-14	33.9	35.7	1.9	1	
Calle Zanbrana B/Residencial Coamo			0.2		1

Municipality of Villalba					
Roadway Name	From KM	To KM	Length KM	Fatal	Serious Injury
PR-149	55.4	57.4	2.0	1	1
PR-589	0	0.8	0.8		1
PR-149	57.4	61.1	3.7		1