



HAWAI'I

Strategic Highway Safety Plan 2025 - 2029

November 2024



SHARE THE ROAD

SAFE SPEEDS



SAFE VEHICLES



SAFE SYSTEM APPROACH

SAFE ROAD USERS



POST-CRASH CARE

SAFE ROADS





TABLE OF CONTENTS

- Introduction 1**
 - Mission, Vision, and Goal 2
 - Highway Safety Program 3
 - 2019 – 2024 SHSP Accomplishments 4
 - 2025 – 2029 Update Process 8
- Statewide Traffic Safety Performance 12**
 - Data Trends and Analysis 15
- Emphasis and Focus Areas 17**
 - Safe Road Users 20
 - Safe Roads 38
 - Safe Vehicles 42
 - Safe Speeds 44
 - Post-Crash Care 47
 - Program Management 49
 - HSIP Special Rules 50
- Implementation 51**
- References 52**
- Appendices 53**

TABLE OF EXHIBITS

| | | |
|-------------------|-------------------------------------------------------------------------------------------------------------------|----|
| Exhibit 1 | Historical Traffic Fatalities Statewide | 12 |
| Exhibit 2 | Historical Serious Injuries Statewide..... | 12 |
| Exhibit 3 | Historical Non-Motorized Serious Injuries and Fatalities Statewide | 12 |
| Exhibit 4 | Five-Year Moving Average Number of Serious Injuries and Fatalities | 13 |
| Exhibit 5 | Five-Year Moving Average Rate of Serious Injuries and Fatalities..... | 14 |
| Exhibit 6 | Five-Year Moving Average of Non-Motorized Serious Injuries and Fatalities | 14 |
| Exhibit 7 | Serious Injury and Fatal Crashes 2018 - 2022 Sorted by Crash Characteristics | 15 |
| Exhibit 8 | Registered Vehicles, Driver’s License in Force, and VMT (2018 - 2022)..... | 16 |
| Exhibit 9 | Means of Transportation to Work in 2021 Statewide..... | 16 |
| Exhibit 10 | National and Statewide Fatalities..... | 20 |
| Exhibit 11 | Age of Pedestrians Involved in Serious Injury and Fatal Crashes (2017-2021) and 2019 Statewide Population..... | 21 |
| Exhibit 12 | Age of Pedestrians Involved in Serious Injury and Fatal Crashes (2017-2021) | 21 |
| Exhibit 13 | Age of Bicyclists Involved in Serious Injury and Fatal Crashes (2017-2021) and 2019 Statewide Population..... | 21 |
| Exhibit 14 | Age of Bicyclists Involved in Serious Injury and Fatal Crashes (2017-2021) | 21 |
| Exhibit 15 | Vehicle Maneuver Involved in Pedestrian and Bicycle Crashes..... | 22 |
| Exhibit 16 | Human Factors (Vehicle Drivers) Involved in Pedestrian and Bicycle Crashes | 22 |
| Exhibit 17 | Serious Injury and Fatal Crashes Involving Young Drivers (2018-2022) | 24 |
| Exhibit 18 | Top Factors Contributing to Crashes Involving Younger Drivers..... | 24 |
| Exhibit 19 | Serious Injury and Fatal Crashes Involving Older Drivers (2018-2022)..... | 25 |
| Exhibit 20 | Top Factors Contributing to Crashes Involving Older Drivers..... | 26 |
| Exhibit 21 | Annual Motorcyclist Fatalities and 5-Year Moving Average (2018-2022) | 27 |
| Exhibit 22 | Annual Unhelmeted Fatalities and 5-Year Moving Average (2018-2022) | 27 |
| Exhibit 23 | Total Serious Injury and Fatal Crashes for Motorcycles, Mopeds, and Motor Scooters (2018-2022)..... | 28 |
| Exhibit 24 | HDOT Attitudinal Survey Motorcyclist Behavior Responses (2023)..... | 28 |
| Exhibit 25 | Top Factors Contributing to Crashes Involving Motorcycles, Mopeds, and Motor Scooters | 28 |
| Exhibit 26 | Annual Number of Drug- and Alcohol-Impaired Drivers Involved in Fatal Crashes (2018-2022)..... | 30 |



| | | |
|-------------------|-------------------------------------------------------------------------------------------------------------------|----|
| Exhibit 27 | Age of Impaired Drivers in Serious Injury and Fatal Crashes (2018-2022) | 31 |
| Exhibit 28 | Top Factors Contributing to Impaired Driving Crashes..... | 31 |
| Exhibit 29 | HDOT Attitudinal Survey Impaired Driving Responses (2023)..... | 31 |
| Exhibit 30 | Distracted Driving Factors Involved in Serious Injury and Fatal Crashes (2018-2022) | 32 |
| Exhibit 31 | Driving Factors as a Percentage of Total Distracted Driving Serious Injury and Fatal Crashes (2018-2022) | 32 |
| Exhibit 32 | HDOT Attitudinal Survey Distracted Driving Responses (2023) | 33 |
| Exhibit 33 | Aggressive Driving Factors Involved in Serious Injury and Fatal Crashes (2018-2022)) | 33 |
| Exhibit 34 | Driving Factors as a Percentage of Total Aggressive Driving Serious Injury and Fatal Crashes (2018-2022)..... | 34 |
| Exhibit 35 | HDOT Attitudinal Survey Observed Red Light Running Responses (2023) | 34 |
| Exhibit 36 | HDOT Attitudinal Survey Red Light Running Responses (2023) | 35 |
| Exhibit 37 | HDOT Attitudinal Survey Passenger Restraints Responses (2023)..... | 36 |
| Exhibit 38 | Top Factors Contributing to Unrestrained Crashes..... | 37 |
| Exhibit 39 | Age of Unrestrained Occupants in Serious Injury and Fatal Crashes (2018-2022) | 37 |
| Exhibit 40 | Fatal Lane Departure, Intersection, Pedestrian-Involved, and Bicycle-Involved Crashes (2018-2022)..... | 38 |
| Exhibit 41 | Red Light Running Serious Injury and Fatal Crashes..... | 39 |
| Exhibit 42 | Serious Injury and Fatal Crashes That Occurred in a Work Zone..... | 40 |
| Exhibit 43 | Top Factors Contributing to Work Zone Crashes..... | 40 |
| Exhibit 44 | Percentage of Motor Vehicles Equipped with Advanced Driver Assistance System Technologies | 42 |
| Exhibit 45 | CMV-Related Serious Injury and Fatal Crashes (2018-2022)..... | 43 |
| Exhibit 46 | CMV Types Involved in Serious Injury and Fatal Crashes (2018-2022)..... | 43 |
| Exhibit 47 | Proportion of Speed-Related Fatalities (2008-2017) | 45 |
| Exhibit 48 | Speeding Related Fatalities (2018-2022)..... | 45 |
| Exhibit 49 | Top Factors Contributing to Speed-Related Crashes..... | 45 |
| Exhibit 50 | HDOT Attitudinal Survey Speeding Responses (2023)..... | 46 |
| Exhibit 51 | EMS Response Time for All Crashes in Urban and Rural Areas..... | 44 |



ACRONYMS AND ABBREVIATIONS

| | | | |
|--------------|---------------------------------------------|-------------------|--------------------------------------------------------------------------------------|
| 3HSP | Triennial Highway Safety Plan | MPO | Metropolitan Planning Organization |
| BAC | Blood-alcohol concentration | MVAR | Motor Vehicle Accident Report |
| CMV | Commercial Motor Vehicle | NHTSA | National Highway Traffic Safety Administration |
| CVSP | Commercial Vehicle Safety Plan | OVUII | Operating a Vehicle Under the Influence of an Intoxicant |
| DOH | Hawai'i Department of Health | SAFETEA-LU | Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users |
| DOE | Hawai'i Department of Education | SHACA | State of Hawai'i Advanced Crash Analysis |
| EMS | Emergency Medical Services | SHSP | Strategic Highway Safety Plan |
| FHWA | Federal Highway Administration | SLRLTP | Statewide Long-Range Land Transportation Plan |
| FMCSA | Federal Motor Carrier Safety Administration | U.S.C. | United States Code |
| HDOT | Hawai'i Department of Transportation | VMT | Vehicle Miles Traveled |
| HIGLS | Hawai'i Incident Geo-Locating System | VRUSA | Vulnerable Road User Safety Assessment |
| HSIP | Highway Safety Improvement Plan | | |
| IJA | Infrastructure Investment and Jobs Act | | |



INTRODUCTION

The Hawai'i Strategic Highway Safety Plan (SHSP) is focused on eliminating highway fatalities and serious injuries on all public roads in Hawai'i. This 2025 – 2029 update of the plan builds upon the previous SHSPs as well as current Federal, State, and County traffic safety efforts to identify key highway safety needs, strategies, and actions to improve safety on our roadways. The Safe System Approach, which encompasses a comprehensive focus on education, enforcement, engineering and emergency response, has been adopted by the State of Hawai'i, Department of Transportation (HDOT) and was used to guide the update of the 2025 – 2029 SHSP. The success of this inclusive Safe System Approach is ultimately dependent upon everyone's participation and commitment to safely building, operating and using the transportation system in Hawai'i.

The SHSP is codified under Title 23, Section 148 of the United States Code (U.S.C). The development of a SHSP was first required under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A

Legacy for Users (SAFETEA-LU), which was signed into law in 2005, and has been included in subsequent transportation bills including the most recent Infrastructure Investment and Jobs Act (IIJA) (also known as the "Bipartisan Infrastructure Law"). It is integral for the safety of our transportation system to continue the requirement for the development, implementation, evaluation, and update of the SHSP to identify and analyze highway safety problems and opportunities on all public roads.

The SHSP is developed and updated every five years by the HDOT through a cooperative process with Federal, State, City, and County government agencies and transportation safety stakeholders. The development of this plan update used a data-driven approach to provide a strategic alignment with traffic safety needs and crash characteristics within our State. This allowed for a focus on priorities aimed at eliminating traffic-related fatalities and serious injuries across all surface transportation modes and provides the framework for investments in transportation safety.

This plan provides strategic guidance by:



Source: FHWA.

-  **Incorporating the Safe System Approach** to comprehensively frame the plan's emphasis areas
-  **Using data** to identify existing safety needs and characteristics
-  **Identifying the priority Emphasis Areas** to focus resources on Hawai'i's most serious traffic safety needs and upward trends
-  **Setting actions and progress indicators** to guide action plans for each Focus Area

MISSION, VISION, AND GOAL

The SHSP will guide highway safety decisions throughout the State, setting the direction for improvements, priorities and funding. By establishing the guidance for the next five years, the SHSP update will support the HDOT Highways' mission and goal of zero fatalities and serious injuries.

This plan update emphasizes the importance of everyone's safety on our State's roadways, and the comprehensive and collective effort required to ultimately achieve zero traffic fatalities and serious injuries. By recognizing that serious crashes are preventable, a proactive multi-disciplinary approach addresses the many factors contributing to safe surface transportation, including design, speeds, human behaviors, technology, emergency response and policies.

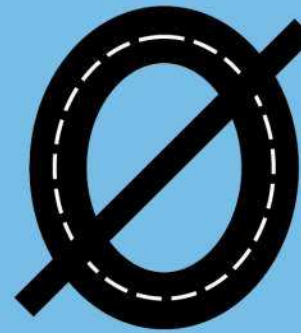


Barnes Dance Pedestrian Crossing in Waikiki



MISSION

Maximize available resources to provide a safe, efficient, accessible and sustainable State Highway System that ensures the mobility of people and goods, and supports economic vitality and livability.



VISION

Eliminate all traffic related deaths and serious injuries while increasing safe, healthy, equitable mobility for all users.



GOAL

Improve the safety of all surface transportation users through pro-active, comprehensive and equitable solutions based on the Safe System Approach.

HIGHWAY SAFETY PROGRAM

Within the State’s Highway Safety Program, the SHSP is the overarching surface transportation safety plan that identifies current and emerging emphasis and focus areas for the next five years. A data- and stakeholder- driven approach was used to identify safety needs and to develop strategies and action plans to address these needs.

Statewide Long-Range Land Transportation Plan

The SHSP is the safety plan that stems from the Statewide Long-Range Land Transportation Plan (SLRLTP). The SLRLTP defines goals, needs, and recommended multimodal strategies, and also sets the direction and priorities for the statewide land transportation system for the next 20 years. The SHSP builds upon the SLRLTP’s goal to:



Improve Safety and Security

Additionally, the SHSP supports the safety related objectives associated with the SLRLTP’s other goals for Fostering System Preservation, Integrating Multi-Modal Networks, Encouraging Economic Vitality, and Advancing Resiliency.

Triennial Highway Safety Plan

The Triennial Highway Safety Plan (3HSP) is one of the tools that evaluates progress of the SHSP and the overall highway safety program. It identifies and refines specific surface transportation safety issues, outlines a public engagement plan, and establishes a performance plan with safety targets over a three-year period. The 3HSP encompasses non-infrastructure programs.

Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) addresses more specific surface transportation safety issues identified within the SHSP and assesses safety performance and sets performance targets annually. The HSIP administers grants for infrastructure improvements.

Commercial Vehicle Safety Plan

The Commercial Vehicle Safety Plan (CVSP) outlines the State’s commercial motor vehicle (CMV) safety objectives, strategies, activities, and performance measures. The goal is to reduce the number and severity of crashes and hazardous material incidents involving commercial motor vehicles.

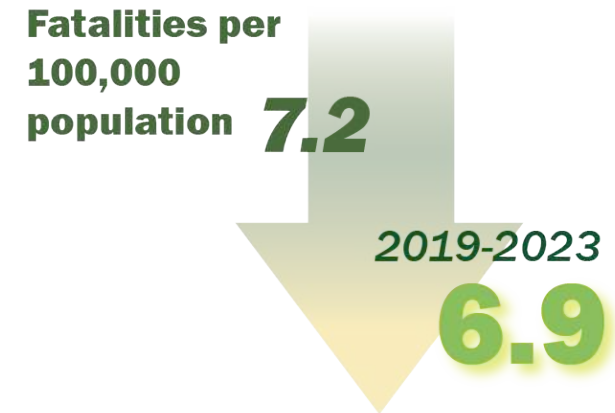
These three plans implement the strategies and actions set by the SHSP.



2019 – 2024 SHSP ACCOMPLISHMENTS

The overall goal set forth in Hawai'i's 2019 – 2024 SHSP was to reduce the fatality rate from 7.2 to 6.5 fatalities per 100,000 population or less by 2024, with the ultimate goal of zero traffic deaths. Between 2019 to 2023, the average fatality rate per 100,000 population decreased to 6.9.

An evaluation of the 2019 – 2024 SHSP was conducted to assess the plan's performance and inform decisions for the current update. The following sections highlight a few of the accomplishments that were achieved for each of the Emphasis Areas identified in the 2019 – 2024 SHSP. A more detailed evaluation of the 2019 – 2024 SHSP's performance is included in Appendix A.



Putting the Brakes on Speeding

- ◇ Enforcement efforts were enhanced by coordinating outreach, media, and enforcement campaigns such as Vision Zero's messaging for speeding, and the "No Excuses" Public Safety Announcement.
- ◇ Over 115,000 speeding related enforcement contacts were made statewide between 2019 and 2023.
- ◇ Physical deterrents were installed such as speed humps, speed tables, and raised crosswalks. To date, over 242 have been installed.
- ◇ The Selective Traffic Enforcement Programs and Traffic Commanders Meeting venues were leveraged to engage law enforcement, engineers and planners – this collaboration allowed for data driven decisions and identification of high-risk areas.
- ◇ Act 112 established the Automated Speed Enforcement System Program, to be implemented by the State in locations where a photo red light imaging detector system has been implemented.



Combating Impaired Driving

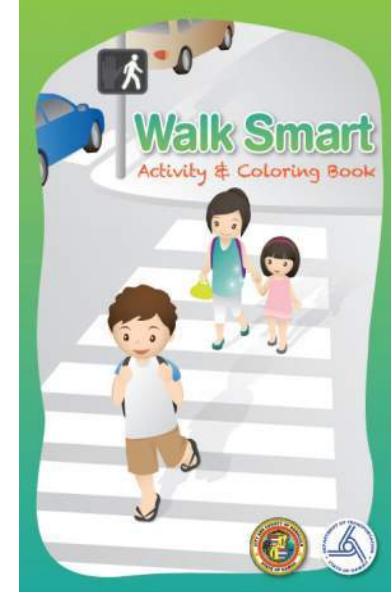
- ◇ Driving While Impaired (DWI) court began evaluation of its program and processes. Following the evaluation, the court will address the findings and outcomes.
- ◇ Court monitoring of impaired driving court proceedings. They reviewed and documented cases, assisted in data entry of drug toxicology results into HDOT's database, and participated in Traffic Commanders and Impaired Driving meetings and trainings.
- ◇ Police conducted impaired driving operations, sobriety checkpoints, and saturation patrols, especially during holidays and periods known for drinking.
- ◇ Act 94 shortened the driver's license revocation period for first-time offenders of Operating a Vehicle Under the Influence of an Intoxicant (OVUII) if they show proof that they are using the interlock ignition system in their car continuously for six to nine months
- ◇ There are currently over 1,000 active ignition interlocks installed and since the inception of the program, they have prevented over 128,000 ignition starts.

Protecting Vehicle Occupants

- ◇ Act 122 enhanced legislation for child passenger restraints, aligning with the American Academy of Pediatrics and the National Highway Traffic Safety Administration (NHTSA).
- ◇ The Keiki Injury Prevention Coalition continued to provide virtual and in-person assistance with child seat protection and distributed 118 car seats to families in need.
- ◇ Approximately 40 training courses have been conducted since 2019, resulting in an additional 146 trained technicians.
- ◇ High visibility enforcement and education for seat belt and child restraint laws were conducted in areas identified with low restraint use by the HDOT's annual observational studies.

Safeguarding Pedestrians and Bicyclists

- ◇ HDOT continued to address bicycle and pedestrian safety through infrastructure improvements.
 - From 2021 – 2023 there were approximately 78 miles of bike and/or pedestrian projects, including 77 improvement projects and 59 new projects.
 - Approximately 8 miles of sidewalk was added, and 168 raised crosswalks, speed tables, and/or speed humps were installed.
- ◇ HDOT continued its Walk Wise Hawai'i initiative to increase awareness of pedestrian safety and safety infrastructure changes through community events, sign waving, presentations, and media events.
- ◇ Act 134, the Vision Zero Act, was passed, leading to the State's adoption of a Vision Zero policy. Since then, the Counties have or are in the process of developing their Vision Zero plans.



Ensuring Motorcycle, Motor Scooter, and Moped Safety

- ◇ The motorcycle working group was reactivated, with a focus on curriculum and availability of the Basic Rider Course
- ◇ HDOT encouraged extended coverage of motorcycle safety, which resulted in updating the Hawai'i Administrative Rules to expand Basic Rider Course training. Between 2019 – 2022 there have been over 300 courses and over 4,000 trained riders.
- ◇ The State continues to work with partners to support the motorcycle safety program with earned media outreach, policy adjustments, and social media outreach

Building Safer Roadways by Design

- ◇ Legislation was authorized for an automated enforcement of red-light running cameras; pilot cameras were installed on O'ahu.
- ◇ Between 2021 – 2023, the HDOT installed 76 miles of milled shoulder/rumble strips, 600 miles of 6-inch edge line, and 11 miles of new guardrail.
 - During this same period, the HDOT installed 5 new traffic signals, 168 new raised crosswalks, speed tables, and/or speed humps, and lowered the posted speed limit for 42 miles of highway.



Enhancing First Responder Capabilities

- ◇ Emergency response equipment upgrades have been purchased, including extrication equipment at various County Fire Department stations.
- ◇ Police departments participated in various traffic safety related training, including At-scene Traffic Crash, Traffic Homicide Investigation, Advanced Traffic Crash Investigation, and Traffic Crash Reconstruction.
- ◇ Maui Police Department purchased software to analyze fatal crashes and cell phone data.



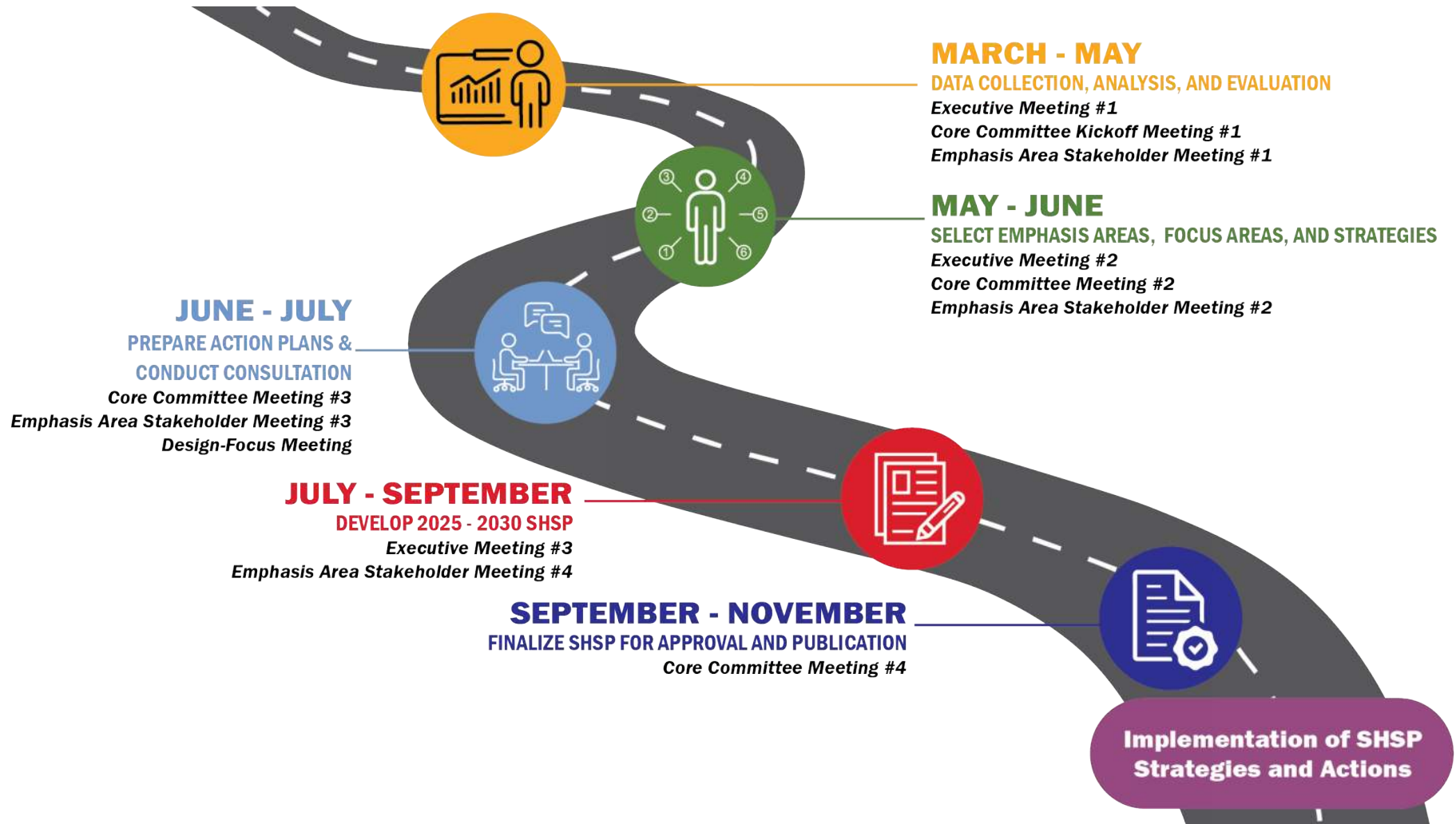
Improving Data and Safety Management Systems

- ◇ Developed and integrated interfaces between the State of Hawai'i Advanced Crash Analysis (SHACA) system and the County police departments.
- ◇ Continued development of both the Hawai'i Incident Geo-Locating System (HIGLS) and SHACA system.
- ◇ The Honolulu and Maui Police Departments have continued the eCitation pilot program, which improves data quality and the amount of time required for data to be made available.



2025 – 2029 UPDATE PROCESS

Updating the SHSP provides Hawai'i the opportunity to reflect upon the effectiveness of statewide traffic safety efforts and to adjust efforts to best meet current and emerging issues. The update process utilized a data-driven approach and collaboration with traffic safety stakeholders throughout the plan development.



Consultation and Outreach Efforts

Stakeholder engagement was a key aspect within the plan update to ensure the plan aligns with Hawai'i's transportation safety priorities, plans, and ongoing initiatives. The HDOT identified and engaged stakeholder groups and committees throughout the SHSP update process. The following is a description of each of the committees' purpose and responsibilities:

SHSP Executive Committee: The SHSP Executive Committee consisted of members of the HDOT and FHWA, and provided leadership for the SHSP development, implementation, and evaluation. The committee also provided technical input and guidance to ensure the SHSP update process was followed and all federal requirements were met. The Executive Committee met three times, at key milestones throughout the plan update.

SHSP Core Committee: The SHSP Core Committee consisted of members from Federal, State, and County transportation agencies, departments of health and education, police departments, fire departments, county prosecutors, judiciary representatives, metropolitan planning organizations (MPOs), advocates for vulnerable road users, and those currently engaged in transportation safety efforts. The Core Committee assisted the Executive Committee by providing input and guidance throughout the update process and providing any agency and transportation updates that were relevant to the SHSP. The SHSP Core Committee met four times over the course of the update process.

Emphasis Area Stakeholders: Emphasis Area stakeholders representing a variety of disciplines from all "4 E's" including engineering, enforcement, education, and emergency response, as well as other traffic safety partners, were also consulted throughout the process. The stakeholders assisted in evaluating strategies previously identified or implemented from the 2019 – 2024 SHSP,

determining strategies to be carried forward, and identifying new strategies and actions to address the Emphasis Area issues.

Other Committees: Other existing traffic safety-related committees within the HDOT were consulted to solicit feedback and refine the traffic data to be analyzed. These committees provided feedback on the update process and the Emphasis Areas' strategies and actions.



Alignment with Other State Plans

As part of the SHSP update process, various State and local traffic safety and modal plans were reviewed to coordinate surface transportation safety goals, needs, actions and resources. Ensuring consistency between plans reinforces the statewide traffic safety priorities, while maximizing resources for implementation. A summary of the relevant plans and their application to the SHSP is documented in a memorandum included in Appendix B.

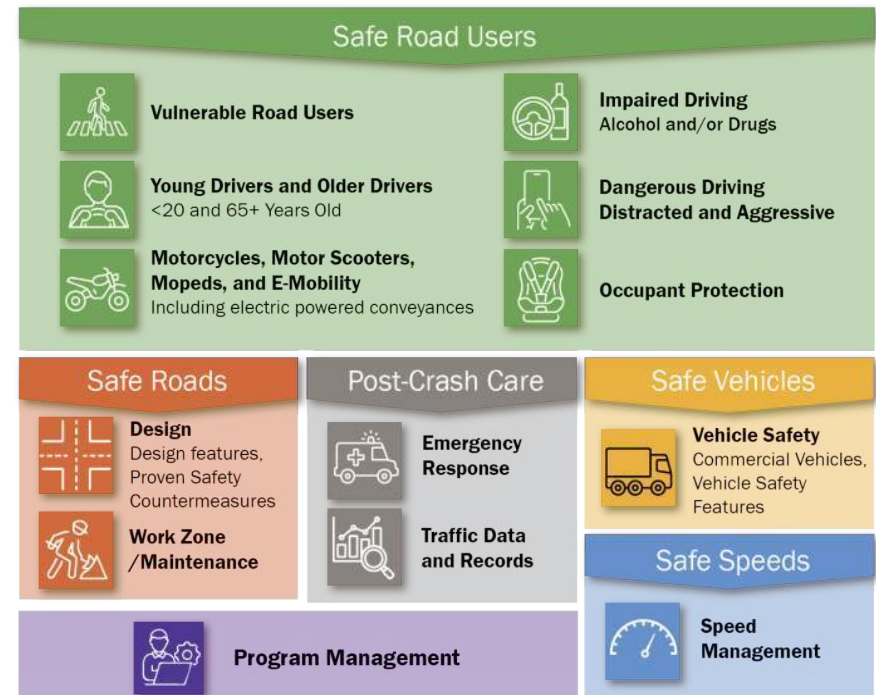
The plan reviews focused on the following areas:

- ◇ Goals and objectives
- ◇ Performance monitoring and measures
- ◇ Identified safety issues
- ◇ Strategies or projects to address safety issues

Relevant plans that were reviewed include:

- ◇ HSIP, 2022 Annual Report
- ◇ 3HSP, FY 2024 - 2026
- ◇ Act 100 Performance Metrics, 2024
- ◇ Statewide and Regional Long-Range Land Transportation Plans
- ◇ Statewide Pedestrian Master Plan
- ◇ Bike Plan Hawai'i Refresh
- ◇ Safe Routes to School
- ◇ CVSP FY 2023
- ◇ Vision Zero Action Plans
- ◇ City/County Bicycle Plans
- ◇ City/County Pedestrian Plans
- ◇ O'ahu MPO and Maui MPO Plans

Data-Driven Approach



The SHSP update process analyzed the most recently available traffic safety data 2018 – 2022 on all public roads to ensure the SHSP follows a data-driven process to identify critical roadway safety problems, priorities, and strategies and opportunities. The traffic safety data was used to evaluate the previous Emphasis Areas and implemented strategies from the 2019 – 2024 SHSP (as detailed in the 2025 – 2029 Update Process section) and identify any new Emphasis and Focus Areas and strategies based on new and/or emerging trends and proven safety countermeasures. Stakeholders from the SHSP Core Committee were consulted to verify data sources and/or the type of data to be analyzed and presented in the plan. The data that was collected and analyzed included:

- ◇ Crash data for the last five (5) years of all major traffic crashes and severity types, with a focus on fatal and serious injury crashes

- ◇ Demographic data (i.e., race, ethnicity, income, and age)
- ◇ Population and employment statistics
- ◇ Equity data and/or census information on disabled, houseless, and populations that may not have access to vehicles
- ◇ Emergency Medical Services (EMS) crash response times
- ◇ Traffic speed data
- ◇ Observational and Behavioral Surveys

Strategies, Actions, and Progress Indicators

The results of the data analysis as well as input from the stakeholders were used to inform the strategies and actions included under each of the Emphasis and Focus Areas. The strategies and actions incorporated the 4 E's and were coordinated with ongoing traffic safety programs and efforts. Systemic improvements and low-cost countermeasures were also considered during the development of the strategies and actions.

Responsible agencies and progress metrics were identified to further guide the implementation of the Focus Area strategies and actions. Progress metrics were established to ensure the status of SHSP implementation efforts can be evaluated in the future update to the plan. The plan's overall performance goals align with the HSIP's targets for the number and rate of traffic fatalities and serious injuries and traffic fatalities and serious injuries for non-motorized modes.

Addressing Equity

Stakeholders from government agencies, advocacy groups, and organizations were consulted to better understand the safety issues impacting affected communities. As defined in the 3HSP and approved by NHTSA, affected communities are those represented by County or zip code as having a score of 50 or higher on the Socio Needs

Index, or an affected community identified in the Asset Limited, Income Constrained, Employed (ALICE) report for Hawai'i. The input provided by the stakeholders helped to inform the most effective types of strategies to improve the safety of these communities, and the specific areas of focus for the actions. Most of the recommended strategies included providing education to affected communities and populations, and coordinating with agencies that work with houseless populations to align efforts in reducing crashes involving the houseless. Strategies and actions addressing affected communities and demographics have been incorporated under the Vulnerable Road Users and Occupant Protection Focus Areas of this plan.

Socially vulnerable communities were closely analyzed in the Vulnerable Road User Safety Assessment (VRUSA), which is included as an appendix to the SHSP. The VRUSA identified the socially vulnerable communities across the State where pedestrian and bicycle improvements and efforts should be prioritized. These communities were taken into consideration when prioritizing the program of vulnerable road user safety projects and strategies that should be considered for further development and incorporated in other planned safety projects and/or improvements.

It is intended that by identifying strategies and actions to address socially vulnerable communities in the SHSP, more specific programs and improvements focused on increasing the safety of these populations would be developed in the other safety plans under the Highway Safety Program. Plans that have identified affected communities include the 3HSP and the VRUSA. The 3HSP is working to provide additional context and qualitative information to support traffic safety efforts and engineering treatments in these communities. These plans should be referenced when implementing the strategies and actions in the SHSP.

STATEWIDE TRAFFIC SAFETY PERFORMANCE

Crash History and Trends

Although the last few years have exhibited an increase in the number of traffic fatalities statewide, the overall trend over the past 15 years has been slightly decreasing as shown below.

Serious injuries have experienced an increasing trend over the past 15 years. In 2019, the definitions for injuries were updated in the Motor Vehicle Accident Report (MVAR), thus resulting in higher serious injury counts in recent years, as shown on the right.

Non-motorized serious injuries and fatalities have also experienced an increasing trend over the past decade, as shown on the bottom right.

Exhibit 1 | Historical Traffic Fatalities Statewide

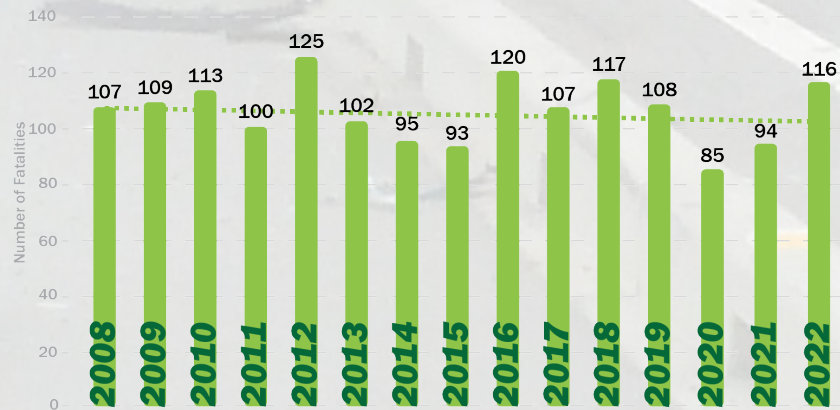


Exhibit 2 | Historical Serious Injuries Statewide

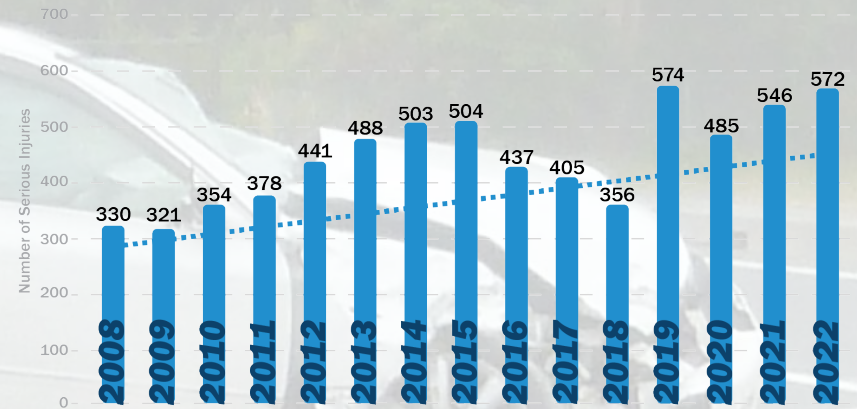
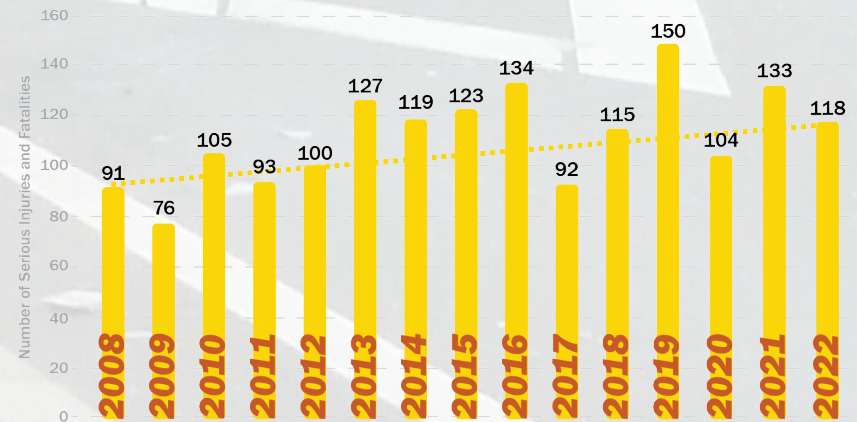


Exhibit 3 | Historical Non-Motorized Serious Injuries and Fatalities Statewide



Performance Measures

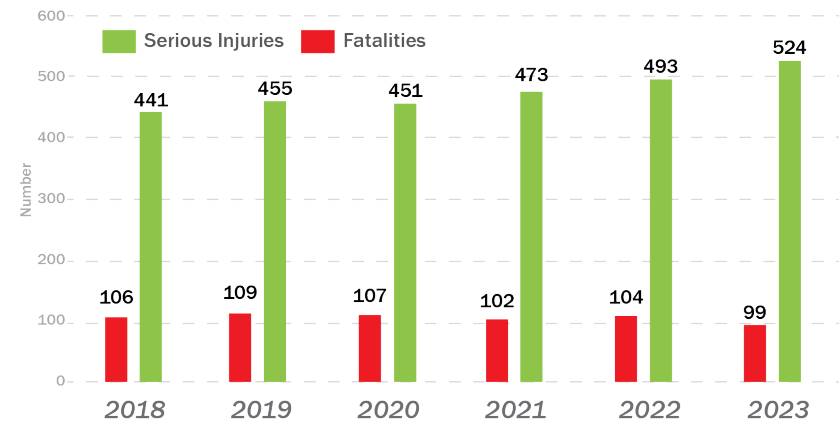
In alignment with the national performance management measures for carrying out the HSIP codified under 23 Code of Federal Regulations Part 490.207, the HDOT tracks five safety performance measures to assess progress on surface transportation safety.

- ◇ Number of fatalities
- ◇ Number of serious injuries
- ◇ Rate of fatalities (fatalities per 100 million vehicle miles travelled)
- ◇ Rate of serious injuries (serious injuries per 100 million vehicle miles travelled)
- ◇ Number of non-motorized fatalities and serious injuries

Each performance measure is tracked by a five-year moving average to evaluate the HSIP progress, and a new performance target is set for the subsequent year on an annual basis. These annually set targets are the incremental safety performance metrics for the HDOT's surface transportation safety program. The performance targets align the HSIP with the SHSP to promote a coordinated relationship between transportation safety planning, implementation, and performance.

Five-year moving averages are shown for the noted performance measures for the latest six years of available data.

Exhibit 4 | Five-Year Moving Average Number of Serious Injuries and Fatalities



Annual targets for 2024 and 2025:

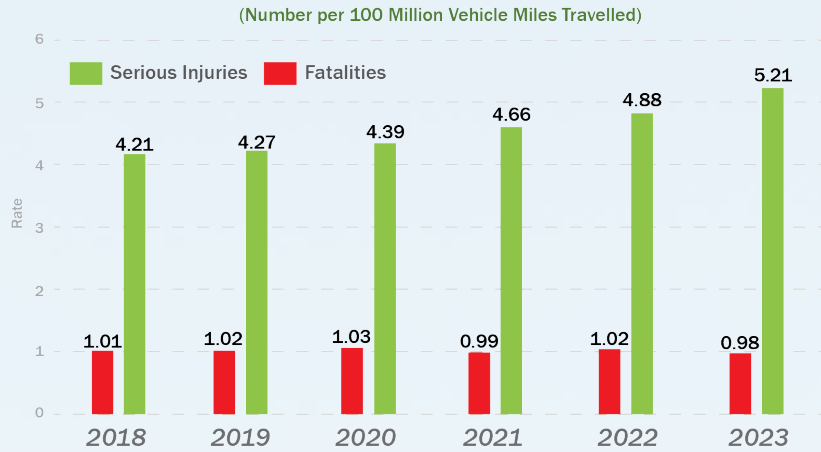
Serious Injuries

- 2024: 546
- 2025: 533

Fatalities

- 2024: 105
- 2025: 104

Exhibit 5 | Five-Year Moving Average Rate of Serious Injuries and Fatalities



Annual targets for 2024 and 2025:

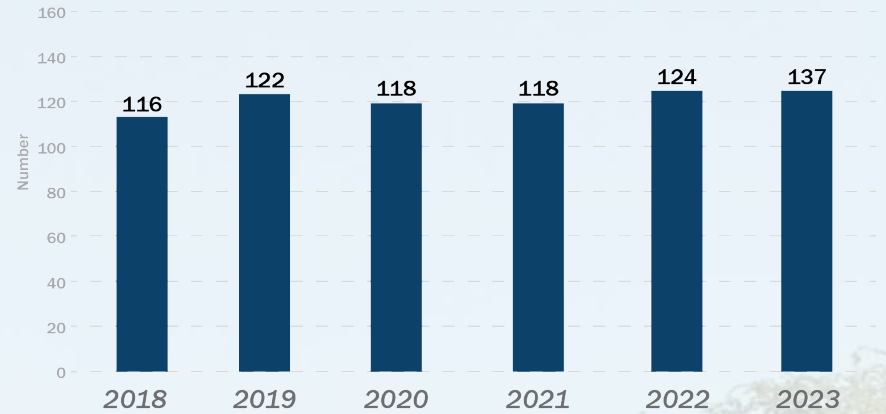
Rate of Serious Injuries

- o 2024: 5.47
- o 2025: 5.22

Rate of Fatalities

- o 2024: 1.05
- o 2025: 1.01

Exhibit 6 | Five-Year Moving Average of Non-Motorized Serious Injuries and Fatalities



Annual targets for 2024 and 2025:

Serious Injuries and Fatalities

- o 2024: 123
- o 2025: 137

DATA TRENDS AND ANALYSIS

Fatal and serious injury crash attributes were examined to identify characteristics of recent crashes. The relative frequency of these characteristics was used to identify trends and risk factors and inform the development of strategies and actions to reduce the frequency and severity of crashes. It should be noted that these characteristics and risk factors that were identified may not be the direct cause of crashes, as there may be multiple factors involved. However, identifying common factors and attributes that are often involved in crashes offers a first step in identifying prioritized Focus Areas where more specific strategies and actions can be developed to address risk factors.

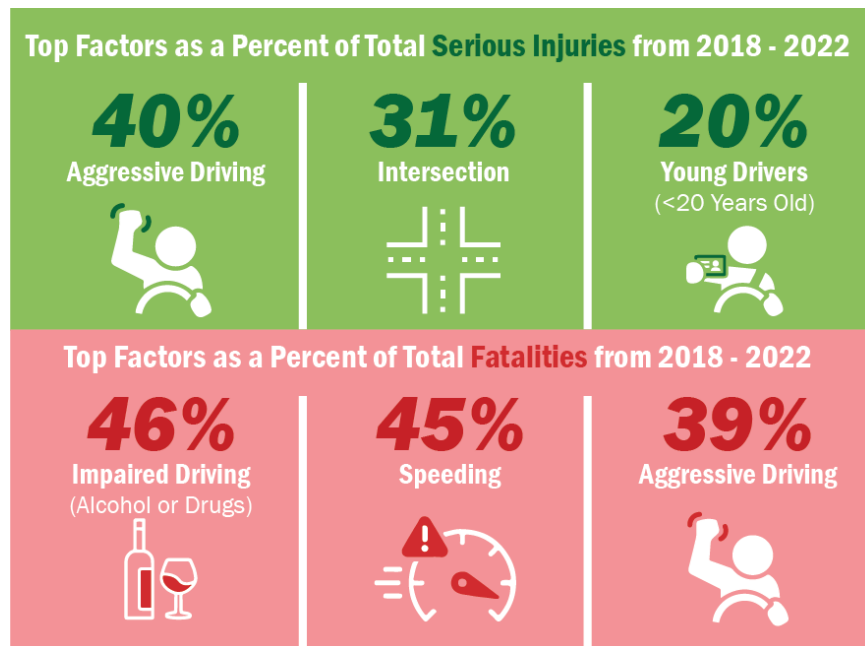
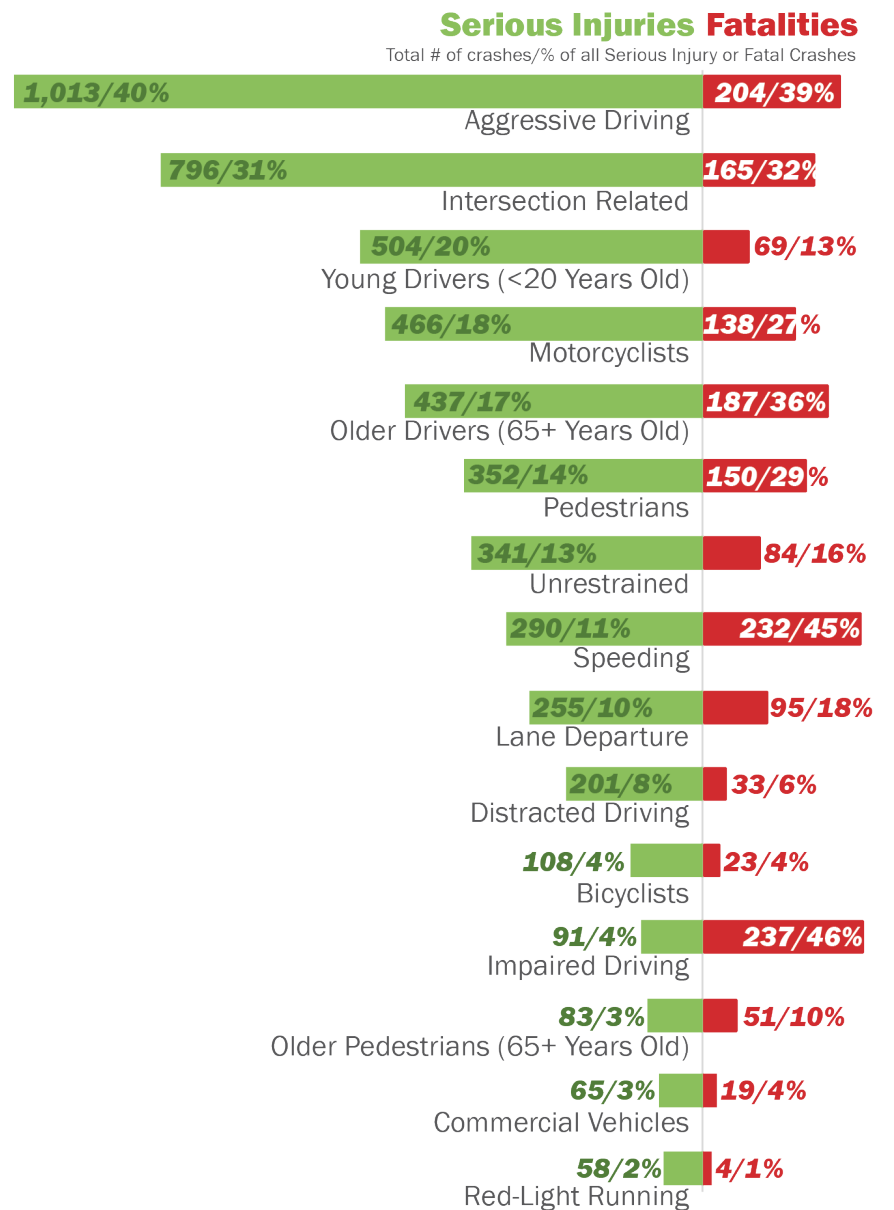
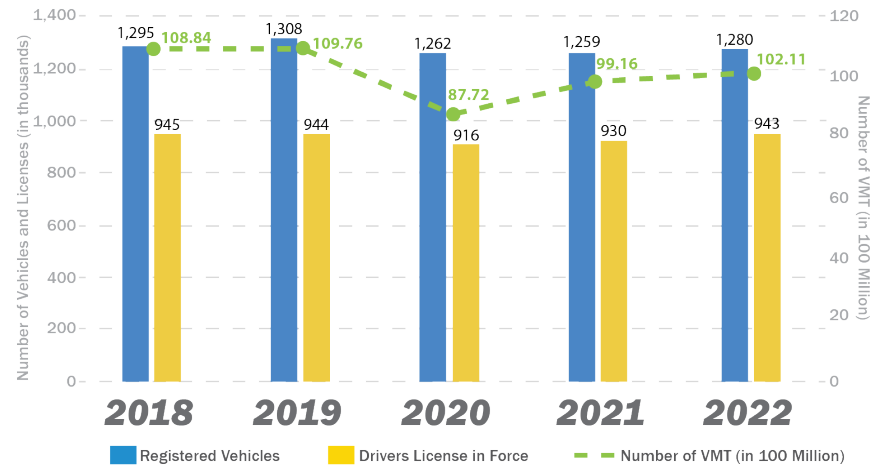


Exhibit 7 | Serious Injury and Fatal Crashes 2018 - 2022 Sorted by Crash Characteristics



The number of registered vehicles and vehicle miles travelled (VMT) were on the rise prior to the COVID-19 pandemic in 2020. Since then, the number of driver's licenses in force (valid driver's licenses that are not expired, suspended, or revoked) have gone up back to pre-pandemic numbers, while the number of registered vehicles and VMT have been increasing.

Exhibit 8 | Registered Vehicles, Drivers License in Force, and VMT (2018 - 2022)



Based on 2021 data of commuting habits across the State, driving alone is still the most common means of commuting to work, followed by carpooling (State of Hawai'i Department of Business, Economic Development, and Tourism, n.d.). Working from home has become a more common practice since the pandemic and has doubled in numbers from 2019 to 2021, going from 5% in 2019 to 11% in 2021.

Exhibit 9 | Means of Transportation to Work in 2021 Statewide



EMPHASIS AND FOCUS AREAS

Safe System Approach

The Safe System Approach was adopted by the United States Department of Transportation (U.S. DOT) and is endorsed by the HDOT as a guiding approach to address roadway safety. The approach recognizes that people make mistakes and that humans are vulnerable, therefore all aspects of the transportation system should be addressed to ensure many redundancies are in place to protect its users.

Safe System Approach Principles

- 

Death/Serious Injury is Unacceptable
While no crashes are desirable, the Safe System Approach prioritizes crashes that result in death and serious injuries, since no one should experience either when using the transportation system
- 

Humans Make Mistakes
People will inevitably make mistakes that can lead to crashes, but the transportation system can be designed and operated to accommodate human mistakes and injury tolerances and avoid death and serious injuries.
- 

Humans Are Vulnerable
People have limits for tolerating crash forces before death and serious injury occurs; therefore, it is critical to design and operate a transportation system that is human centric and accommodates human vulnerabilities.
- 

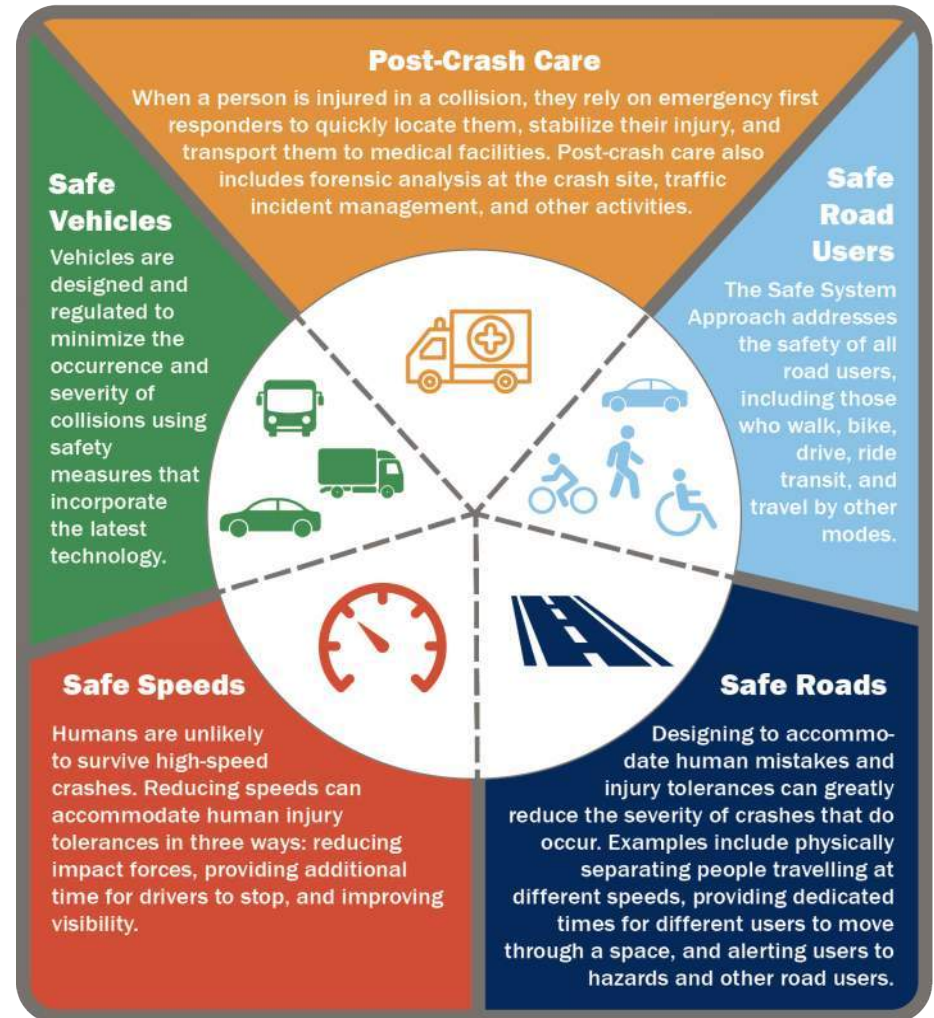
Responsibility Is Shared
All stakeholders (transportation system users and managers, vehicle manufacturers, etc.) must ensure that crashes don't lead to fatal or serious injuries.
- 

Safety Is Proactive
Proactive tools should be used to identify and mitigate latent risks in the transportation system, rather than waiting for crashes to occur and reacting afterwards.
- 

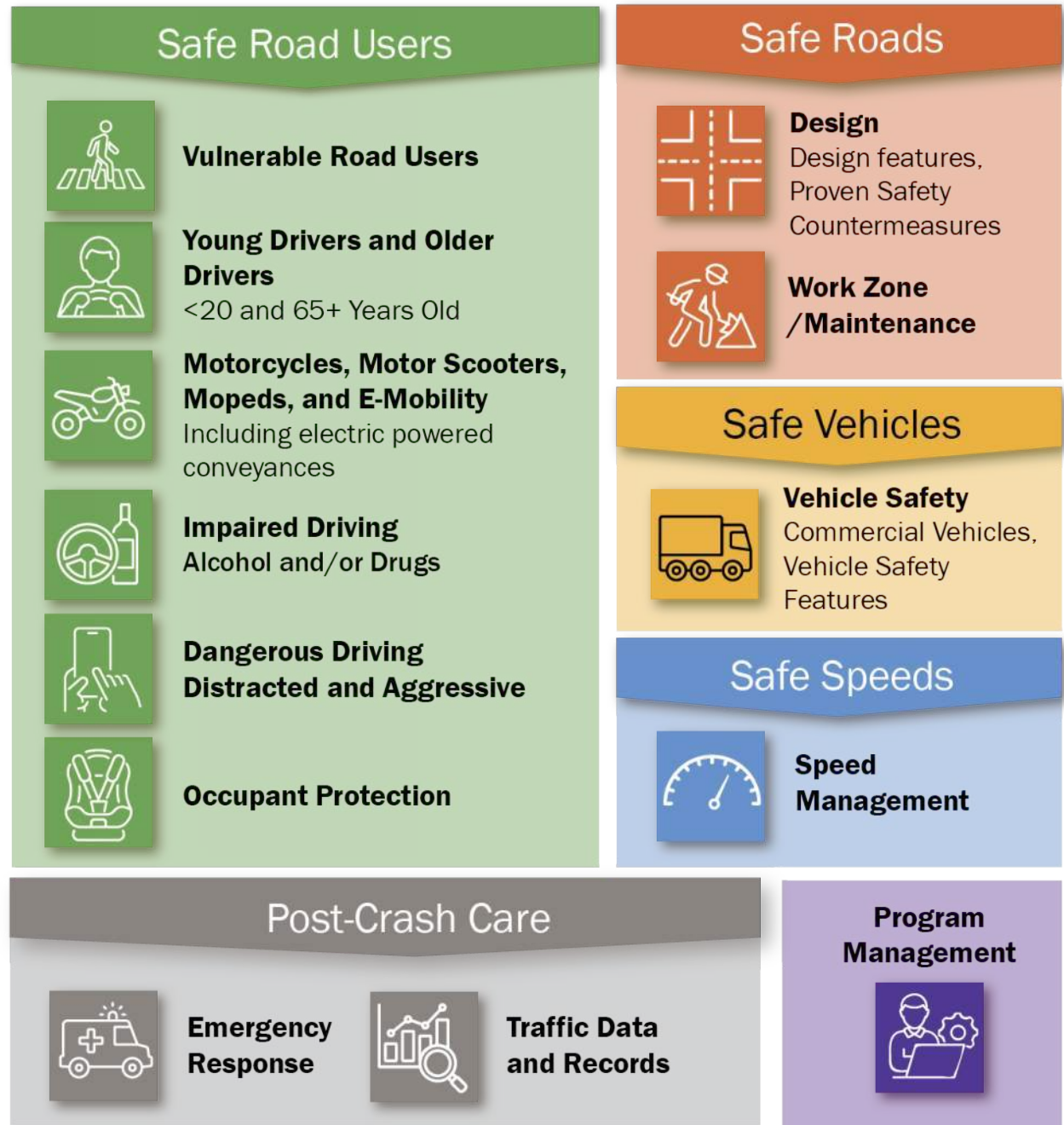
Redundancy Is Crucial
Reducing risks requires that all parts of the transportation system are strengthened, so that if one part fails, the other parts still protect people.

The Safe System Approach includes five primary elements and objectives which are complementary to the principles.

Safe System Approach Elements



To ensure consistency with the National Roadway Safety Strategy, this update of the SHSP utilizes the Safe System Approach elements as Emphasis Areas to address all aspects of the transportation system. The Emphasis Areas are then further broken down into Focus Area topics where strategies, actions, responsible agencies, and progress metrics are developed to specifically address the safety issues of the Focus Areas. All the Emphasis Areas from the previous SHSP were carried forward as Focus Areas and have been expanded to encompass emerging issues.



New Focus Areas address the crash characteristics, risk factors, or specific groups that were commonly involved in serious injury and fatal crashes.



Vulnerable Road Users – In addition to pedestrians and bicyclists, vulnerable road users also include other cyclists, and persons on a non-motorized personal conveyance.



Young Drivers and Older Drivers – Young drivers under 20 years of age have less experience driving on the road and may be less equipped to make safe driving decisions. Older drivers aged 65 years and older are susceptible to changes in their physical and mental abilities, which may affect their driving capabilities and judgement.



Motorcycles, Motor Scooters, Mopeds, and E-Mobility – The use of electric transportation devices poses a safety risk with its ability to travel at fast speeds and lack of enforcement for its use.



Dangerous Driving – For the purpose of this SHSP, “dangerous driving” behaviors are aggressive, reckless, and distracted driving, which have become common factors involved in serious injury and fatal crashes.



Work Zones/Maintenance – Maintaining and improving the roadway system is essential in ensuring it is in good and safe operating order, as well as protecting those who work on it.



Vehicle Safety – Commercial vehicle operations and advancements in vehicle safety equipment and technology must be addressed to ensure that the roadway system is accommodating to these features.



Program Management – Managing the implementation of the SHSP strategies and actions and proactively collaborating with traffic safety partners will help in achieving the vision of zero fatalities and serious injuries on Hawai‘i’s roadways.



SAFE ROAD USERS

The Safe Road Users Emphasis Area seeks to encourage us all to be responsible, cautious and courteous regardless of our mode of transportation. Safe Road Users are those who drive, walk, bike, ride transit, use e-mobility, or travel by other modes on the surface transportation system. Whatever mode of travel we use, learning and practicing safe behaviors are an essential part of becoming and committing to being a Safe Road User.

The Emphasis Area:

- ◇ Underscores the need for protecting our most vulnerable roadway users and providing equitable solutions
- ◇ Encourages proper training and support for both novice and aging drivers
- ◇ Supports sharing the road safely with motorcycles, and other motorized/unshielded vehicles
- ◇ Discourages risky behaviors including impaired, distracted and aggressive driving
- ◇ Strives to protect vehicle occupants and users with seat belts, child restraints and safety gear



Vulnerable Road Users

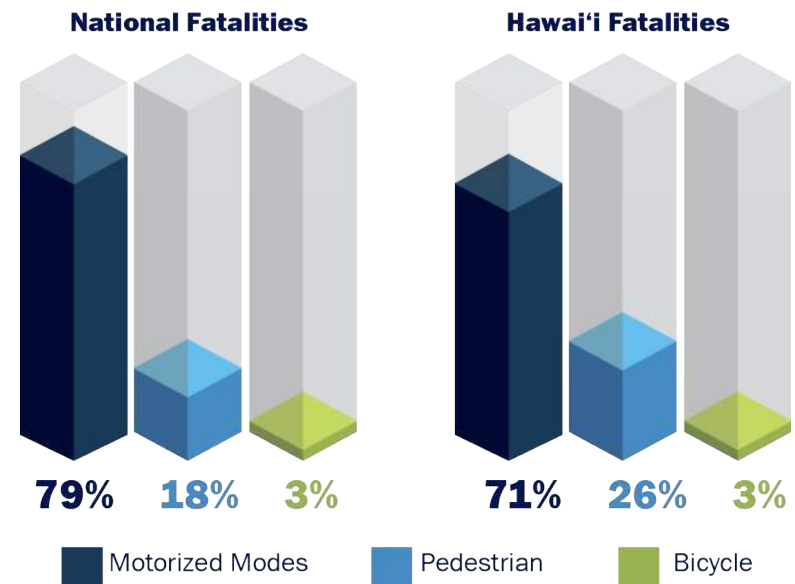
Vulnerable road users are defined as any non-motorist including pedestrians, bicyclists, other cyclists, and persons on a non-motorized personal conveyance. (U.S. Department of Transportation Federal Highway Administration, 2022).

It is important for Hawai'i to design, maintain and operate a transportation system that allows people to walk, bike and roll safely and securely across the State. This means considering equitable improvements, providing infrastructure that accommodates non-

motorized modes and proactively addressing high-risk characteristics with safety countermeasures. At the same time, vulnerable user safety is tied to human behaviors. Education, enforcement and outreach focused on typical vulnerable road user crash characteristics promote prevention and avoidance of crashes. Other Focus Areas will address overlapping behaviors affecting vulnerable road users including impaired driving, dangerous driving, and speed management.

Pedestrian and bicyclist fatalities both nationwide and in Hawai'i have been rising and accounting for an increasing share of overall roadway fatalities. In 2022, the percentage of pedestrian fatalities within Hawai'i accounted for approximately 26% of all roadway fatalities, as compared to a nationwide average of 18% (U.S. Department of Transportation National Highway Traffic Safety Administration, 2024). In the same year, the percentage of bicyclist fatalities within Hawai'i accounted for 3% of all roadway fatalities, which is the same as the national average.

Exhibit 10 | National and Statewide Fatalities



In 2021, the IJJA amended 23 U.S.C Section 148 to include a requirement for all states to develop a VRUSA as part of their HSIP. The purpose of the VRUSA is to combat the increasing trend of vulnerable road user serious injuries and fatalities across the State by assessing the State’s roadway safety performance and identifying a program of projects and strategies to increase the safety of vulnerable road users.

The VRUSA assessed serious injury and fatal crashes between 2017 and 2021 that involved vulnerable road users. Based on the crash

Exhibit 11 | Age of Pedestrians Involved in Serious Injury and Fatal Crashes (2017-2021) and 2019 Statewide Population

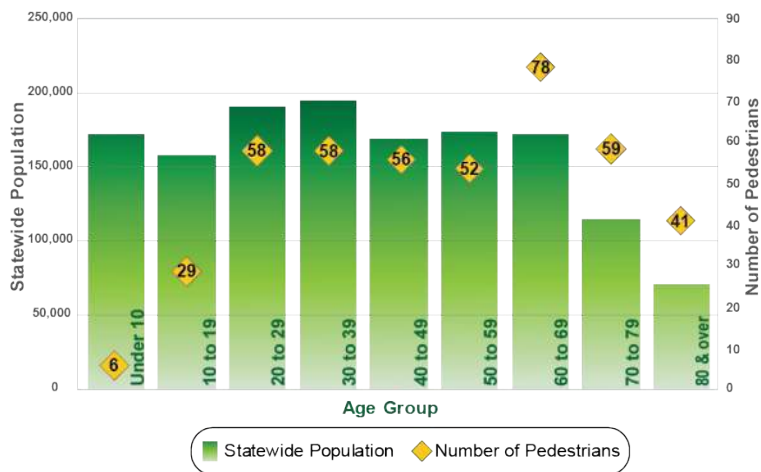
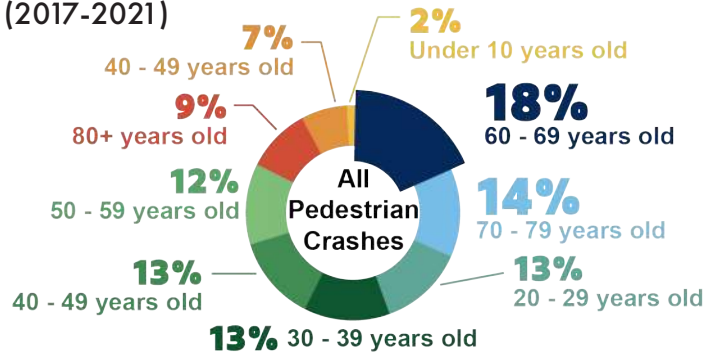


Exhibit 12 | Age of Pedestrians Involved in Serious Injury and Fatal Crashes (2017-2021)



data analysis, it was found that the greatest number of pedestrian and bicyclist serious injury and fatal crashes were within the 60 – 69 year old age group. These groups are overrepresented in proportion to the 2019 statewide population. The 60 – 69 year old age group was involved in the highest percentage of pedestrian traffic fatalities across the nation in 2021, while bicyclists ages 60 – 64 were involved in the highest number of bicyclist fatalities in the same year.

Exhibit 13 | Age of Bicyclists Involved in Serious Injury and Fatal Crashes (2017-2021) and 2019 Statewide Population

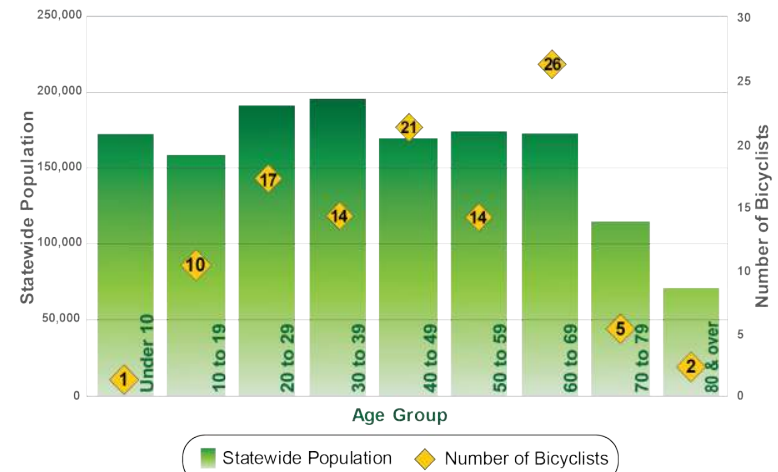
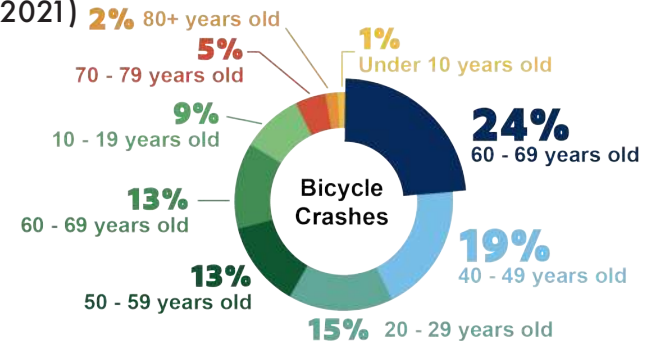


Exhibit 14 | Age of Bicyclists Involved in Serious Injury and Fatal Crashes (2017-2021)



Other factors involved in vulnerable road user crashes such as vehicle maneuver and human factors were also assessed to better understand and address serious injury and fatal crashes. For pedestrian and bicycle serious injury and fatal crashes, driving straight was the most common maneuver for vehicle drivers involved in the crashes. The most common human factor indicated for vehicle drivers involved in both pedestrian and bicycle serious injury and fatal crashes was “none”, followed by inattention and misjudgment.

Exhibit 15 | Vehicle Maneuver Involved in Pedestrian and Bicycle Serious Injury and Fatal Crashes

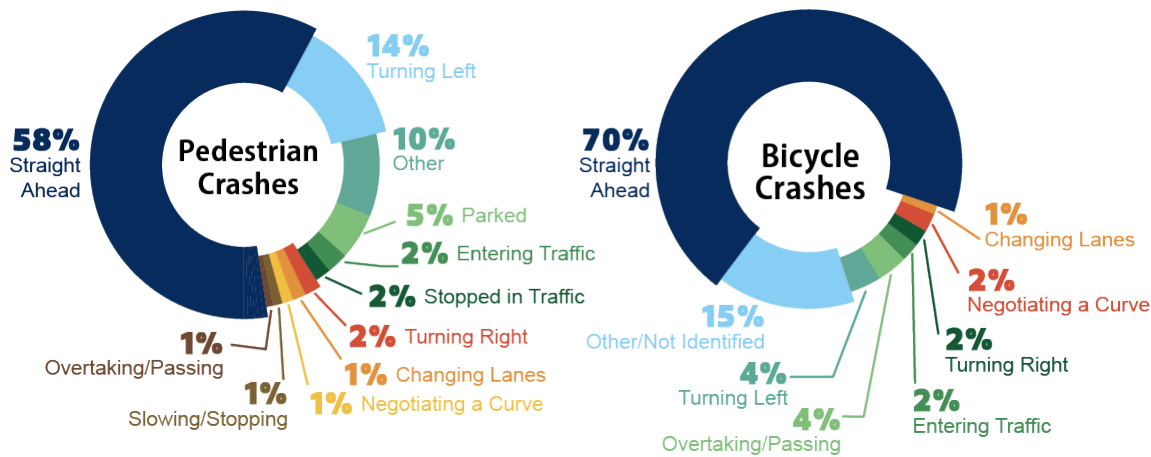
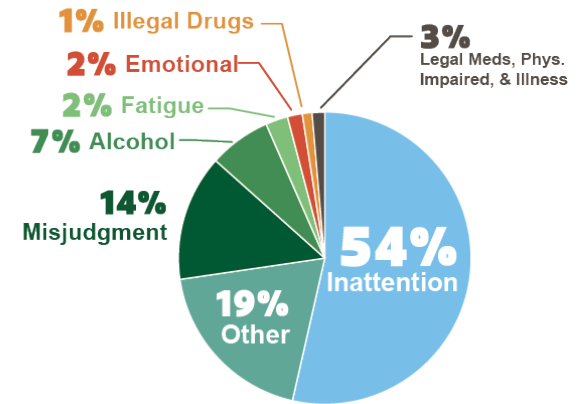
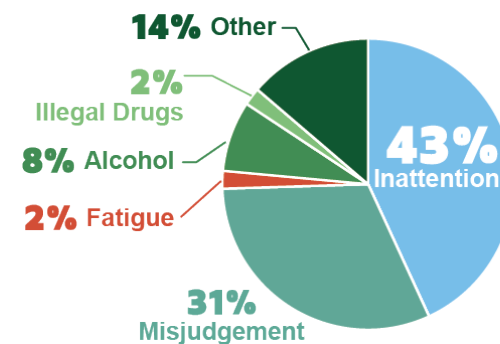


Exhibit 16 | Human Factors (Vehicle Drivers) Involved in Pedestrian and Bicycle Serious Injury and Fatal Crashes

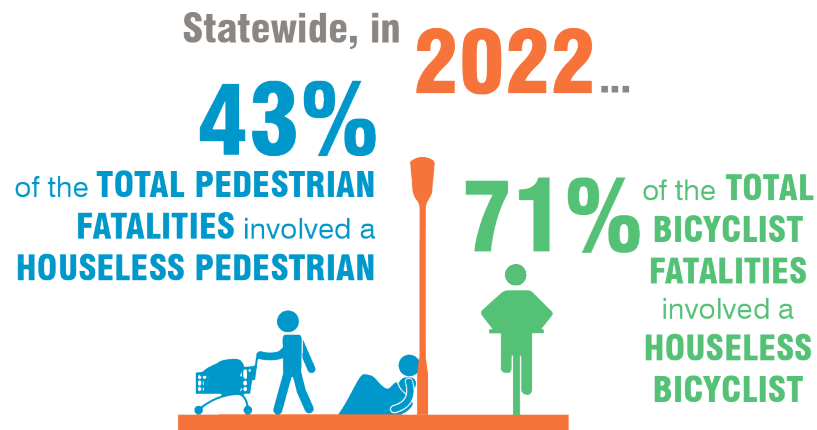
Human Factors (Vehicle Drivers) Pedestrian Crashes



Human Factors (Vehicle Drivers) Bicycle Crashes



The technical and stakeholder advisory committees that were convened for the VRUSA provided recommendations for better data collection on demographics of vulnerable road users, including houselessness and mental illness. While the houseless population's involvement in vulnerable road user crashes was not available for the five-year period of the assessment, the HDOT provided data on pedestrian and bicyclist fatalities that involved the houseless population for 2022. A total of 28 pedestrian fatalities and seven bicyclist fatalities involving the houseless population occurred across the State. More than half of the total pedestrian and bicyclist fatalities involving the houseless population occurred on O'ahu. Reporting of the houseless and mentally ill populations involved in vulnerable road user crashes is vital for creating more targeted actions to reduce the number of serious injury and fatal crashes involving these vulnerable populations.



The action plan for the Vulnerable Road Users Focus Area (included in Appendix A) includes actions targeted at identification of vulnerable populations and communities, addressing data gaps, and coordinating efforts with partner agencies that address houseless populations.

Strategies for Vulnerable Road Users

- 1) Implement best practices and proven countermeasures to address high-risk facility characteristics to support safe travel for vulnerable road users.
- 2) Educate, enforce, and encourage all road users emphasizing the Safe Road User characteristics to support a safe transportation system for vulnerable road users.
- 3) Develop and maintain data to identify and address vulnerable road user safety issues.





Young Drivers and Older Drivers

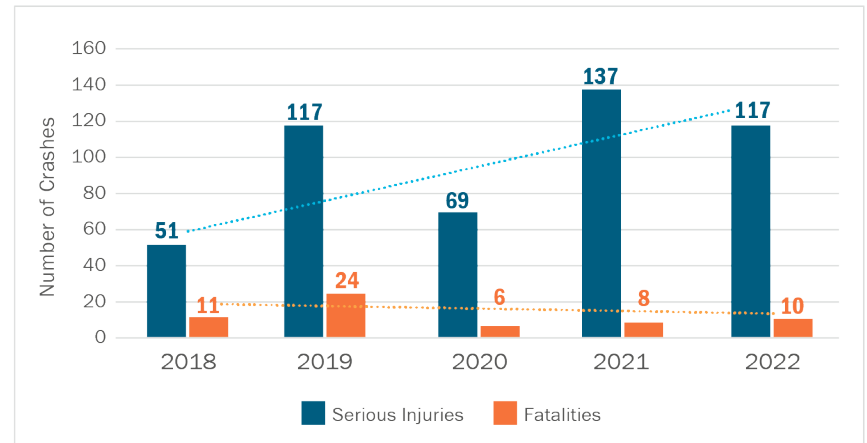
Young drivers have less knowledge about the roadway system and other user behaviors, as well as less practical experience to maneuver through dangerous situations. Inexperience combined with risky decisions, such as excessive speeding and texting while driving can lead to serious consequences.

Comprehensive education and training, as well as graduated drivers' license restrictions for young drivers allows them to gain experience on the road before being fully licensed. Family support as well as law enforcement, may also preemptively assess and recognize at-risk behaviors in young drivers.

In 2020, motor vehicle crashes were the leading cause of accidental death across the nation for people between the ages of 15 and 24 years old. In 2021, approximately 2,116 drivers ages 15 to 20 years old were killed, while an estimated 203,256 were injured in motor vehicle crashes. Young drivers are also overrepresented in motor vehicle crashes, accounting for approximately 5.1% of licensed drivers in the United States, but accounting for 8.5% of drivers involved in fatal crashes and 12.6% of drivers involved in all crashes (National Highway Traffic Safety Administration, 2023).

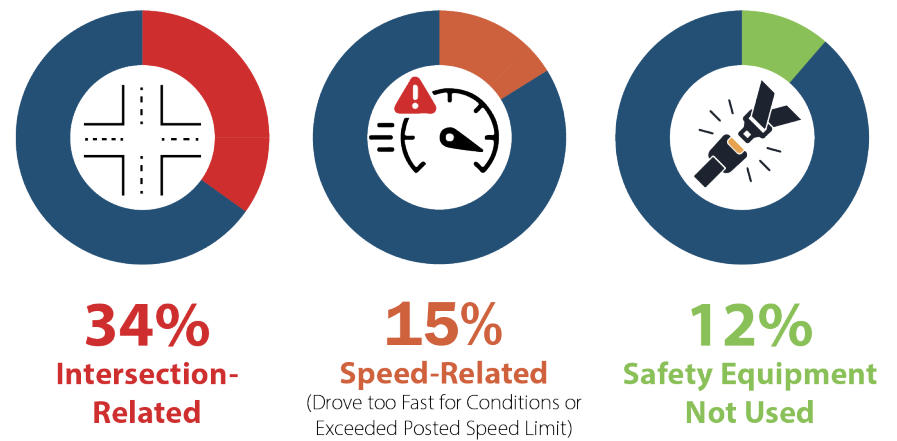
There has been an increasing trend of serious injury and fatal crashes involving drivers 20 years old and younger within the State since 2018. Fatalities have been increasing since the COVID-19 pandemic in 2020. Since 2018, serious injury crashes involving young drivers have increased by approximately 15.2% annually. Fatal crashes have slightly declined by about 1.8% per year.

Exhibit 17 | Serious Injury and Fatal Crashes Involving Younger Drivers (2018-2022)



Between 2018 to 2022, the most common factors occurring in crashes involving young drivers were crashes that occurred at intersections, speed-related crashes, and crashes where no safety equipment was used.

Exhibit 18 | Top Factors Contributing to Crashes Involving Younger Drivers

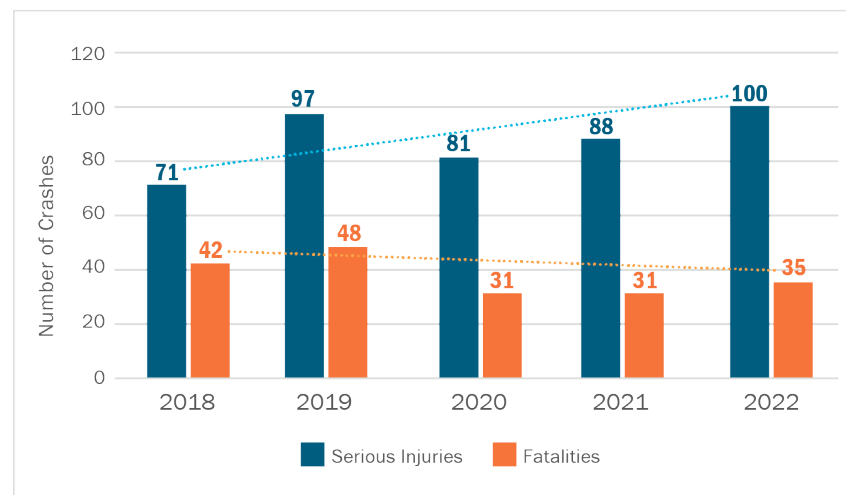


Older drivers experience changes to their physical and mental abilities, which can impact their driving behaviors, capabilities, and judgment. In 2021, people aged 65 years or older accounted for 21% of all licensed drivers in the United States, an increase from approximately 14% in 2001. Unfortunately, older drivers have also been involved in more fatal crashes recently, accounting for 19% of all fatal crashes in 2021, an increase from 11% in 2001. With the national trend of an aging population, it is important to balance the mobility of older drivers and the safety of all road users (National Traffic Highway Safety Administration, 2023).

In Hawai'i, the number of fatalities and serious injuries to kupuna (older person), or those aged 65 and older, has been on the rise. In 2018, the total number of serious injury crashes involving older drivers was 71, representing the lowest number of crashes between the 2018 to 2022 timeframe. Since then, the total number of serious crashes has only increased, with 2022 representing the highest number of serious injury crashes involving older drivers. According to 23 U.S.C. 148(g) (2), the Highway Safety Improvement Program Special Rule applies to Hawai'i due to the increasing rate of fatal and serious injury crashes among older drivers and pedestrians, and requires the SHSP Update to provide strategies to lower these rates.

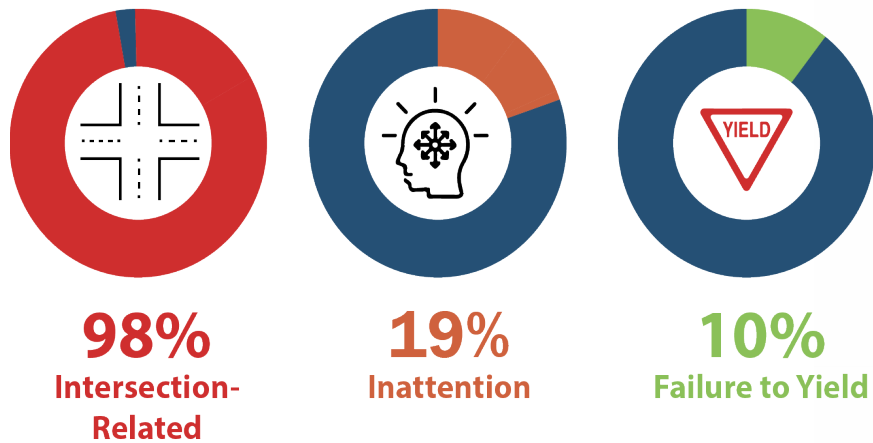
Education and training focused on driving skills for older drivers in conjunction with recognition of at-risk characteristics can help to address balancing mobility and safety of both our roadways and our kupuna.

Exhibit 19 | Serious Injury and Fatal Crashes Involving Older Drivers (2018-2022)



Based on the analysis of crash data, the most common factors occurring in crashes involving older drivers between 2018 and 2022 were crashes that occurred at intersections, inattention, and failure to yield.

Exhibit 20 | Top Factors Contributing to Crashes Involving Older Drivers



Strategies for Young Drivers and Older Drivers

- 1) Conduct outreach and education to encourage young drivers to practice safe driving behaviors.
- 2) Conduct outreach and education to encourage older drivers to practice safe driving behaviors.
- 3) Assess requirements for receiving and maintaining a driver's license and increase opportunities for driver education.





Motorcycles, Motor Scooters, Mopeds and E-mobility

Motorcycles, motor scooters, and mopeds have more inherent risk to operate, as these vehicles require more physical skill and strength to operate than driving a normal passenger vehicle. Additionally, they lack a physical protective structure, offering riders little protection in the event of a crash and making them less visible to other drivers (National Highway Traffic Safety Administration, 2023).

It is essential that operators of these types of vehicles wear proper safety equipment and are trained in the skills required to control their vehicles. Both enforcement and outreach for motorcyclists as well as other vehicle drivers can help everyone to share the road responsibly and safely.

In 2021, motorcycles accounted for about 3.5% of all registered vehicles in the United States but made up about 14% of all motor vehicle traffic fatalities. Motorcycles, motor scooters and mopeds accounted for approximately 3% of vehicle registrations in Hawai'i, while related fatalities were 35%.

Between 2018 and 2022, motorcycle fatalities saw an overall upward trend across the State, specifically from 2020 to 2022 (See Exhibit 21). As shown in Exhibit 22, unhelmeted fatalities followed a similar trend despite observed helmet use increasing in recent years.

Exhibit 21 | Annual Motorcyclist Fatalities and Five-Year Moving Average (2018-2022)

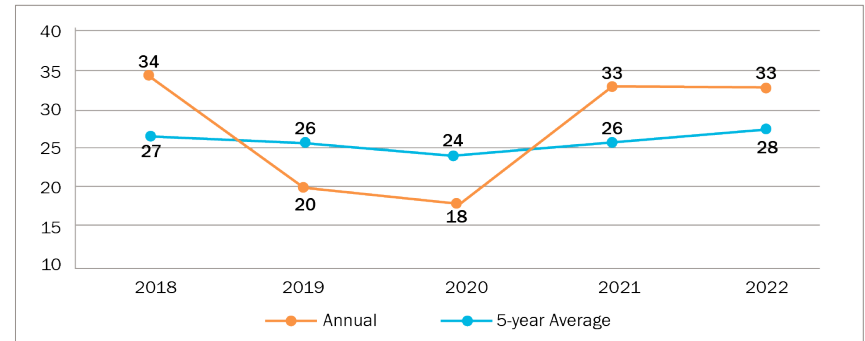
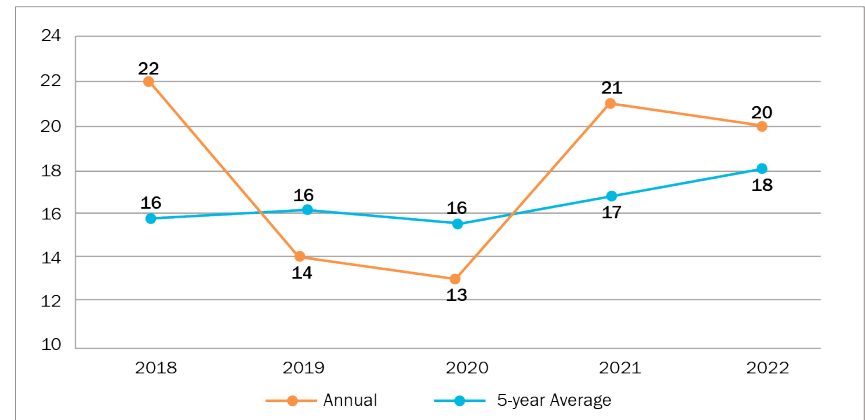
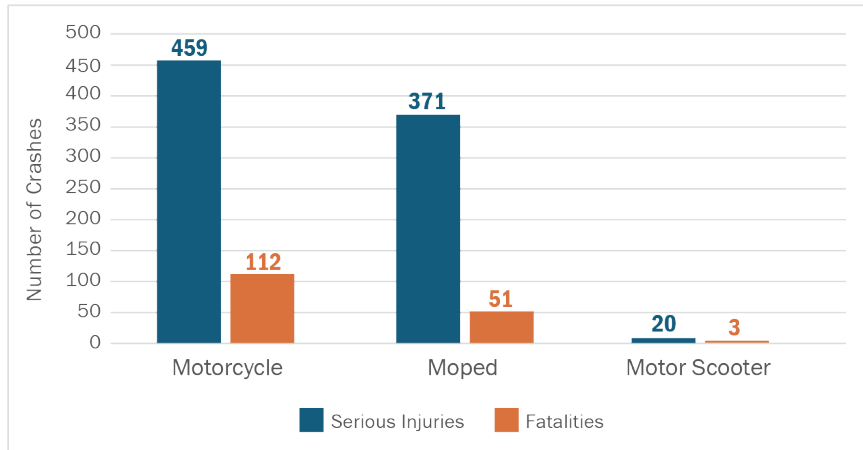


Exhibit 22 | Annual Unhelmeted Fatalities and Five-Year Moving Average (2018-2022)



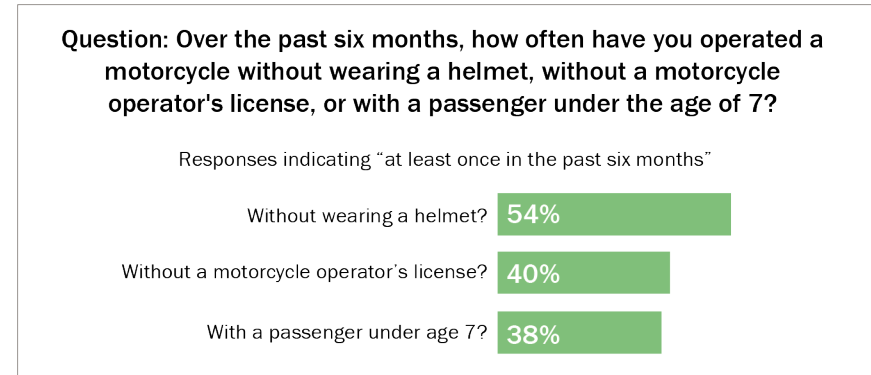
During this same time period, motorcycles were involved in the most crashes, followed by mopeds, then motor scooters (See Exhibit 23).

Exhibit 23 | Total Serious Injury and Fatal Crashes for Motorcycles, Mopeds, and Motor Scooters (2018-2022)



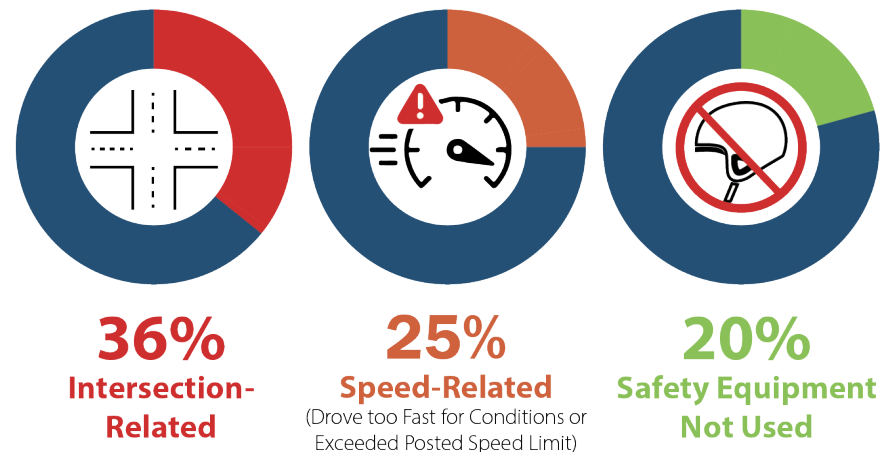
In 2023, the HDOT conducted a statewide Attitudes and Behaviors Survey that was intended to provide quantitative data about the general public’s views of behavioral traffic safety data. Exhibit 24 shows that over half of respondents admitted to operating a motorcycle without a helmet at least once in the previous six months. About 40% of respondents stated that they had operated a motorcycle without a motorcycle operator’s license, and 38% admitted to riding with a passenger under seven years old.

Exhibit 24 | HDOT Attitudinal Survey Motorcyclist Behavior Responses (2023)



The top three factors that occurred in serious injury and fatal crashes involving motorcycles, motor scooters, mopeds, and e-mobility were crashes that occurred at intersections, speeding, and riding without the use of safety equipment.

Exhibit 25 | Top Factors Contributing to Crashes Involving Motorcycles, Mopeds, and Motor Scooters



Due to the recent rise in e-mobility options and usage, data is currently limited on this mode of transportation. E-mobility is comprised of battery-powered mobility vehicles such as electric scooters, electric bikes, and hoverboards. These vehicles vary widely in terms of maximum speed and size, which presents difficulties in defining and classifying them. Between 2017 and 2019, emergency room visits for e-mobility crashes within the nation rose sharply, totaling over 30,000 in 2017, over 40,000 in 2018, and approximately 55,000 in 2019 (Tark, 2020). E-mobility-related fatalities followed a similar uptrend, with five reported fatalities in 2017, ten in 2018, and 26 in 2019.

Clearly defining e-mobility vehicle classifications, rules, and requirements, as well as providing education to both riders and law enforcement will help to integrate this emerging travel mode into our overall transportation system.

Strategies for Motorcycles, Mopeds, Motor Scooters, and E-Mobility

- 1) Improve upon the collection, analysis, and application of data in order to identify high-risk areas and characteristics.
- 2) Provide access to basic and advanced rider safety courses.
- 3) Educate, enforce, and encourage the use of safety gear.
- 4) Support law enforcement efforts in enforcing safety in coordination with other initiatives (e.g. speeding, dangerous and impaired driving/riding).





Impaired Driving

Impaired driving encompasses driving under the influence of alcohol and/or drugs which impact a driver's ability to safely operate a motor vehicle. Impairment may negatively affect reaction time, thinking and judgment, which can lead to risky decisions and dangerous driving behaviors.

In 2021, there were over 13,000 fatalities in the United States from crashes involving alcohol-impaired drivers, or those operating a vehicle with a blood-alcohol concentration (BAC) of .08 grams per deciliter and greater. This represented one-third of motor vehicle fatalities nationally and an approximate 14% increase in fatalities involving alcohol-impaired drivers from 2020, just one year prior (National Highway Traffic Safety Administration, 2023). In the same year, Hawai'i experienced four fatal crashes that involved alcohol-only impaired drivers. Drug-impaired drivers were involved in more fatal crashes than alcohol-only impaired drivers in recent years. Drivers impaired by drugs or a combination of alcohol (at .01+ BAC) and drugs were involved in a total of 54 fatal crashes, representing the highest number of fatal crashes between 2018 and 2022.

Both legal and illegal drugs can impair a driver's ability to safely operate a motor vehicle. There is less data and research around drug-impaired driving compared to alcohol-impaired driving due to the wide range of drugs and the varying effects that they can have on drivers. Drug testing can also be intrusive as it involves measuring of bodily fluids (blood, urine, or oral fluid) and the relationship between blood levels of drugs and driving impairment has not been well established (National Highway Traffic Safety Administration, 2023).

Exhibit 26 shows the annual number of drivers in Hawai'i who tested positive for alcohol, drugs, or both and were involved in a fatal crash between 2018 and 2022. Data for 2022 may be underrepresented as not all drivers were tested. During this time, alcohol-only fatalities

generally decreased while fatalities involving only drugs and a combination of alcohol and drugs increased.

Exhibit 26 | Annual Number of Drug- and Alcohol-Impaired Drivers Involved in Fatal Crashes (2018-2022)

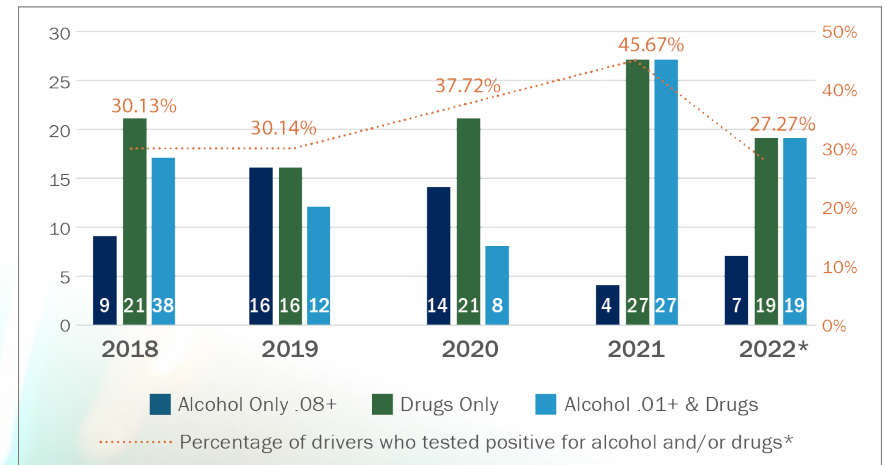
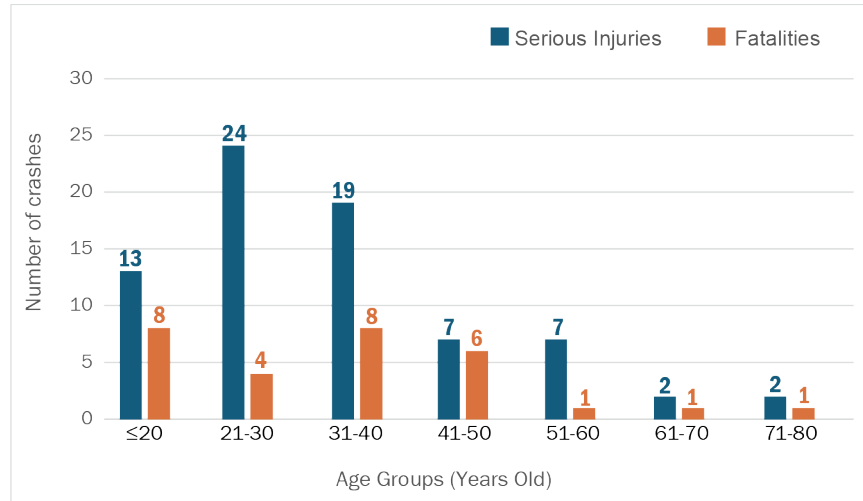


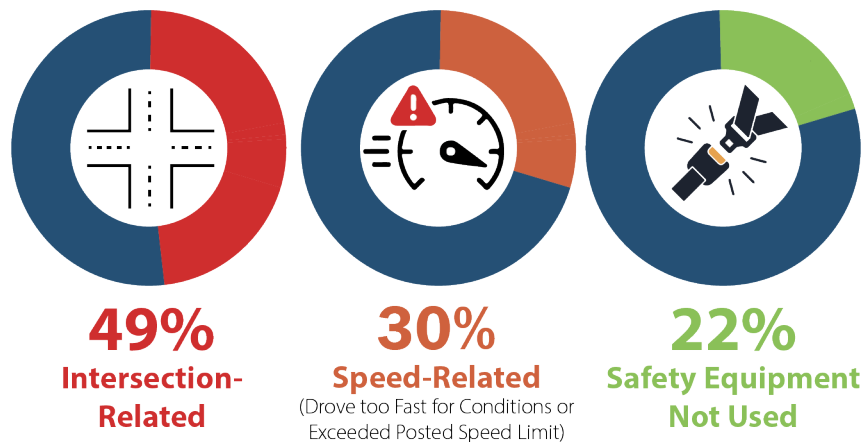
Exhibit 27 shows the age of drivers who were impaired and involved in serious injury or fatal crashes between 2018 and 2022. Most of these crashes involved individuals 40 years old and younger, with the most serious injury and fatal crashes occurring in the 21 to 30 year old age group.

Exhibit 27 | Age of Impaired Drivers in Serious Injury and Fatal Crashes (2018-2022)



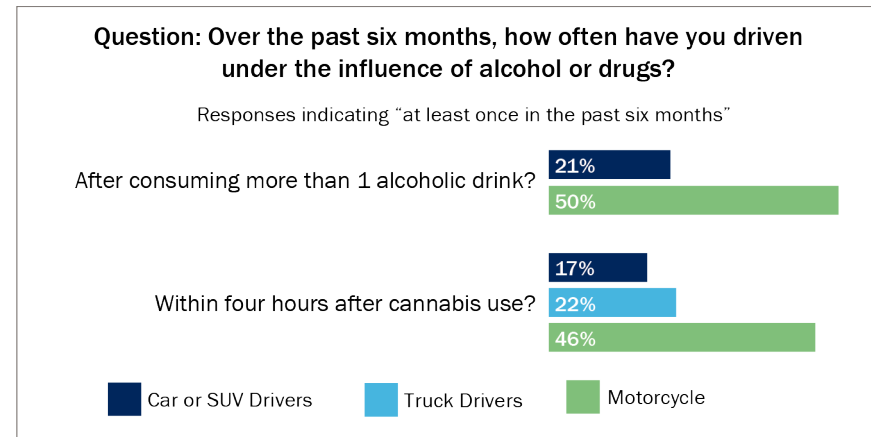
The top three factors that occurred in serious injury and fatal crashes involving impaired drivers were crashes that occurred at intersections, speeding, and the use of no safety equipment.

Exhibit 28 | Top Factors Contributing to Impaired Driving Crashes



The 2023 Attitudes and Behaviors Survey asked respondents how often they operated a vehicle after consuming cannabis, alcoholic drinks, and while feeling buzzed. Roughly 20% of car, SUV and/or truck drivers have driven after consuming alcohol or cannabis. In comparison, approximately 50% of motorcyclists acknowledged driving after alcohol or cannabis use.

Exhibit 29 | HDOT Attitudinal Survey Impaired Driving Responses (2023)



Strategies for Impaired Driving

- 1) Improve upon the collection, analysis, sharing, and application of alcohol- and drug-impaired driving-related data.
- 2) Educate, enforce, and encourage all road users of the consequences of alcohol- and drug-impaired driving.
- 3) Support and enhance the adjudication process relating to OVUII convictions.
- 4) Support legislation that strengthens policies against impaired driving.



Dangerous Driving

Dangerous driving includes aggressive, reckless, or distracted driving. Speeding may also be considered as a dangerous driving behavior; however, speeding is covered further under the Safe Speeds Emphasis Area.

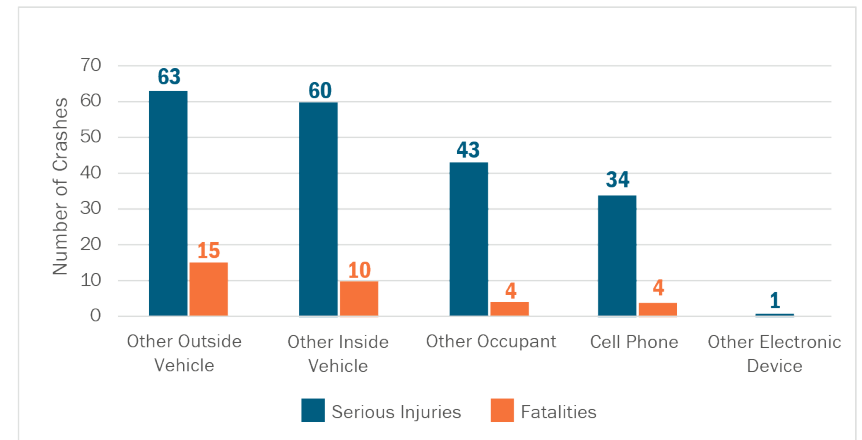
Distracted driving can involve cell phone use, eating or drinking, using the radio or navigation system, or any other activity that takes a driver's attention away from the road. Distracted driving has contributed to approximately 3,500 fatal crashes nationwide in the year 2021 alone, which accounted for about 8% of all fatal traffic accidents that year (National Highway Traffic Safety Administration, 2023).

Hawai'i has more than double the national average of traffic fatalities resulting from distracted driving, accounting for approximately 20% of all fatalities on our roadways.

Exhibit 30 shows statewide serious injury and fatal crash data between 2018 and 2022 where the driver was distracted by either a cellular phone or other distractions inside or outside of the vehicle. During this time, there were 201 serious injury crashes and 33 fatal crashes due to distracted driving.



Exhibit 30 | Distracted Driving Factors Involved in Serious Injury and Fatal Crashes (2018-2022)



As shown in Exhibit 31, drivers distracted by other factors outside the vehicle was the most common factor in distracted driving crashes, and accounted for 33% of all distracted driving serious injury and fatal crashes. Distractions by other factors inside the vehicle was the second most common factor in distracted driving serious injury and fatal crashes, and accounted for 30% of crashes.

Exhibit 31 | Driving Factors as a Percentage of Total Distracted Driving Serious Injury and Fatal Crashes (2018-2022)

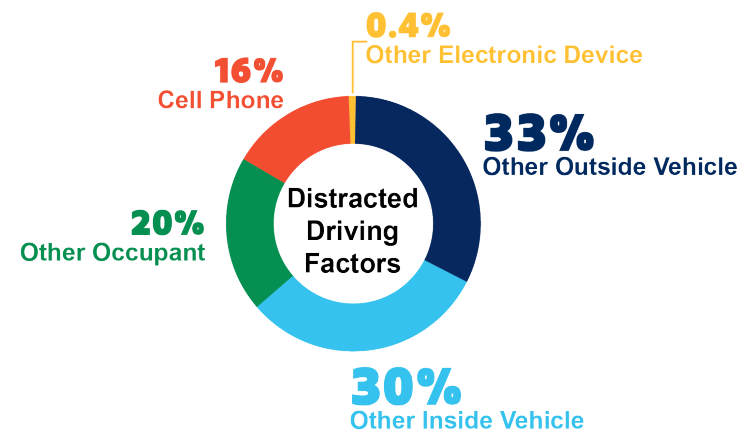
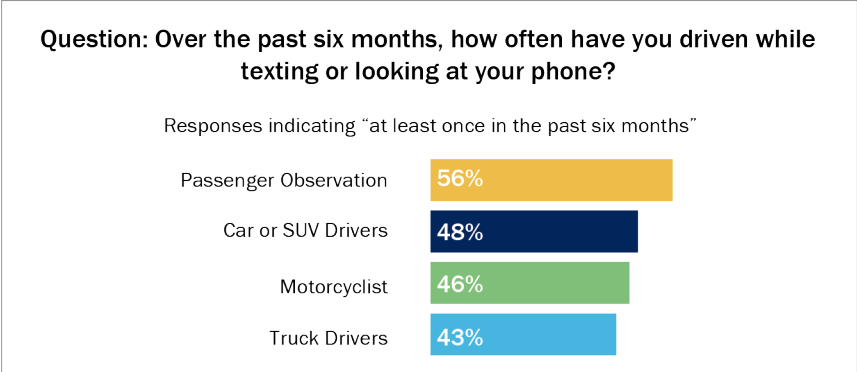


Exhibit 32 shows the response rates of the 2023 Attitudinal Survey on questions regarding distracted driving. About half of drivers have driven while texting or looking at their phone at least once in the past six months.

Exhibit 32 | HDOT Attitudinal Survey Distracted Driving Responses (2023)

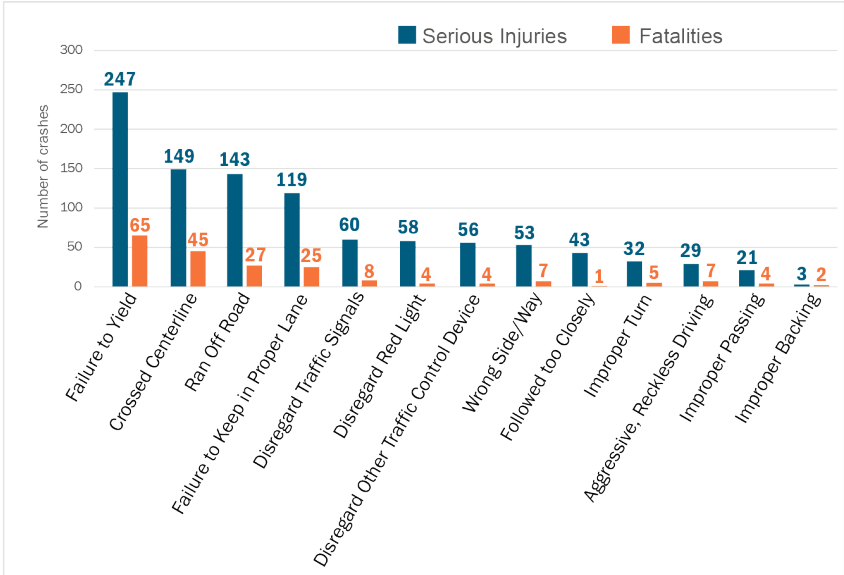


In 2023, the Honolulu Police Department (HPD) cited more than 4,700 individuals for operating a vehicle while using a cell phone on O’ahu alone. In 2023, 26 out of 119 (21.8%) total traffic fatalities involved distracted driving as a contributing factor, and by March 2024, six out of 35 (17.1%) of traffic fatalities involved distracted driving.

Aggressive driving includes various types of traffic violations that endanger others or property, such as disregarding traffic signals, failing to yield, driving on the wrong side of the road or in the wrong direction, making unsafe lane changes, improper passing, backing, or turns, following too closely, and reckless driving.

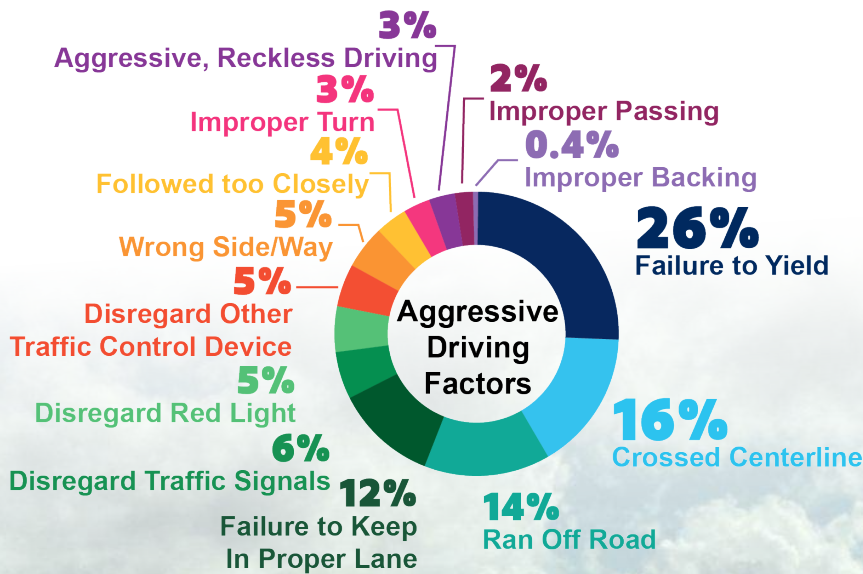
Exhibit 33 shows the factors involved in aggressive and reckless driving serious injury and fatal crashes between 2018 and 2022. The most common factors involved with serious injuries and fatalities from aggressive and reckless driving were failing to yield, followed by crossing the center line, driving off the road, and failing to keep in the proper lane.

Exhibit 33 | Aggressive Driving Factors Involved in Serious Injury and Fatal Crashes (2018-2022)



As shown in Exhibit 34, failure to yield was the most common factor in aggressive driving crashes and accounted for 26% of all aggressive driving serious injury and fatal crashes. Crossing the centerline was the second most common factor in aggressive driving serious injury and fatal crashes, and accounted for 16% of crashes.

Exhibit 34 | Driving Factors as a Percentage of Total Aggressive Driving Serious Injury and Fatal Crashes (2018-2022)



Exhibits 35 and 36 show response rates from the 2023 HDOT Attitudes and Behaviors Survey regarding red light running. A majority of pedestrians, bicyclists, and motorcyclists surveyed acknowledged witnessing a driver run a red light at least once within the past six months. Meanwhile, between 27% and 44% of drivers or passengers reported driving or being in a vehicle that has driven through a red light at least once in the prior six months.

Exhibit 35 | HDOT Attitudinal Survey Observed Red Light Running Responses (2023)

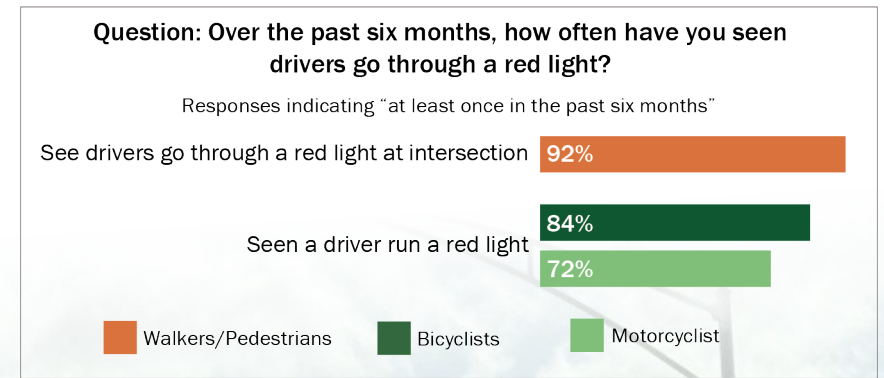
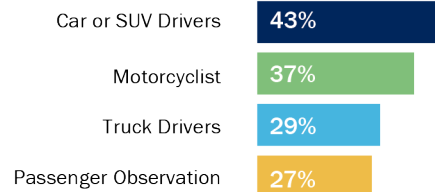


Exhibit 36 | HDOT Attitudinal Survey Red Light Running Responses (2023)

Question: Over the past six months, how often have you gone through a red light?

Responses indicating "at least once in the past six months"



Strategies for Dangerous Driving

- 1) Continue to improve upon the collection, analysis, and application of dangerous driving-related data.
- 2) Support dangerous driving enforcement efforts and conduct trainings and educational outreach to reduce dangerous driving.
- 3) Continue to explore and encourage the implementation of best practices and policies related to dangerous driving.





Occupant Protection

Occupant protection involves the appropriate use of child restraints or seatbelts to reduce the severity of injuries in crashes. Lap and shoulder seat belts, for example, have been found to reduce the risk of fatality to front seat passenger car occupants in crashes by 45% and reduce the risk of moderate-to-critical injuries by 50%. These risks are further reduced for light truck occupants. When used correctly, child restraints reduce the risk of fatalities and serious injuries for children of all ages by as much as 71% (National Highway Traffic Safety Administration, 2023).

Wearing protective safety gear, including helmets, is also considered as one of the most effective occupant protection methods. This aspect is encompassed within the Motorcycles, Motor Scooters, Mopeds and E-mobility Focus Area.

Seat belt usage has generally been increasing on a national level, with almost half of states exceeding 90% seat belt usage in 2021. In 2022, the observed daytime seat belt use was approximately 91.6% nationwide. Child restraint usage has experienced a similar trend, with the most recent data in 2021 showing a usage rate of approximately 89.8% among children younger than 13. It should be noted that restraint use for infants under 1 year old was close to 100% while restraint use for children aged 8 to 12 was approximately 86.8%, showing that child restraint usage generally decreases as children age.

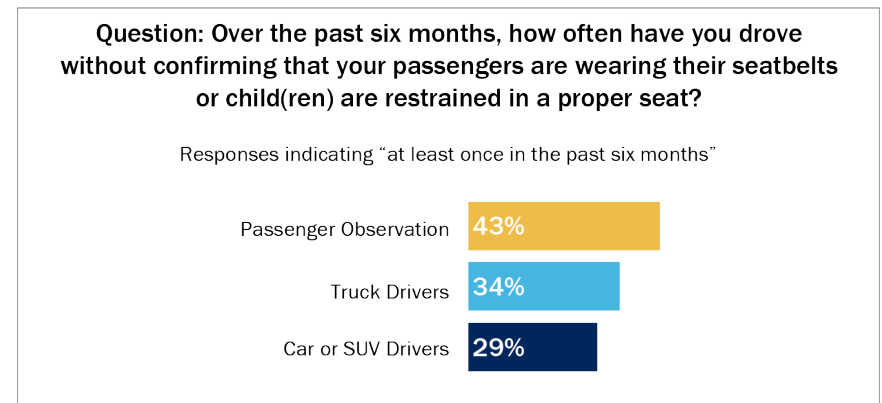
Despite the proven reduction of fatality and serious injury risk and encouraging rates of seat belt and child restraint use, approximately 50% of the total fatalities (26,325) and 40% of the child fatalities (863) within the United States in 2021 were unrestrained.

Hawai'i's observed seatbelt usage rate in 2021 was 94.3%. Infant restraints were observed at 94.8%, although toddler restraint significantly dropped down to 63.6%, a decrease of over 25% from the previous year.

Safety equipment usage amongst serious injury and fatal crashes between 2018 and 2022 were analyzed for the State. The percentage of fatal crashes where a shoulder or lap belt was used was 32%, which was less than those where safety equipment was not used at 42%. Safety equipment was not used in 66% of serious injury crashes.

Exhibit 37 shows the responses from the 2023 Attitudes and Behaviors Survey to the question asking drivers whether they have driven in the past six months without confirming that passengers or children within the vehicle are properly restrained. While a majority of car, SUV, and truck drivers checked to ensure that their passengers or children were properly belted or restrained, between 25% and 45% of respondents acknowledged not checking to ensure that the proper protections were in place before driving.

Exhibit 37 | HDOT Attitudinal Survey Passenger Restraints Responses (2023)



Like previous Focus Areas, most unrestrained crashes occurred at intersections. Speed and alcohol were the next most commonly occurring factors in unrestrained crashes.

Exhibit 38 | Top Factors Contributing to Unrestrained Crashes

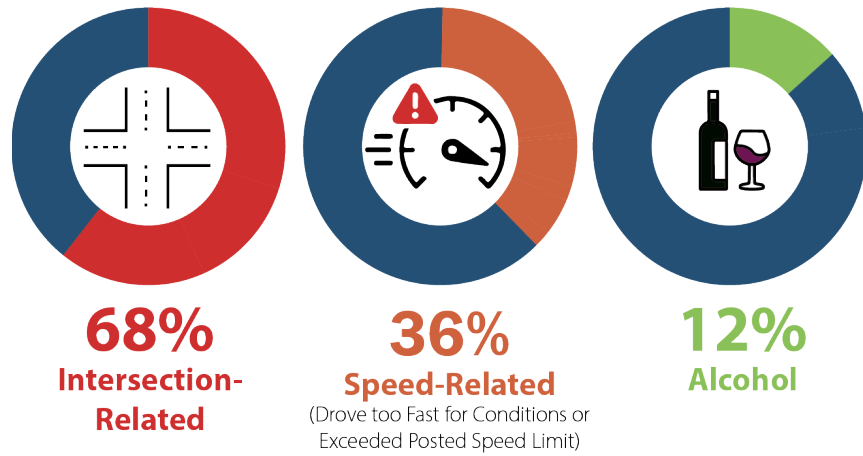
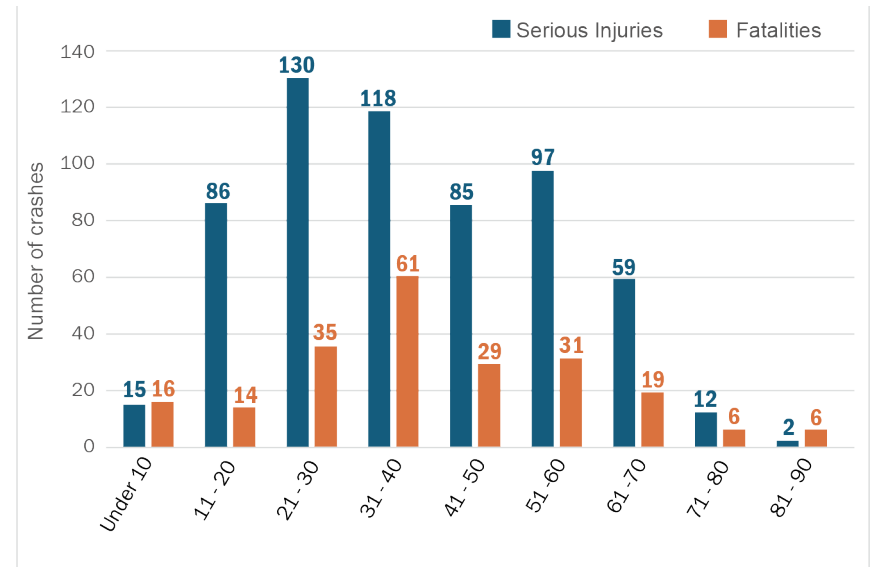


Exhibit 39 shows the age of unrestrained occupants in serious and fatal injury crashes between 2018 and 2022. The 21- to 30 year-old age group was involved in the most unrestrained serious injury crashes, while the 31- to 40 year old age group accounted for the most unrestrained fatalities, almost doubling the number of fatalities in the 21- to 30 year old age group.

Exhibit 39 | Age of Unrestrained Occupants in Serious Injury and Fatal Crashes (2018-2022)

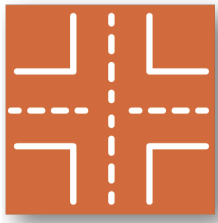


Strategies for Occupant Protection

- 1) Maintain and implement outreach and programs focused on increasing safety belt and proper child restraint use.
- 2) Support law enforcement and organizations with training, tools, and resources to improve seat belt and child restraint usage.
- 3) Identify and support legislation and programs to increase the use of proper restraints for all seating positions within a vehicle.

SAFE ROADS

Safe Roads are those that are designed and maintained to support a safe roadway environment to serve all road users. Roadway environments should be designed to account for and mitigate human mistakes and lessen the severity of crashes when they do occur. Safe Roads also protect vulnerable road users by integrating Complete Streets principles that fit within the context of the surrounding community.



Design

Roadway design influences the way people use roads, including driver and pedestrian behavior, vehicle speeds, and other factors that can contribute to crash risk. In addition to the design of roadways, the surrounding environment can influence a driver's speed and behavior. Safe road design can reduce the risk of crashes which involve lane departures, intersections, and pedestrians and bicyclists (U.S. Department of Transportation, 2022).

Between 2018 and 2022, crashes that occurred at an intersection and crashes involving pedestrians were the most commonly occurring types of crashes. Pedestrian-involved and lane departure fatal crashes experienced declining trends during this time, while bicycle-involved crashes and crashes at intersections slightly increased.

Lane departure crashes occur when a vehicle leaves its lane and collides with another vehicle, object, or a person. This could happen due to improper passing, weaving, swerving or over-correcting. It also may be associated with other Focus Areas including Impaired Driving, Dangerous Driving, or Speed Management.

Intersections are locations where two or more roads meet or cross. These convergences create conflict points when crossing paths of other

vehicles or vulnerable road users. Intersections have been identified as a top overlapping characteristic in a majority of the Focus Areas.

Intentional roadway design features can provide safety redundancies by reducing conflict points, increasing visibility, aligning with vehicle safety features, and setting appropriate speed limits.

Exhibit 40 | Fatal Lane Departure, Intersection, Pedestrian-Involved, and Bicycle-Involved Crashes (2018-2022)

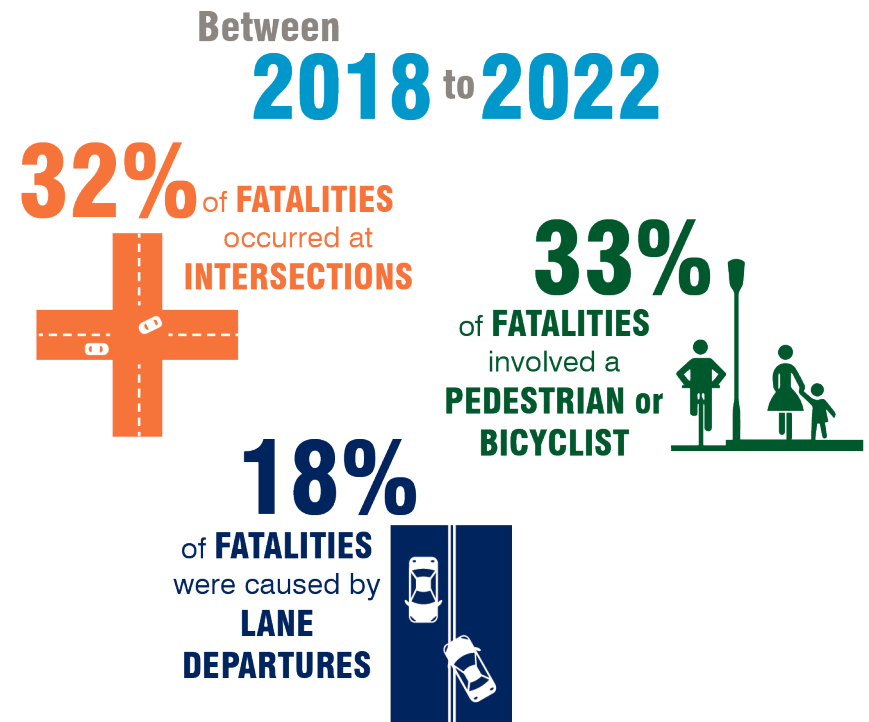
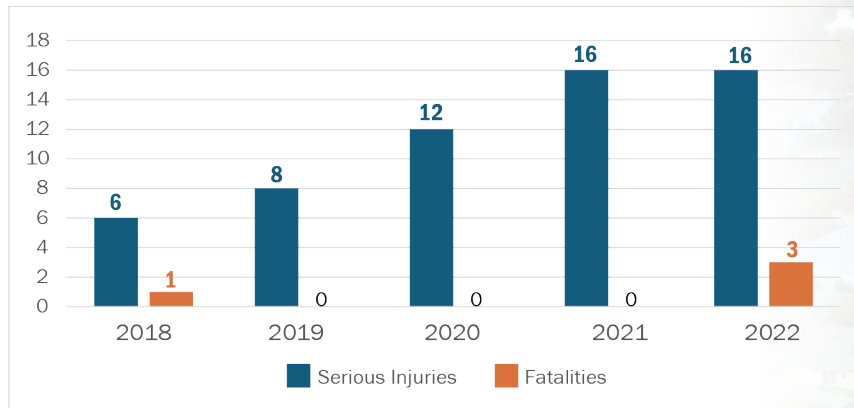


Exhibit 41 shows the number of serious injury and fatal crashes in Hawai'i that involved a vehicle running a red light between 2018 and 2022. Serious injury crashes have experienced an increasing trend, with the highest counts for both serious injury as well as fatal crashes occurring in 2022.

Exhibit 41 | Red Light Running Serious Injury and Fatal Crashes (2018-2022)



Strategies for Design

- 1) Integrate Complete Streets principles to create safe, connected and equitable networks that fit community needs and context.
- 2) Identify and integrate design elements that are compatible with emerging vehicle safety features.
- 3) Mitigate high-risk crash characteristics by identifying and integrating design elements that can reduce speed and increase safety.



Work Zones/Maintenance

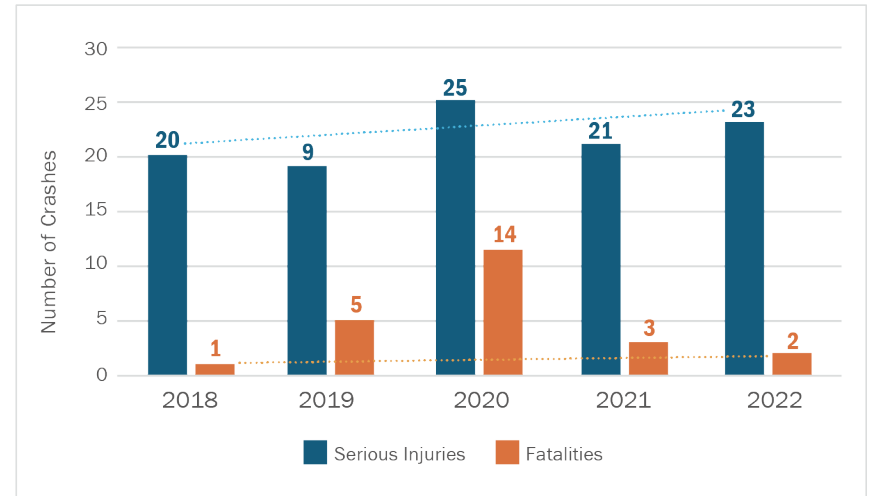
Maintenance of our transportation system supports the overall functionality and safety of our State’s roadways. A well-maintained system supports vulnerable road user travel by keeping those modes within their intended facilities and paths, which minimizes conflicts with vehicles. It can also enhance emergency service and first responder capabilities by providing efficient roadway operations and clear accessibility to crash sites.

Roadway work zones can create hazardous conditions for both motorists and workers, as drivers are required to navigate signs, roadblocks, and lane changes while workers construct or maintain roads. From 2003 to 2020, 2,222 workers in the United States lost their lives at roadway construction sites, an average of approximately 123 per year (U.S. Center for Disease Control and Prevention, 2022).

Improving work zone safety through clear notifications, signage and positive protection, as well as educating the public about navigating work zones can help to get our highway construction workers home safely.

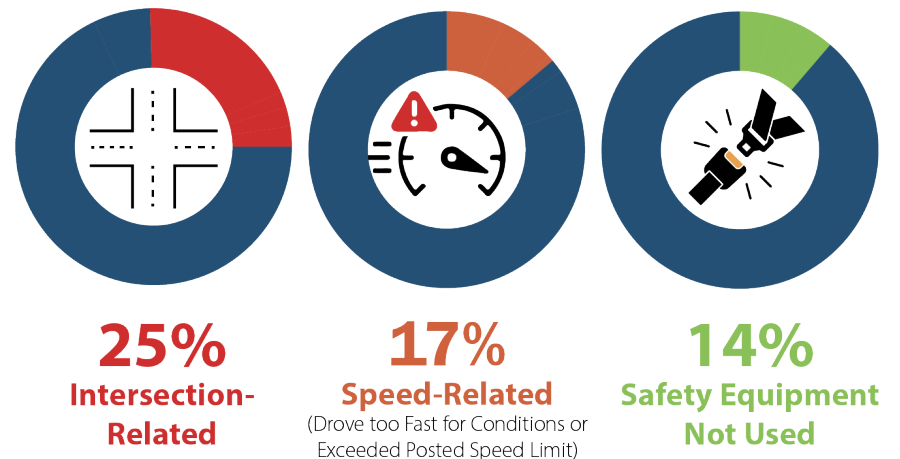
Exhibit 42 shows the serious injury and fatal crashes that occurred in work zones in Hawai‘i between 2018 and 2022. During this time, crashes in work zones have been relatively stable, with serious injury crashes increasing slightly and the highest counts for both serious injuries and fatalities occurring in 2020.

Exhibit 42 | Serious Injury and Fatal Crashes That Occurred in a Work Zone (2018-2022)



The most common overlapping factors for work zone crashes were those that occurred at intersections, speeding, and the lack of safety equipment used.

Exhibit 43 | Top Factors Contributing to Work Zone Crashes



Strategies for Work Zones and Maintenance

- 1) Perform timely infrastructure maintenance for all travel modes.
- 2) Improve the safety of work zones created by road improvement work, construction, or other maintenance activities.
- 3) Support agencies and partnerships that provide training to increase safety around work zones.



SAFE VEHICLES

All vehicles are an integral component to a Safe System, and vehicle manufacturers are continuing to advance safety features. Passive and active safety technology is evolving to assist with recognition of and response to dangers on the roadways. Vehicle designs are also advancing crashworthiness as well as protecting those on the outside. The SHSP Focus Area address two aspects of Safe Vehicles:

- ◇ Highway infrastructure support of vehicle safety elements, and
- ◇ Commercial vehicle operations

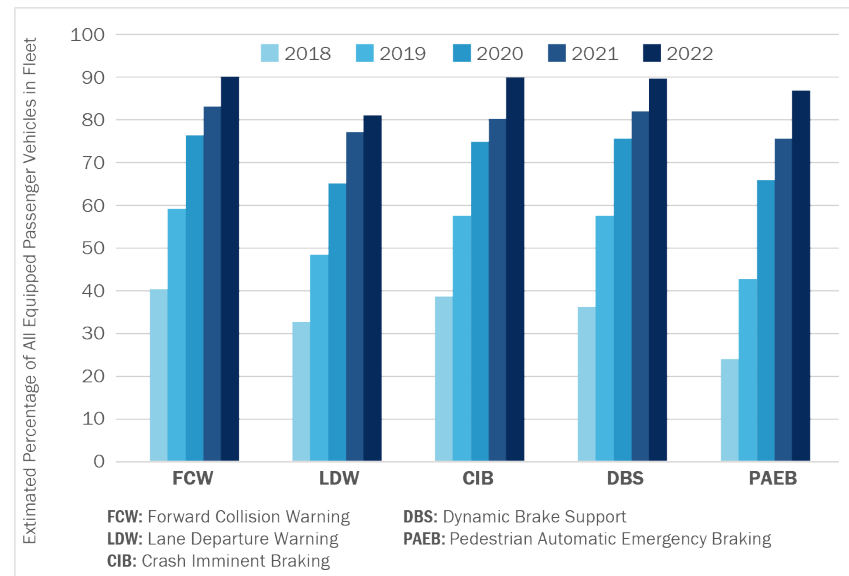
Safe Vehicles and safety features can help prevent crashes as well as minimize the severity and impact of them. For example, seat belts and air bags have prevented approximately 425,000 traffic fatalities since they were required by the Federal Motor Vehicle Safety Standards (FMVSS). Newer generations of vehicles are also adding more safety technology to prevent crashes and mitigate harm to vehicle occupants, resulting in vehicles more equipped to protect occupants and those around them (U.S. Department of Transportation, 2022).



Vehicle Safety

Safety technology and their deployment in vehicles has rapidly expanded from 2018 to 2022. The percentage of cars that have been equipped with safety features such as forward collision warning, lane departure warning, crash imminent braking, dynamic brake support, and pedestrian automatic emergency braking have doubled from 2018 to 2022 (U.S. Department of Transportation, 2022). Approximately 82 – 91% of cars released in 2022 are equipped with all of these safety features.

Exhibit 44 | Percentage of Motor Vehicles Equipped with Advanced Driver Assistance System Technologies



Highway infrastructure can complement these safe vehicle technologies, for example, clear lane striping assists with lane departure warnings. These warnings are provided when a vehicle's position within a driving lane approaches the lane line. Intelligent Transportation System (ITS) technologies are also being used to integrate with safe vehicle technology, such as emergency vehicle pre-emption.



Nationwide, the number of fatalities involving large trucks has been increasing from 2018 to 2022. Fatalities involving large trucks accounted for 14% of all fatalities across the nation in 2022. Ensuring

the safety of CMVs is essential as they play a vital role in supporting the State’s economic vitality. CMVs transport all of Hawai’i’s goods from airports or harbors to its distribution or destination point. CMVs are also used to provide services and public transit options to thousands of people across the State every day.

CMV safety is contingent upon the vehicles being maintained and operating properly, CMV driver behaviors, as well as public awareness related to CMV highway safety.

Exhibit 45 shows the CMV-related serious injury and fatal crashes that occurred in Hawai’i. CMV-related fatalities have exhibited an increasing trend in recent years.

Exhibit 45 | CMV-Related Serious Injury and Fatal Crashes (2018-2022)

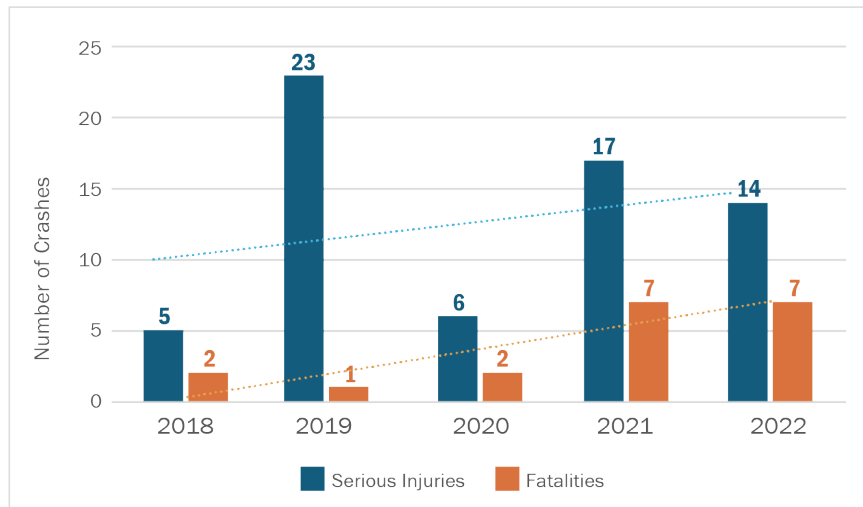
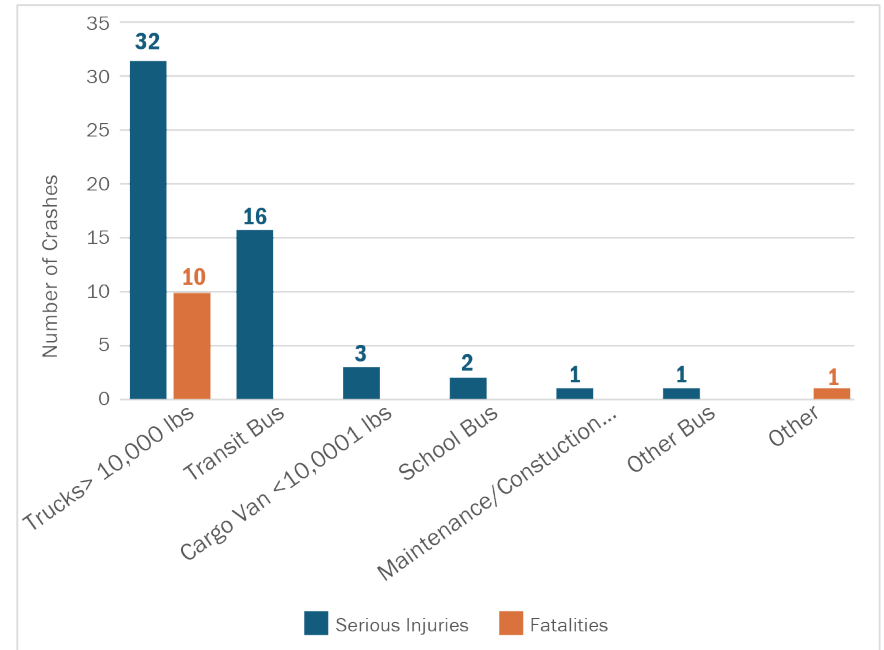


Exhibit 46 shows the types of CMVs that were involved in serious injury and fatal crashes during this time. Trucks over 10,000 pounds were involved in the most serious injury and fatal crashes. The second most common vehicle type involved in these crashes were transit buses.

Exhibit 46 | CMV Types Involved in Serious Injury and Fatal Crashes (2018-2022)



Strategies for Vehicle Safety

- 1) Increase motor vehicle safety awareness amongst drivers and passengers.
- 2) Enforce compliance with Federal and State motor vehicle safety laws and regulations.
- 3) Align with best practice policies for emerging vehicle types/technology.

SAFE SPEEDS

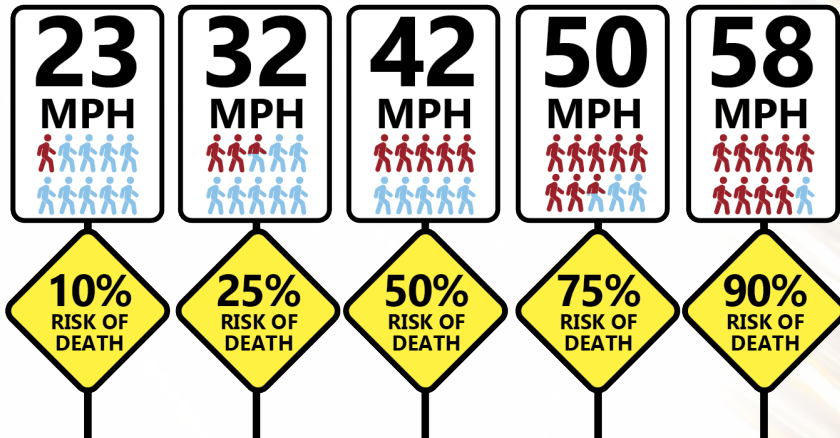
Traveling at Safe Speeds allows drivers to arrive at their destination safely and reduces the risk of causing harm to other road users. Safe Speeds are set appropriately within context of the roadway design and the surrounding land use to reduce the frequency and severity of crashes. Enforcement, education, context-appropriate design, and speed limit setting are essential in achieving Safe Speeds on Hawai'i's surface transportation system.



Speed Management

Speeding is one of the most persistent and largely accepted driving behaviors across the nation. The speed at which a vehicle is traveling is a significant factor in serious injury and fatal pedestrian and bicyclist crashes as it increases the impact force on the body during a crash. Between 2018 to 2022, speeding-related fatalities accounted for 26 – 29% of all fatalities across the nation.

Hit by a vehicle traveling at...

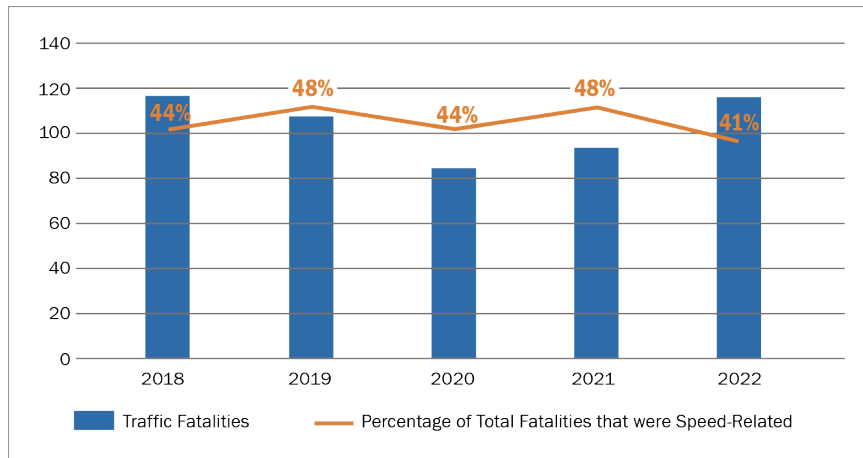


Sources: Fatality Analysis Reporting System; Early Estimates of Motor Vehicle Traffic Fatalities and Fatality Rate by Sub-Categories in 2020, DOT HS 813 118, June 2021; AAA Foundation for Traffic Safety, Impact Speed and a Pedestrian's Risk of Severe Injury or Death; National Traffic Speeds Survey III: 2015, DOT HS 812 485, March 2028.



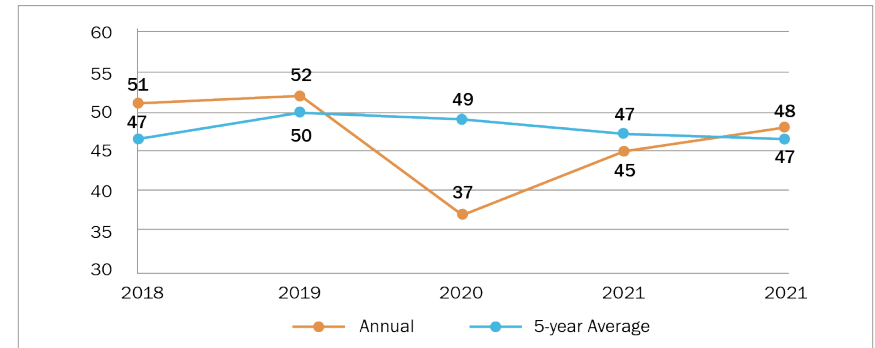
Speeding has contributed to at least 40% of all fatal crashes in recent years. Exhibit 47 shows the total annual traffic fatalities in Hawai'i and the proportion of them that were speed-related between 2018 and 2022.

Exhibit 47 | Proportion of Speed-Related Fatalities (2018-2022)



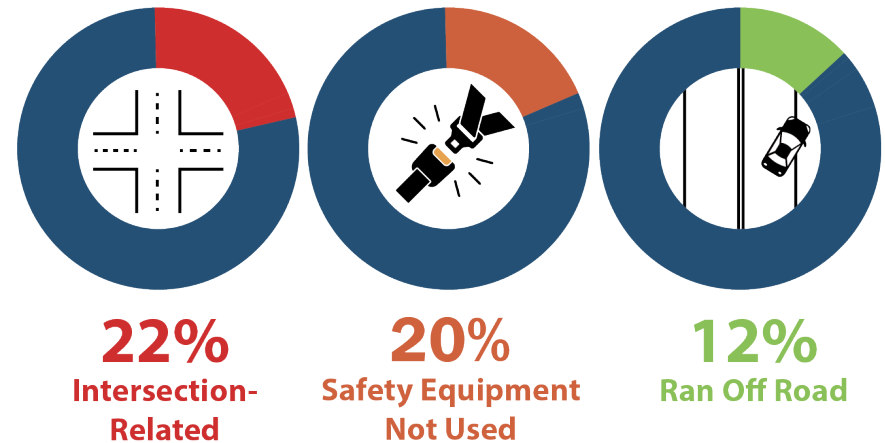
Speeding-related fatalities have been on the rise, both before and after the COVID-19 pandemic in 2020. Exhibit 48 shows the number of speeding-related fatalities each year between 2018 and 2022 along with the 5-year moving average. Although the data shows an annual increase in fatalities between 2020 and 2022, the moving average has remained constant, with a slight decrease between 2019 to 2022, from 50 to 47.

Exhibit 48 | Speeding Related Fatalities (2018-2022)



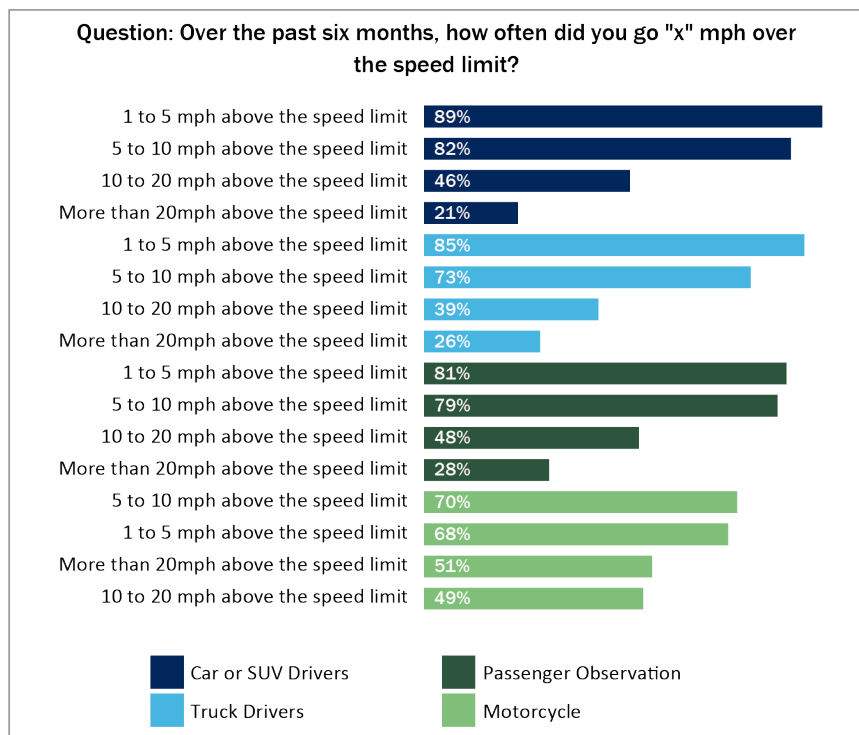
Based on the analysis of crash data, the most common factors occurring in speed-related crashes between 2018 and 2022 were crashes that occurred at intersections, lack of safety equipment used, and crashes where the driver ran off the road.

Exhibit 49 | Top Factors Contributing to Speed-Related Crashes



In the 2023 Attitudes and Behaviors Survey, participants were asked how often they travel at certain miles per hour (mph) over the speed limit. Responses show that speeding is a common occurrence across all vehicle types surveyed (car or SUV drivers, truck drivers, passenger observations, and motorcyclists). Over 80% of car/SUV drivers drove 5–10 mph above the speed limit. Motorcyclists were recorded to speed at higher speeds than any other mode, with over half of respondents indicating they travelled 20 mph over the speed limit and 49% responding that they traveled between 10–20 mph over the speed limit at least once in the past six months.

Exhibit 50 | HDOT Attitudinal Survey Speeding Responses (2023)



Strategies for Speed Management:

- 1) Utilize context-appropriate design elements and technology to reduce speeding.
- 2) Develop and implement education and outreach about the impacts of speed on crash severity and consequences.
- 3) Support policies, legislation, and increased enforcement measures to reduce speeding and speed-related crashes.
- 4) Continue to implement a data collection, management, and monitoring system to identify high-risk and high-occurrence roadway areas for speeding and speed-related crashes.



POST-CRASH CARE

Providing timely post-crash care plays a major factor in the survivability of those involved in a crash. Having well-trained and fully equipped first responders is critical in providing the appropriate post-crash care to those who are injured to limit the severity of their injuries. Coordination of traffic safety and emergency medical service (EMS) data will assist in improving the quality and timeliness of post-crash care with the goal of increasing the survivability and reducing the trauma of those involved in a crash.



Emergency Response

The quick response of trained emergency responders and the timely transportation of crash victims to trauma care centers can reduce fatalities and the severity of injuries experienced at crashes. For these reasons, the adequate staffing, training, and distribution of emergency

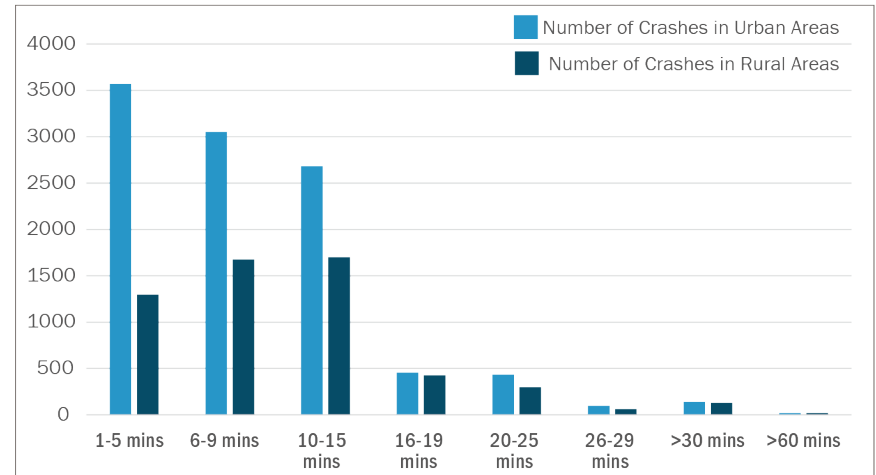
responders and trauma care centers remain important aspects of the Post-Crash Care Emphasis Area.

In Hawai'i, a majority of EMS response times between 2018 to 2022 have occurred within 15 minutes of a call for crashes of all severities, in both urban and rural areas. In urban areas, the response times have generally fallen within the 1 – 5 minute timeframe, while in rural areas the response times have been a little longer within the 6 – 15 minute timeframe. There is currently one Level 1 trauma center and seven Level 3 trauma centers in the State of Hawai'i.

Managing a crash scene and providing a safe environment for first responders and nearby travelers are essential parts of maintaining a safe transportation system. Up to 20% of crashes are secondary crashes, or crashes that occur due to an earlier traffic incident.

The likelihood of a secondary crash increases by 2.8% for every minute a primary crash poses a hazard by obstructing a travel lane or in other ways (U.S. Department of Transportation, 2022).

Exhibit 51 | EMS Response Time for All Crashes in Urban and Rural Areas



Strategies for Emergency Response:

- 1) Improve safety and efficiency of first responders when responding to crashes.
- 2) Ensure expedient access to appropriate emergency response and trauma care services.
- 3) Promote partnerships between transportation agencies and health care/emergency response officials to reduce traffic-related fatalities and serious injury.
- 4) Support agencies and partnerships that provide first responder training, technologies and equipment for traffic-related crashes.



Traffic Data and Records

In addition to post-crash care, first responders also provide vital information and data related to crashes, such as response times, location of incident, timeliness of extrication efforts, and the patient's condition at the scene. The HDOT and

County Police Departments have been working together to build the HIGLS, which is a map-based incident location system that assists in identifying and accurately reporting crash locations. The HDOT has also been improving their data collection systems through the development of the State of Hawai'i Advanced Crash Analysis (SHACA) system, which interfaces between the County Police Departments to allow for direct transmission of crash data into the system.

Additional coordination and integration of crash data from HDOT and the County Police Department with EMS data will assist in creating a centralized database to provide quality and timely data to improve post-crash care.

Other types of traffic data that assist in providing data-driven analysis to inform priorities and decision-making include traffic records such as eCitations, judiciary data, driver's records, vehicle registration data, and roadway data. Improving the integration and accessibility of all traffic data and records will assist in measuring the performance and effectiveness of the strategies identified in this SHSP, and will help to inform the priorities, Focus Areas, strategies, and actions for future updates of the plan.

Strategies for Traffic Data and Records:

- 1) Advance safety data collection and analysis by improving the timeliness, accuracy, completeness, uniformity, integration and accessibility of data in existing or new data sources.
- 2) Utilize data-driven assessments to identify priorities for state and local traffic safety programs.

PROGRAM MANAGEMENT



Oversight and management of the implementation of the SHSP and the Highway Safety Program will assist in realizing the strategies and actions identified in this plan. The HDOT is responsible for coordinating the tracking of the SHSP progress indicators, managing grant requirements and compliance, facilitating collaboration between traffic safety partners and agencies, and continuing coordination and programming of the HSIP improvements. The coordination with traffic safety partners, first responders, the State Judiciary, and other related government agencies and partners is essential in implementing the SHSP and evaluating the performance of this plan in its future update, all of which contribute towards achieving the vision of zero deaths and serious injuries on Hawai'i's roadways.

Strategy for Program Management:

- 1) Provide oversight of the traffic safety programs.



HSIP SPECIAL RULES

On November 15, 2021, the IIJA was signed into law, and it established a new Special Rule relating to Vulnerable Road Users (23 U.S.C. 148(g)(3)) and continued the existing rules for High-Risk Rural Roads (23 U.S.C. 148(g)(1)) and Older Drivers and Pedestrians (23 U.S.C. 148(g)(2)). The HSIP Special Rules were reviewed to determine its applicability to Hawai'i.

High Risk Rural Roads

A high-risk rural road in Hawai'i is defined as any roadway functionally classified as a rural major or minor collector or a rural local road with a fatality and serious injury crash rate higher than the average fatality and serious crash rate for those functional classifications of roadway. If the fatality rate on rural roads increases over the most recent 2-year period of data, certain funds would be required to be obligated to these roads. This rule is not currently applicable to Hawai'i.

Older Drivers and Pedestrians

Older drivers and pedestrians relate to those that are 65 years and older. If the per capita of traffic fatalities and serious injuries for drivers and pedestrians increases over the most recent 2-year period of data, the State is required to include strategies to address the increases in those rates in the SHSP. Based on the most recent 2-year period of data, this rule applies to the State. The Vulnerable Road User and Young Drivers and Older Drivers Focus Areas encompass strategies and actions to specifically address the safety of both drivers and pedestrians 65 years and older in the SHSP update.

Vulnerable Road Users

The Vulnerable Road Users special rule considers the number of non-motorized fatalities. If the total annual fatalities of vulnerable road users represent not less than 15% of the annual crash fatalities, then the State must obligate not less than 15% of certain funds in the following fiscal year. This rule is currently applicable to the State. The VRUSA addresses locations and risk characteristics of both fatalities and serious injuries for vulnerable road users and was the basis for the development of strategies and actions within the Vulnerable Road User Focus Area. The VRUSA has been incorporated as an appendix to the SHSP update to guide implementation.



IMPLEMENTATION

The SHSP provides the vision and goal to guide the Highway Safety Program and the implementation of the other safety plans under this program. The SHSP Emphasis Areas are based off of the Safe System Approach to achieve a comprehensive and redundant plan and pathway to the SHSP vision and goal. Focus Area Strategies and Actions identify the issues and priorities and provides the framework for implementation through the programs and improvements identified in the 3HSP, HSIP, and the CVSP for which grant funding is applied for.

- ◇ Strategies and Actions are created based on the Safe Systems Approach for each of the Focus Areas. These guide the development of the 3HSP, HSIP, and CVSP.
- ◇ Progress indicators are established for each of the Focus Areas to assess the status of accomplishments as well as incremental progress within each Focus Area, and overall progress toward meeting FHWA, NHTSA, and Federal Motor Carrier Safety Administration’s (FMCSA) Performance Measures and Targets.
- ◇ Through the Focus Area Strategies and Actions, the 3HSP, HSIP, and CVSP guide the development of specific improvements and programs. Per 23 U.S.C. 135 (g), the Statewide Transportation Improvement Program (STIP) funds improvements tied to the HSIP recommendations.
- ◇ The 3HSP, HSIP, and CVSP establish the FHWA, NHTSA, and FMCSA Performance Measures and Targets. These Performance Targets help to inform whether the HDOT’s family of safety plans are helping to address the safety performance of the surface transportation system, which ultimately informs the SHSP progress indicators.



This implementation cycle provides pertinent feedback during the update of the SHSP to inform the Focus Areas, strategies, and actions that should be prioritized for the next five-year period, which all strives to reach the primary goal of eliminating all fatalities and serious injuries.

The actions, responsible agencies, and progress indicators that should be used to implement the strategies in the SHSP are provided in Appendix A.

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Appendix A: Action Plans

Appendix B: Plan Review Technical Memorandum

Appendix C: Evaluation of Previous SHSP Technical Memorandum

Appendix D: Vulnerable Road User Safety Assessment



Appendix A: Action Plans

APPENDIX A: Action Plans



SAFE ROAD USERS | VULNERABLE ROAD USERS

| Strategy | Action | Agency | Progress Indicator | |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Implement best practices and proven countermeasures to address high-risk facility characteristics to support safe travel for vulnerable road users. | a) Identify facilities with high-risk characteristics for vulnerable road users and integrate systemic approach strategies from approved state and local plans within planned projects along high-risk facilities. | HDOT & Counties | Meet annual target for pedestrian fatalities Reduce bicycle fatalities to annual target or lower |
| | | b) Prioritize and program the projects identified as areas of concern from approved vulnerable road user plans. | HDOT & Counties | Conduct a needs and gap assessment for vulnerable road users data |
| 2 | Educate, enforce and encourage all road users emphasizing the Safe Road User characteristics to support a safe transportation system for vulnerable road users. | a) Develop community outreach, enforcement and media addressing "rules of the road", inattention and/or misjudgment, commonly associated with vulnerable user crashes. | HDOT & Counties | Maintain outreach and education campaigns |
| | | b) Increase education and training related to vulnerable users. | HDOT, Department of Education (DOE), Counties | Increase education and outreach targetting vulnerable road users within underserved communities, 65 years and older, and houseless populations |
| | | c) Identify populations and communities that are overrepresented in vulnerable road user crashes and support solutions that improve their safety. | HDOT, Counties, Department of Health (DOH), Houseless coordinators | |
| | | d) Conduct targeted education and outreach towards older (65+) pedestrians. | HDOT & Counties | |

APPENDIX A: Action Plans



SAFE ROAD USERS | VULNERABLE ROAD USERS

| Strategy | Action | Agency | Progress Indicator |
|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 3 Develop and maintain data to identify and address vulnerable road user safety issues. | a) Develop guidance for the consistency of data among safety partner agencies and facilitate the collaboration of private, public, and nonprofit stakeholders. | HDOT, DOH, First Responders, Counties | Increase vulnerable road users infrastructure/ countermeasure installations |
| | b) Identify and address data gaps, availability of data, and completeness of data including demographic and socioeconomic profiles of individuals involved in crashes. | HDOT, DOH, First Responders, Counties | Reduce the number of annual fatalities for pedestrians 65 years and older |
| | c) Coordinate efforts with the agencies addressing houseless populations to curb the trend of increasing vulnerable road users crashes involving houseless populations. | Institute of Human Services & HDOT, DHS, Office on Homelessness and Housing Solutions, Counties | |

APPENDIX A: Action Plans



SAFE ROAD USERS | YOUNG DRIVERS AND OLDER DRIVERS

| Strategy | Action | Agency | Progress Indicator |
|----------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 1 | Conduct outreach and education to encourage young drivers to practice safe driving behaviors. | a) Coordinate efforts with parents, drivers' education classes, schools, and law enforcement officers to conduct safe driving behavior outreach. | HDOT, Counties, Police Departments, DOE |
| | | b) Educate parents, guardians, and law enforcement on the recognition of young at-risk drivers. | HDOT, Counties, DOE |
| | | c) Assess and provide guidance on driver education material, content, and training. | HDOT & DOE |
| 2 | Conduct outreach and education to encourage older drivers to practice safe driving behaviors. | a) Support and incentivize formal educational courses and training for older drivers. | HDOT & Counties |
| | | b) Educate older drivers, medical providers, law enforcement, licensing personnel, family and caregivers on the recognition of older at-risk drivers. | HDOT & Counties |
| 3 | Assess requirements for receiving and maintaining a driver's license and increase opportunities for driver education. | a) Assess driving skills and traffic safety curriculum requirement for young drivers. | HDOT & Counties |
| | | b) Continue to improve upon criteria for medical review, screening, and testing for license renewal for older drivers. | HDOT, DOH, Motor Vehicle Licensing Department, Counties |
| | | c) Promote driver education opportunities. | HDOT & Counties |

APPENDIX A: Action Plans



SAFE ROAD USERS | MOTORCYCLES, MOTOR SCOOTERS, MOPEDS, AND E-MOBILITY

| Strategy | Action | Agency | Progress Indicator |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1 | Improve upon the collection, analysis, and application of data in order to identify high-risk areas and characteristics. | a) Establish and consistently use e-mobility rules and definitions. | Meet the annual target for motorcycle fatalities |
| | | b) Modify the crash reports to include electronic powered personal conveyances. | Meet the annual target for unhelmeted motorcyclist fatalities |
| | | c) Use data to identify high-risk areas and characteristics. | |
| 2 | Provide access to basic and advanced rider safety courses. | a) Increase the accessibility and availability of basic and advanced rider courses. | Expand the availability of the Basic Rider Course training opportunities for neighborislands |
| | | b) Incentivize rider endorsement. | |
| 3 | Educate, enforce, and encourage the use of safety gear. | a) Pass/update the helmet requirement law. | Establish e-mobility definitions and rules |
| | | b) Encourage the use of high-visibility and other safety gear and support its distribution. | |
| 4 | Support law enforcement efforts in enforcing safety in coordination with other initiatives (e.g. speeding, dangerous and impaired driving/riding). | a) Continue to implement and support the enforcement of graduated driver licensing for motorcycles, motor scooters, mopeds, and e-mobility. | Modify MVAR to reflect e-mobility modes |
| | | b) Support the detection and enforcement of sanctions on motorcycle, motor scooter, moped, and e-mobility traffic infractions. | Pass helmet requirement legislation |

APPENDIX A: Action Plans



SAFE ROAD USERS | IMPAIRED DRIVING

| Strategy | Action | Agency | Progress Indicator | |
|----------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------|
| 1 | Improve upon the collection, analysis, sharing, and application of alcohol- and drug-impaired driving-related data. | a) Identify data needs and support the improvement of alcohol- and drug-impaired driving and crash data collection. | HDOT, Counties, First Responders, DOH | Meet the annual target for alcohol-impaired driving fatalities |
| | | b) Establish and maintain an in-state forensic toxicology lab. | DOH | Reduce the number of annual fatalities for drug-impaired driving |
| | | c) Continue improving upon data sharing and integration of alcohol- and drug-impaired driving across agencies. | All traffic safety agencies | |
| 2 | Educate, enforce, and encourage all road users of the consequences of alcohol- and drug-impaired driving. | a) Support alcohol- and drug-impaired driving enforcement efforts. | HDOT, Counties, Police Departments, Judiciary | Perform a data, training, and equipment needs assessment for drug impaired driving |
| | | b) Continue developing and implementing educational outreach that spread awareness about the consequences of alcohol- and drug-impaired driving, prevention, and safe alternative transportation modes. | All traffic safety agencies, advocates | |
| | | c) Support law enforcement efforts to identify and arrest impaired drivers. | HDOT, Counties Lawmakers, Police Departments | Maintain education and outreach for impaired driving |
| | | d) Pursue partnerships with organizations and agencies associated with impaired driving to collaboratively leverage resources and funding. | HDOT, Counties, DOH | |
| | | e) Support strategies in approved state and local impaired driving plans | All traffic safety agencies | |

APPENDIX A: Action Plans



SAFE ROAD USERS | IMPAIRED DRIVING

| Strategy | Action | Agency | Progress Indicator |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------|
| 3 Support and enhance the adjudication process relating to OVUII convictions. | a) Support and enhance the adjudication and post-adjudication process to reduce repeat instances of impaired driving. | HDOT, Counties, First Responders, Judiciary, DOH | Improve the adjudication process |
| | b) Support the training, data and evidence needs of the adjudication process related to OVUII convictions. | HDOT, Counties, First Responders, Judiciary, DOH | Decrease repeat impaired driving offenders |
| 4 Support legislation that strengthens policies against impaired driving. | a) Support legislation that strengthens regulations and penalties against alcohol- and drug-impaired driving. | All traffic safety agencies, Lawmakers, Judiciary | |

APPENDIX A: Action Plans



SAFE ROAD USERS | DANGEROUS DRIVING

| Strategy | | Action | Agency | Progress Indicator |
|----------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------|
| 1 | Continue to improve upon the collection, analysis, and application of dangerous driving-Related data. | a) Support data collection and analysis to address dangerous driving behaviors. | HDOT, Counties, First Responders, Police Departments, Lawmakers | Maintain STEP and Traffic Commanders meetings and coordination |
| 2 | Support dangerous driving enforcement efforts and conduct trainings and educational outreach to reduce dangerous driving. | a) Support high visibility enforcement to help officers identify and cite drivers exhibiting dangerous driving behaviors. | HDOT, Counties Lawmakers, Police Departments | |
| | | b) Implement and encourage outreach campaigns, employer programs, and professional trainings that discourage dangerous driving and educate about its prevention. | HDOT, DOH, Counties, Lawmakers | |
| | | c) Pursue partnerships to bring awareness to dangerous driving behaviors. | HDOT, Counties, Police Departments | Maintain distracted driving operations and campaigns |
| 3 | Continue to explore and encourage the implementation of best practices and policies related to dangerous driving. | a) Support legislation that enhances penalties for distracted and aggressive driving. | All traffic safety agencies, Lawmakers, Judiciary | |
| | | b) Continue to support programs and policies which reduce the risk of dangerous driving. | HDOT, DOE, Counties | |

APPENDIX A: Action Plans



SAFE ROAD USERS | OCCUPANT PROTECTION

| Strategy | Action | Agency | Progress Indicator | |
|----------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------|
| 1 | Maintain and implement outreach and programs focused on increasing safety belt and proper child restraint use. | a) Integrate Child Passenger Safety Technician training, recommendations from the American Academy of Pediatrics, and other proven practices into educational programs and material. | HDOT & Counties | Meet the annual target for unrestrained passenger vehicle occupant fatalities |
| | | b) Support targeted outreach, programs, and educational material to reach demographics with known low occupant safety rates, vulnerable demographics, and first time parents. | HDOT & Counties | Increase the number of annual child restraint inspection stations |
| 2 | Support law enforcement and organizations with training, tools, and resources to improve seat belt and child restraint usage. | a) Support high-visibility enforcement measures and provide resources for seat belt and child protection usage. | HDOT, Counties, Police Departments | Increase the observed child restraint use |
| | | b) Encourage programs and pursue partnerships that support increased safety belt and child restraint usage. | HDOT & Counties | Maintain the observed seat belt use rate above 90% |
| 3 | Identify and support legislation and programs to increase the use of proper restraints for all seating positions within a vehicle. | a) Support and strengthen seat belt and child passenger safety laws and strengthen penalties for violations. | All traffic safety agencies, Lawmakers, Judiciary | Maintain educational and outreach campaigns for occupant protection |

APPENDIX A: Action Plans



SAFE ROADS | DESIGN

| Strategy | | Action | Agency | Progress Indicator |
|----------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------|
| 1 | Integrate Complete Streets principles to create safe, connected and equitable networks that fit community needs and context. | a) Align design with Safe System Roadway Design Hierarchy, such as removing severe conflicts, encouraging contextually appropriate speeds, managing conflicts in time, increasing attentiveness and awareness with signage and/or striping. | HDOT & Counties | Maintain annual planned safety countermeasure installations identified in Act 100 |
| | | b) Improve education related to roadway and intersection design and elements. | HDOT & Counties | Decrease the number of intersection related fatalities |
| 2 | Identify and integrate design elements that are compatible with emerging vehicle safety features. | a) Implement roadway design elements that support emerging vehicle technology and safety features. | HDOT & Counties | Decrease the number of lane departure fatalities |
| | | b) Continue to track and implement lane departure and intersection countermeasures. | HDOT | |
| 3 | Mitigate high-risk crash characteristics by identifying and integrating design elements that can reduce speed and increase safety. | a) Enhance and support improvements statewide by analyzing and providing data, countermeasure alternatives, and other resources. | HDOT & Counties | Conduct systemic fatality/serious injury crash characteristic assessments |
| | | b) Perform crash data assessments to identify systemic crash characteristics and measures that can reduce these risks. | HDOT & Counties | |
| | | c) Support projects consistent with 23 U.S.C. 148. | HDOT | |

APPENDIX A: Action Plans



SAFE ROADS | WORK ZONES/MAINTENANCE

| Strategy | | Action | Agency | Progress Indicator |
|----------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------|
| 1 | Perform timely infrastructure maintenance for all travel modes. | a) Maintain and support transportation programs that prioritize roadway improvements and maintenance projects. | HDOT & Counties | Provide work zone safety training courses |
| 2 | Improve the safety of work zones created by road improvement work, construction, or other maintenance activities. | a) Improve signage, notifications, and traffic controls around work zones to reduce speeding and traffic hazards. | HDOT & Counties | Decrease # of work zone related crashes |
| | | b) Update guidance for the use of positive protection measures within work zones. | HDOT & Counties | |
| | | c) Conduct public outreach, educational events, and safety awareness campaigns to educate drivers and passengers on driving around work zones on the road. | HDOT & Counties | Maintain system preservation annual planned projects |
| 3 | Support agencies and partnerships that provide training to increase safety around work zones. | a) Promote and support work zone safety training and best practices. | HDOT & Counties | |

APPENDIX A: Action Plans



SAFE VEHICLES | VEHICLE SAFETY

| Strategy | | Action | Agency | Progress Indicator |
|----------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------|
| 1 | Increase motor vehicle safety awareness amongst drivers and passengers. | a) Conduct public outreach campaigns to increase public awareness of safety on the highways and driving around commercial motor vehicles | HDOT & Counties | Reduce the number of CMV fatalities |
| 2 | Enforce compliance with Federal and State motor vehicle safety laws and regulations. | a) Support training of vehicle inspectors and conducting inspections. | HDOT & Police Departments | Maintain annual safety awareness campaigns |
| | | b) Conduct adequate number of vehicle inspections in alignment with the Hawai'i Commercial Vehicle Safety Plan. | Police Departments | |
| | | c) Provide CMV traffic enforcement training to law enforcement. | Police Departments | Meet the annual target for the number of vehicle inspections |
| 3 | Align with best practice policies for emerging vehicle types/technology. | a) Research emerging vehicle technologies, and identify roadway infrastructure that will support the safety features. | HDOT & Counties | |
| | | b) Continued support in developing legislation to address emerging vehicle technology | All traffic safety agencies, Lawmakers, Judiciary | |

APPENDIX A: Action Plans



SAFE SPEEDS | SPEED MANAGEMENT

| Strategy | Action | Agency | Progress Indicator |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1 | Utilize context-appropriate design elements and technology to reduce speeding. | a) Implement speed limits and design countermeasures in alignment with the context of the area/location. | Meet the annual target for speeding related fatalities |
| | | b) Research emerging technologies related to reducing speeding. | |
| 2 | Develop and implement education and outreach about the impacts of speed on crash severity and consequences. | a) Create and distribute education and outreach media targeting drivers about the consequences of speed and aggressive driving. | Maintain the number of police enforcement speed operations annually |
| | | b) Provide education and training for transportation professionals on establishing context-appropriate speed limits and implementing Complete Streets hierarchy. | Pass speeding related legislation |
| 3 | Support policies, legislation, and increased enforcement measures to reduce speeding and speed-related crashes. | a) Support high visibility enforcement (HVE) and enforcement of speeding violations. | Install speed countermeasures at identified high-risk locations |
| | | b) Support legislation that addresses speeding, such as automated speed enforcement and increased penalties for speed related violations. | |
| 4 | Continue to implement a data collection, management, and monitoring system to identify high-risk and high-occurrence roadways areas for speeding and speed-related crashes. | a) Identify and assess locations with a high-risk of speeding through crash and speed data collection and analysis. | |

APPENDIX A: Action Plans



POST-CRASH CARE | EMERGENCY RESPONSE

| Strategy | Action | Agency | Progress Indicator |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Improve safety and efficiency of first responders when responding to crashes. | a) Implement best practice techniques, or technologies to protect first responders at crash sites. | First responders | Increase the number of first responder training courses Establish a bi-directional health data exchange system for hospital/first responder/EMS medical record data |
| | b) Maintain and support emergency routes. | HDOT & Counties | |
| | c) Promote and enhance legislation protecting first responders. | HDOT, DOH, First responders, Courts | |
| 2 Ensure expedient access to appropriate emergency response and trauma care services. | a) Assess distribution and capacity needs of EMS stations, ambulances, and trauma centers serving rural areas. | DOH, First responders | Assess rural emergency response needs |
| | b) Enhance inter-facility transfer system statewide. | DOH | |
| | c) Support technologies to improve accuracy and reliability of response time data collection. | DOH | |
| 3 Promote partnerships between transportation agencies and health care/emergency response officials to reduce traffic-related fatalities and serious injury. | a) Continue to facilitate collaboration and communication between traffic safety partners to improve awareness of the interrelationships between all aspects of highway safety. | HDOT, DOH, First responders, Courts | Improve inter-facility call/transfer system |
| 4 Support agencies and partnerships that provide first responder training, technologies and equipment for traffic-related crashes. | a) Promote and support courses to train new first responders. | DOH, First responders | Improved EMS response times |
| | b) Promote and support first responder training in traffic safety best practices and emerging issues. | DOH, First responders | |

APPENDIX A: Action Plans



POST-CRASH CARE | TRAFFIC DATA AND RECORDS

| Strategy | Action | Agency | Progress Indicator |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 1 Advance safety data collection and analysis by improving the timeliness, accuracy, completeness, uniformity, integration and accessibility of data in existing or new data sources. | a) Improve coordination and integration of crash, vehicle, driver, roadway, hospital, citation/adjudication, and EMS/injury surveillance data. | HDOT, DOH, Oahu MPO, First responders, FMCSA, Judiciary | Decrease the number of days from crash to database |
| | b) Support the collection of EMS data in the latest version of the NEMSIS data collection standards. | DOH, First responders | Maintain the Traffic Records Coordinating Committee meetings and coordination |
| | c) Collaborate with traffic safety partners to update the MVAR and train partners to improve upon the location accuracy, quality, and consistency in reporting. | HDOT, DOH, First responders, FMCSA | Update MVAR and provide training |
| | d) Improve the crash data system through enhancing existing and/or new data sources and technology. | HDOT, Police Departments, FMCSA | |
| 2 Utilize data-driven assessments to identify priorities for state and local traffic safety programs. | a) Improve coordination and integration of traffic safety data records by linking crash, health, court, licensing, toxicology, vehicle, and other relevant records in a central database. | HDOT, DOH, First responders, Courts, FMCSA, Judiciary | Reduction in case dismissals due to citation discrepancies |
| | b) Improve data collection and analysis by supporting traffic safety workforce development for staff that work on programs, projects, or activities targeting fatality and serious injury reduction. | HDOT, DOH, First responders, Courts, FMCSA, Judiciary | Continue to develop SHACA and HIGLS system |
| | c) Review adjudication process for traffic cases and minimize dismissals due to data quality and/or availability. | Courts, prosecutors, Attorney General's office, Police Departments | |

APPENDIX A: Action Plans



PROGRAM MANAGEMENT

| Strategy | Action | Agency | Progress Indicator |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------|
| 1 Provide oversight of the traffic safety programs. | a) Coordinate tracking of traffic safety progress indicators. | First responders | Maintain regular evaluation and assessments (3HSP and HSIP) |
| | b) Facilitate identification, evaluation and recommendations relating to traffic safety issues, policies, and strategic planning. | HDOT & Counties | |
| | c) Manage grant requirements and compliance. | HDOT, DOH, First responders, Courts | |
| | d) Manage grant sub-recipient applications and provide assistance with project/program compliance. | HDOT | |
| | e) Facilitate collaboration, partnerships, and communication between traffic safety partners and agencies. | HDOT | |
| | f) Continue coordination and programming of HSIP improvements. | HDOT | |



**Appendix B:
Plan Review Technical
Memorandum**



2025 – 2029 Strategic Highway Safety Plan Plan Review

The State of Hawaii Department of Transportation (HDOT) Strategic Highway Safety Plan (SHSP) will be updated in alignment with current transportation safety efforts across the State and Counties. The plan review summarizes the goals and objectives, performance monitoring and measures, identified safety issues, and strategies and or projects to address safety issues that are identified in the transportation safety plans.

The SHSP Executive and Core Committees will be consulted to clarify or discuss the outcomes of the plans, and to verify current transportation safety efforts. The results of the Plan Review will inform how the SHSP Emphasis Areas and strategies may be implemented through other transportation planning and programming processes, and vice-versa, to ensure the SHSP results in a coordinated effort across State, City, and County agencies to address transportation safety issues.

1. Statewide Plans

The following plans addressing highway safety with a focus on the state highway system were examined:

- 1) Highway Safety Improvement Program, 2022 Annual Report
- 2) Triennial Highway Safety Plan, FY 2024 - 2026
- 3) Highway Safety Plan FFY 2023
- 4) Act 100 Performance Metrics 2024
- 5) Draft Hawai'i Statewide Transportation Plan
- 6) Federal-Aid Highways 2035 Transportation Plan
- 7) Regional Long-Range Land Transportation Plans (Hawai'i Island and Kaua'i)
- 8) Hawai'i Commercial Vehicle Safety Plan FY 2023
- 9) Statewide Pedestrian Master Plan
- 10) Bike Plan Hawaii Refresh Priorities and Implementation Plan 2022

1.1 Highway Safety Improvement Program, 2022 Annual Report

1.1.1 Purpose and Content

The Highway Safety Improvement Program (HSIP) is a Federal-aid program that focuses on achieving a significant reduction in traffic fatalities and serious injuries on all public roads. The program is legislated under Title 23, United States Code (U.S.C.), Section 148 and regulated under Title 23, Code of Federal Regulations (CFR), Part 924. As codified under 23 U.S.C. 148(h) and 23 CFR 924.15, each State is required to submit a HSIP annual report that describes the progress made to implement highway safety improvement projects, assesses the effectiveness of those improvements, and describes the extent to which the improvements have contributed to a reduction in fatalities and serious injuries on all public roads.

1.1.2 Goals and Objectives

The primary objective of HDOT's HSIP is to incorporate highway safety to reduce the number and severity of fatalities and injuries involving motor vehicle crashes.

1.1.3 Performance Monitoring and Measures

The HDOT’s HSIP process involves collecting all major traffic crash data, analyzing the data, proposing safety improvement projects, and evaluating the benefits from the projects. HDOT has focused on addressing systemic locations over hot spot locations as it allows for better allocation of funds on a proactive approach.

The performance measures used to analyze highway safety trends include:

- Fatalities
- Serious Injuries
- Fatality Rate (fatalities per hundred million vehicle miles traveled (HMVMT))
- Serious Injury Rate (serious injuries per HMVMT)
- Number of Non-motorized Fatalities
- Number of Non-motorized Serious Injuries

The change in fatalities and serious injuries reported is used to measure the effectiveness of the HSIP. Completed projects are evaluated using crash data from 3-years before and after project completion to measure its effectiveness.

Present and describe trends in SHSP emphasis area performance measures.

Year 2021

| SHSP Emphasis Area | Targeted Crash Type | Number of Fatalities (5-yr avg) | Number of Serious Injuries (5-yr avg) | Fatality Rate (per HMVMT) (5-yr avg) | Serious Injury Rate (per HMVMT) (5-yr avg) |
|--------------------|---------------------|---------------------------------|---------------------------------------|--------------------------------------|--------------------------------------------|
| Lane Departure | Run-off-road | 39.6 | 152.4 | 0.38 | 1.51 |
| Intersections | Intersections | 29.6 | 110.4 | 0.29 | 1.08 |
| Pedestrians | Vehicle/pedestrian | 28.4 | 84.2 | 0.27 | 0.83 |
| Bicyclists | Vehicle/bicycle | 4 | 18.6 | 0.04 | 0.18 |
| Motorcyclists | Other (define) | 26.2 | 122.6 | 0.26 | 1.2 |

Safety Performance Targets for Calendar Year 2023

5-Year Moving Average Target Number of Fatalities: 103

The performance target for fatalities was determined by using a linear trend line based on the 2017 – 2021 five-year moving average data and an analysis of external factors including the updated SHSP, Vision Zero Plans developed and implemented, planned roadway infrastructure safety improvement projects, and safety impacts of proposed grants. This is the same performance target identified in the Highway Safety Plan (HSP).

5-Year Moving Average Target Number of Serious Injuries 506

The performance target for serious injuries was determined using the linear trend line based on five-year moving average data. An update to the Motor Vehicle Accident Report’s (MVAR) terminology changing from “incapacitating injury” to “suspected serious injury” was expected to impact the number of serious injury crashes reported. This is the same performance target identified in the HSP.

5-Year Moving Average Target Fatality Rate: 1.057

The performance target for fatality rate was determined using the linear trend line based on five-year moving average data and through an analysis of external factors including COVID-19 and shelter-in-place orders. This is the same performance target identified in the HSP.

5-Year Moving Average Target Serious Injury Rate: 5.032

This performance target for serious injury rate was determined by using the linear trend line based on five-year moving average data. The updated terminology used in the MVAR was anticipated to impact the number of serious injury crashes reported.

5-Year Moving Average Target for Total Number of Non-Motorized Fatalities and Serious Injuries: 142.4

The performance target for the total number of non-motorized fatalities and serious injuries was determined by using the linear trend line based on five-year moving average data, and an analysis of external factors, as previously identified in the other performance targets.

1.1.4 Identified Safety Issues

Describe progress toward meeting the State’s 2021 Safety Performance Targets (based on data available at the time of reporting). For each target, include a discussion of any reasons for differences in the actual outcomes and targets.

| PERFORMANCE MEASURES | TARGETS | ACTUALS |
|-----------------------------------------------|---------|---------|
| Number of Fatalities | 103.0 | 102.2 |
| Number of Serious Injuries | 427.0 | 473.2 |
| Fatality Rate | 0.968 | 0.995 |
| Serious Injury Rate | 3.912 | 4.666 |
| Non-Motorized Fatalities and Serious Injuries | 136.8 | 135.2 |

Revision to the MVAR’s terminology for serious traffic injuries has shown an increase in serious injury crashes reported. The Honolulu Police Department implemented the form at the beginning of 2019, which is also the year when the largest increase in serious injuries was reported.

During the reporting period, run off roadway and median crossover type crashes were targeted. The HDOT focused on reducing fatalities and serious injury type crashes through the implementation of cost-effective safety improvements along corridors that have a history of these crash types.

1.1.5 Strategies or Projects to Address Safety Issues

The following table provides a summary of the projects obligated using HSIP funds for 2022. The table provides a summary of the information deemed to be relevant to the SHSP – the full listing of project information is provided in the report.

| Improvement Category | Improvement Type | Number of Projects Obligated | SHSP Emphasis Area | SHSP Strategy |
|----------------------|----------------------------------|------------------------------|--------------------|-----------------------------------------------------------------|
| Roadway | Rumble strips – edge or shoulder | 11 | Roadway Departure | Improve roadway infrastructure by installing countermeasures to |

| Improvement Category | Improvement Type | Number of Projects Obligated | SHSP Emphasis Area | SHSP Strategy |
|-----------------------------------|-------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------|
| | | | | reduce lane departure crashes. |
| Roadway signs and traffic control | Roadway signs (including post) – new or updated | 1 | All types of highway signs addressing lane departure, intersection, pedestrian, etc. | Improve roadway infrastructure to increase safety |
| Miscellaneous | Data Analysis | 1 | Data | Improve linkage and integration of data |
| Miscellaneous | Transportation safety planning | 1 | Data | Improve linkage and integration of data |

The HSIP reported that 94% of HSIP funds addressed systemic improvements. These improvements included rumble strips.

1.1.6 Application to the SHSP

The data reported in the HSIP will be used in the evaluation of the previous SHSP to identify the strategies that were implemented, and to measure the effectiveness of those strategies that were implemented. This will help to inform the Emphasis Areas and strategies that will be included in the updated SHSP.

1.2 Triennial Highway Safety Plan (3HSP), Federal Fiscal Years 2024 through 2026

1.2.1 Purpose and Content

The Triennial Highway Safety Plan (3HSP) is one of the tools to assess and implement safety conditions to achieve the long-term performance target goals. The most recent plan was completed for federal fiscal years 2024 through 2026. The plan includes the State’s long-term performance target goals, objectives, countermeasure strategies for improving traffic safety, and projects to address traffic safety problems.

1.2.2 Goals and Objectives

The 3HSP examines statewide traffic safety, first responder, socio-economic and survey data to refine problem identification and incorporate into traffic safety public participation and engagement efforts.

The 2019-2024 SHSP goal is to reduce the fatality rate from 7.2 to 6.5 fatalities per 100,000 population, or less, by 2024, with an ultimate goal of zero traffic deaths. In the 3HSP, annual performance targets were coordinated between HDOT, Oahu and Maui MPO’s to be in alignment with the CFR 1300.11 requirements. Three core performance measures (C-1 to C-3, shown in the next section).

1.2.3 Performance Monitoring and Measures

The table below illustrates the changes in the number of fatalities against core performance measures from year 2018 to 2022.

| PROGRAM PERFORMANCE AREAS | TREND DIRECTION BASED ON COMPARING 2018 TO 2022 | 2018 to 2022 |
|---------------------------|-------------------------------------------------|--------------|
| UNRESTRAINED | INCREASE | 16 TO 19 |
| ALCOHOL .08+ | DECREASE | 37 TO 25 |
| SPEED | DECREASE | 51 TO 48 |
| MOTORCYCLE | DECREASE | 34 TO 33 |
| UNHELMETED | DECREASE | 22 TO 20 |
| 20 AND YOUNGER | DECREASE | 10 TO 8 |
| PEDESTRIAN | DECREASE | 42 TO 28 |
| BIKE | INCREASE | 2 TO 7 |

The 3HSP established performance measure targets for each year from 2024 to 2026, as shown in the tables below. The performance measure targets were set using fatality numbers from 2022 as the baseline, since it is the most currently available data that is reflective of regional and national increases in fatalities following the COVID-19 pandemic.

| | | Current State Data | | | | | Projected Targets | | | | |
|-----|------------------------------------------------------------------------------------|---------------------|------|-------|-------|-------|-------------------|-------|-------|-------|-------|
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | |
| C-1 | Traffic Fatalities | State Annual | 117 | 108 | 85 | 94 | 116 | 115 | 114 | 113 | 112 |
| | Reduce annual traffic fatalities from 116 in 2022 to 112 by 2026 | 5-Year Rolling Avg. | 106 | 109 | 107 | 102 | 104 | 104 | 105 | 110 | 114 |
| C-2 | Serious Injuries in Traffic Crashes | State Annual | 356 | 574 | 485 | 546 | 572 | 565 | 560 | 555 | 550 |
| | Reduce annual serious injuries in traffic crashes from 572 in 2022 to 550 by 2026. | 5-Year Rolling Avg. | 441 | 455.2 | 451.4 | 473.2 | 506.6 | 548.4 | 545.6 | 559.6 | 560.4 |
| C-3 | Fatalities/100M VMT | State Annual | 1.08 | 0.98 | 0.97 | 0.94 | 1.14 | 1.1 | 1.09 | 1.08 | 1.06 |
| | Reduce Fatalities/100 MVMT from 1.14 in 2022 to 1.06 by 2026. | 5-Year Rolling Avg. | 1.01 | 1.02 | 1.03 | 0.99 | 1.02 | 1.03 | 1.05 | 1.07 | 1.09 |

| | | Current State Data | | | | | Projected Targets | | | |
|-----|-------------------------------------------------------------------------------------------------------------------------------|---------------------|------|------|------|------|-------------------|------|------|------|
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
| C-4 | Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions | State Annual | 16 | 16 | 13 | 20 | 19 | 18 | 18 | 18 |
| | Reduce unrestrained passenger vehicle occupant fatalities, all seat positions from 19 in 2022 to 18 fatalities a year by 2026 | 5-Year Rolling Avg. | 18 | 18 | 18 | 17 | 17 | 17 | 19 | 18 |
| C-5 | Alcohol-Impaired Driving Fatalities | State Annual | 38 | 36 | 28 | 28 | 25 | 28 | 28 | 28 |
| | Maintain alcohol impaired driving fatalities at 28 through 2026 | 5-Year Rolling Avg. | 37 | 38 | 36 | 34 | 31 | 29 | 27 | 27 |
| C-6 | Speeding-Related Fatalities | State Annual | 51 | 52 | 37 | 45 | 48 | 47 | 47 | 47 |
| | Reduce speeding-related fatalities from 48 in 2022 to 47 fatalities a year from by 2026 | 5-Year Rolling Avg. | 47 | 50 | 49 | 47 | 47 | 46 | 45 | 47 |
| C-7 | Motorcyclist Fatalities | State Annual | 34 | 20 | 18 | 33 | 33 | 33 | 32 | 32 |
| | Reduce the annual fatalities from 33 in 2022 to 32 fatalities a year by 2026 | 5-Year Rolling Avg. | 27 | 26 | 24 | 26 | 28 | 27 | 30 | 33 |

| | | Current State Data | | | | | Projected Targets | | | |
|------|------------------------------------------------------------------------------|----------------------|------|------|------|------|-------------------|------|------|------|
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
| C-8 | Unhelmeted Motorcyclist Fatalities | State Annual | 22 | 14 | 13 | 21 | 20 | 20 | 20 | 20 |
| | Maintain annual unhelmeted motorcyclist fatalities at 20 a year through 2026 | 5-Year Rolling Avg. | 16 | 16 | 16 | 17 | 18 | 19 | 20 | 20 |
| C-9 | Young Driver Fatalities | State Annual | 10 | 12 | 8 | 11 | 8 | 7 | 7 | 7 |
| | Reduce annual young driver fatalities from 8 in 2022 to 7 a year by 2026 | 5-Year Rolling Avg. | 10 | 11 | 10 | 9 | 10 | 9 | 8 | 7 |
| C-10 | Pedestrian Fatalities | State Annual | 42 | 36 | 21 | 25 | 28 | 28 | 28 | 28 |
| | Maintain Pedestrian Fatalities at 28 a year through 2026 | 5-Year Rolling Avg. | 27 | 29 | 28 | 28 | 30 | 28 | 26 | 27 |
| C-11 | Bicyclist Fatalities | State Annual | 2 | 4 | 4 | 4 | 7 | 7 | 7 | 7 |
| | Maintain annual Bicyclist fatalities at 7 a year through 2026 | 5-Year Rolling Avg. | 3 | 3 | 3 | 4 | 4 | 5 | 6 | 6 |
| C-12 | Observed Seat Belt Use Rate | State Annual Percent | 97.7 | 97.5 | 96.0 | 95.8 | 95.8 | 95.8 | 95.8 | 95.8 |
| | Maintain above 90 percent use rate through 2026 | | | | | | | | | |

The targets may differ from the State’s HSIP target because 3HSP targets were set with the exemption listed under CFR 1300.11.

1.2.4 Identified Safety Issues

Program Problem Identification

The HDOT’s 2022 Attitudinal Survey and the Statewide Highway Safety Survey provided insights to program areas that could be improved, and also informed on where community members receive their information or have seen past traffic safety messages.

Education and Awareness

The following are the results of survey respondents who disagree that there is adequate education and awareness in the following areas in their community:

- 58% e-powered vehicles (e-scooters, e-bikes, etc.)
- 51% pedestrian safety
- 44% motorcycle training and motorcycle safety

- 43% distracted driving
- 38% dangers of speeding or driving too fast
- 37% drug impaired driving
- 32% drunk driving enforcement
- 18% child passenger safety checks and restraint laws

Survey respondents indicated that television was the most common source of news and information, followed by social media, radio, and the newspaper.

Enforcement

The following are the results of survey respondents who disagree that there is adequate enforcement in the following areas in their community:

- 67% speeding drivers
- 67% distracted drivers (using cell phones or other electronic devices)
- 61% drivers who run through red lights
- 60% drivers who fail to stop for someone trying to cross in a crosswalk
- 47% drug impaired drivers
- 47% drivers who drive too close (within three feet) of bicyclists
- 45% drunk driving
- 30% drivers who are unrestrained (including children)

Infrastructure

The following are the results of survey respondents who would like to see more of the following infrastructure in their community:

- 57% roadway lighting
- 56% raised crosswalks
- 53% multiuse paths
- 43% distracted driving
- 51% divided highway or roadways
- 50% rumble strips
- 49% pedestrian refuges or islands that let people take a break before crossing the entire road
- 43% guardrails
- 43% more frequent crossings for pedestrians
- 41% all-way crossing for pedestrians
- 38% lowered speed limits

1.2.5 Strategies or Projects to Address Safety Issues

Planning and Administration Countermeasure #1: Program Administration

Estimated funding amount FFY 2024-2026: \$600,000

Funding sources: FAST Act NHTSA 402, BIL NHTSA 402, Supplemental BIL NHTSA 402

HDOT will incorporate a Program Administration to support the Highway Safety Section with overseeing NHTSA's grant program and other traffic safety initiatives, as well as addressing BIL requirements through the 3HSP.

Media Plan Countermeasure #1: NHTSA Mobilizations

High visibility enforcement in combination with multi-media support will help deter negative traffic safety behaviors. The Attitudinal Survey and the Highway Safety Survey confirm the need for continuous communication to the public about safety, resources, and enforcement efforts.

Performance Targets: Impaired Driving winter and summer campaigns and Click It or Ticket participation, required under CFR 1200.21(d)(2).

Media Plan Countermeasure #2: Statewide Program Area Campaigns

A need for additional communication across all program areas was identified through the State Highway Safety Survey. The Attitudinal Survey identified the need for investment in television, social media, and radio as the results showed that they were the top means of receiving information.

Performance Targets: National speed campaign and support of Distracted Driving Awareness Month, Motorcycle Safety Month, and efforts around Unintended Occupants in Vehicles. Smaller forms of communication will also be used to enhance efforts of program areas, such as e-bike etiquette, laws relating to driving and marijuana use, promoting motorcycle rider courses, etc.

Selected Traffic Enforcement Programs (STEP): Distracted Driving, Speed Management, Police Traffic Services, and Roadside Safety Countermeasure #1: Safe Systems Approach Through Safe Road Users

This countermeasure is intended to address the percentage of distracted drivers involved in fatal crashes. Countermeasures will include enforcement, in-service training, high visibility enforcement campaigns, education, and outreach.

Performance Target: C-1 Traffic Fatalities

Selected Traffic Enforcement Programs (STEP): Distracted Driving, Speed Management, Police Traffic Services, and Roadside Safety Countermeasure #1: Safe Systems Approach Through Safe Road Users Countermeasure #2: Safe Systems Approach Through Safe Speeds

This countermeasure is intended to address the percentage of speeding drivers involved in fatal crashes. Countermeasures will include enforcement, in-service training, high visibility enforcement campaigns, education, and outreach.

Performance Target: C-6 Speeding-Related Fatalities

Selected Traffic Enforcement Programs (STEP): Distracted Driving, Speed Management, Police Traffic Services, and Roadside Safety Countermeasure #1: Safe Systems Approach Through Safe Road Users Countermeasure #3: Program Management

HDOT will incorporate a Program Administration as a countermeasure strategy to support the Highway Safety Section with overseeing NHTSA's grant program and other related traffic safety initiatives, as permitted under CFR 1200.4.

Performance Targets: C-1 Traffic Fatalities and C-6 Speeding-Related Fatalities

Impaired Driving Countermeasure #1: Improve Impaired Driving Data

This countermeasure is intended to address the significant gaps in the impaired driving data, as well as deficiencies in data sharing, data access, data integration, and timely reporting. Countermeasures will include identifying data gaps, and addressing them with better data collection, greater access to data, and analysis of data.

Performance Target: C-5 Core Performance Target #5 – Alcohol-Impaired Driving Fatalities

Impaired Driving Countermeasure #2: Promote Safer Road Users

This countermeasure is intended to address the increase in alcohol- and drug-impaired driving in recent years. Drugged driving has increased at a faster rate than alcohol-impaired driving. Countermeasures will include:

Countermeasures That Work

- Publicized Sobriety Checkpoints (5 stars)
- High-Visibility Saturation Patrols (4 stars)
- Preliminary Breath Test Devices (4 stars)
- DWI Courts (4 stars)
- Court Monitoring (3 stars)
- Alcohol Ignition Interlocks (5 stars)
- Lower BAC Limits for Repeat Offenders (4 stars)
- Mass-Media Campaigns (3 stars)
- Zero-Tolerance Law Enforcement (3 stars)
- Youth Programs (2 stars) (Some research findings are positive, but effectiveness remains inconclusive)
- Enforcement of Drug-Impaired Driving (3 stars)

NHTSA's Uniform Guideline No. 8 for Impaired Driving

- Prevention
- Criminal Justice System
- Enforcement
- Publicizing High Visibility Enforcement
- Prosecution
- Adjudication
- Administrative Sanctions and Driver Licensing Programs
- Communication Program

Performance Targets: C-5 and C-9 Core Performance Target #5 – Alcohol-Impaired Driving Fatalities and Young Driver Fatalities

Impaired Driving Countermeasure #3: Program Management

This countermeasure is intended to address impaired driving from a holistic approach, using different tactics such as applying Safe System Approach concepts, evaluating existing practices and policies, encouraging collaborations among traditional and non-traditional partners, and providing forums to promote partnerships, discussions, and collaborations.

Performance Targets: C-5 Core Performance Target #5 – Alcohol-Impaired Driving Fatalities

Occupant Protection Countermeasure #1: Seat Belt and Child Safety Seat Law Enforcement

This countermeasure is intended to address the low rates of child restraint compliance, which was at 68.11% in 2022. In the same year, 19 of the 48 passenger vehicle fatalities involved unrestrained occupants, with more than half of the unrestrained fatalities occurring at night. Countermeasures will include short-term, high-visibility seat belt law enforcement; integrated nighttime seat belt enforcement; and short-term high-visibility child restraint law enforcement.

Performance Target: C-4 Unrestrained Passenger Vehicle Occupant Fatalities in All Seating Positions

Occupant Protection Countermeasure #2: Communication, Outreach, and Other Strategies

Countermeasures will include communication and outreach efforts such as community safety talks, presentations, events, and special events in support of Child Passenger Safety Week in September. Other countermeasures will include enforcement and community car seat checks and inspections, especially in underserved communities around the State such as Waianae, Waimānalo, East Pāhoa, and East Hawai'i Island. Other efforts will include in-service educational sessions at medical centers and training sessions with retailers that sell car seats.

Performance Target: C-4 Unrestrained Passenger Vehicle Occupant Fatalities in All Seating Positions

Occupant Protection Countermeasure #3: Program Management

Program Management will be used as both authority and function to administer highway safety programs, as identified under CFR 1200.11. Under 23 U.S.C. 402, each State is required to dedicate a portion of program funding to educate the public on the risks of leaving a child or unattended passenger in the vehicle.

Performance Target: C-4 Unrestrained Passenger Vehicle Occupant Fatalities in All Seating Positions

Motorcycle Safety Countermeasure #1: Communication and Outreach through media purchases to the public to encourage drivers to be aware of riders and for riders to get basic rider training, to be licensed and to ensure that they ride in accordance with the rules of the road.

This countermeasure is intended to address the factors that have been shown to contribute to motorcycle, motor scooter, and moped crashes, including impairment, conspicuity, improper road use, speed, and unlicensed or untrained drivers. Countermeasures include building public awareness around training and licensure requirements for motorcycle, motor scooter, and moped riders, as well as ensuring proper training and education is being given to these riders.

Performance Targets: C-7 and C-8 Total Motorcycle, Motor Scooter, and Moped Fatalities and Unhelmeted Motorcyclist Fatalities

Motorcycle Safety Countermeasure #2: Program Management

This countermeasure includes program management of the Motorcycle Safety Program to provide guidance to subrecipients and to ensure that grant goals are met, and project activities are conducted in a timely manner according to milestones. Program management will cover program operations costs

such as reporting, monitoring, technical assistance and development of plans and applications for Motorcycle Management grants, and motorcycle safety related training and travel to further the goals and strategies of the HSP and SHSP.

Nonmotorized Safety Countermeasure #1: Safe Road User through Education, Community Outreach, and Media

This countermeasure is intended to address the factors contributing to pedestrian and bicyclist crashes, including impairment, conspicuity, improper road use, improper crossing, impairment, and failure to yield by motorists. Countermeasures would include:

- Elementary-Age Child Pedestrian Training
- Walking School Buses
- Conspicuity Enhancement
- Communications and Outreach Addressing Impaired Pedestrians
- Pedestrian Safety Zones
- Conspicuity Enhancement
- Pedestrian Gap Acceptance Training
- Bicycle Safety Education for Children
- Cycling Skills Clinics, Bike Fairs, Bike Rodeos
- Bicycle Safety Education for Adult Cyclists
- Active Lighting and Rider Conspicuity
- Promote Bicycle Helmet Use with Education
- Share the Road Awareness Programs

Performance Targets: C-10 and C-11 Total Pedestrian and Bicycle Fatalities

Nonmotorized Safety Countermeasure #2: Safer Roads through Enforcement and Community Engagement

This countermeasure will include public engagement through highly publicized pedestrian operations, with an emphasis on Pedestrian Safety Month in August. The community policing team and solo bike officers will also be deployed to rural and underserved elementary schools or those in need of a crossing guard to serve as a reminder to drivers to follow all roadway rules, especially in the school zone. Two public educational events will be conducted quarterly to raise awareness of pedestrian safety.

Performance Targets: C-10 and C-11 Total Pedestrian and Bicycle Fatalities

Nonmotorized Safety Countermeasure #3: Program Management

This countermeasure is similar to the Program Management countermeasure for Motorcycle Safety, but instead covers the Pedestrian Management Program and non-motorized grants.

First Responders Countermeasure #1: First responders equipment for post-crash care and prehospital evidence based process model

This countermeasure consists of obtaining two cordless extrication kits to provide the most current and efficient tools for first responders in extricating crash victims, which would improve emergency response

time, especially for rural locations and locations furthest from a hospital. Reducing the extrication time for crash victims would help to compensate for the travel time to the hospital.

Performance Target: Reduction in victim extrication time by at least 2 – 7 minutes

First Responders Countermeasure #2: Program Management

This countermeasure is similar to the Program Management countermeasure for Motorcycle Safety, but instead covers the EMS Program and EMS Management grants.

Traffic Records Countermeasure #1: Improve the data quality control program for the crash data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.

This countermeasure is intended to address crash data inconsistencies, such as location data, which must be reviewed and corrected by HDOT. Countermeasures include hiring a State Fatal Accident Reporting System (FARS) liaison and building the Hawai'i Incident Geo-Locating System (HIGLS) in the police department's Records Management System (RMS) and creating a direct interface with HDOT's SHACA system to ensure location data is accurate.

Performance Target: Percentage of statewide crash records in SHACA with locations linked to county police departments' HIGLS.

Traffic Records Countermeasure #2: Improve the data quality control program for the citation and adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.

The intent of this countermeasure is to address quality control in citations, as most law enforcement agencies still use paper citations. Use of paper citations lead to deficiencies such as illegible citations, incomplete citations, length of time between issuance of citation to entry into Judiciary Information Management System (JIMS), and access to citations by prosecutors.

Performance Target: C-1 Total Traffic Fatalities

Traffic Records Countermeasure #3: Improve the traffic records system capacity to integrate data that reflect best practices identified in the Traffic Records Program Assessment Advisory.

This countermeasure is intended to address data gaps in Hawai'i's traffic records systems and data sources. New transportation modes such as electric bikes and motorized scooters are not consistently captured in the MVAR as there are currently no categories that identify these modes.

Performance Target: C-1 Total Traffic Fatalities

Traffic Records Countermeasure #4: Improve the compatibility and interoperability of State data systems with national data systems and the data systems.

The Hawai'i Emergency Medical Services Information System (HEMSIS) is in need of updating to version 3.5. This would help to enhance the State's and NHTSA's ability to observe and analyze local, State, and national trends in crash occurrences, rates, outcomes, and circumstances through linked EMS data.

Performance Target: C-1 Total Traffic Fatalities

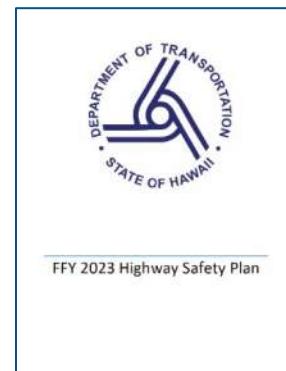
1.2.6 Application to the SHSP

The SHSP will build upon the performance measures and data, safety issues, and countermeasures identified in the 3HSP. Strategies and countermeasures in the SHSP will align with those identified in the 3HSP for non-infrastructure improvements.

1.3 Highway Safety Plan FFY 2023 (HDOT Highways Division, 2023)

1.3.1 Purpose and Content

The Highway Safety Plan (HSP) is an annual plan, created under the umbrella of the SHSP. It is an annual grant application that provides project level information on the State’s highway safety program in alignment with the State’s 3HSP.



1.3.2 Goals and Objectives

The 2019-2024 SHSP goal is to reduce the fatality rate from 7.2 to 6.5 fatalities per 100,000 population, or less, by 2024, with an ultimate goal of zero traffic deaths. The HDOT Highway Safety Section and Traffic Safety Section, along with the State Department of Health (DOH) Emergency Medical Services (EMS) & Injury Prevention Systems Branch and the O’ahu Metropolitan Planning Organization (O’ahu MPO) worked together to establish three core performance measures that are required to be identical in the HSP and the HSIP: number of traffic fatalities, number of serious injuries, and rate of fatalities.

1.3.3 Performance Monitoring and Measures

The HDOT Highway Safety Section and Traffic Safety Section, in collaboration with the State Department of Health (DOH) Emergency Medical Services (EMS) & Injury Prevention Systems Branch, and the O’ahu Metropolitan Planning Organization, established the three core performance measures that are required to be identical in the HSP and the HSIP, which are the number of traffic fatalities, number of serious injuries, and the rate of fatalities.

1.3.4 Identified Safety Issues

Preliminary data from 2021 that was analyzed in the HSP showed that fatalities that involved speeding, drug-impaired driving, pedestrians, motorcyclists, and distracted driving are overrepresented in the State’s fatal crash and fatality counts.

| Hawaii 2021 Traffic Fatalities* | | | | | | | |
|---------------------------------|-------------------------------------|------------------------------|-------------------------|-----------------------------------------|-----------------------|----------------------|--------------------|
| Unrestrained vehicle occupants | Alcohol-impaired driving fatalities | Speeding -related fatalities | Motorcyclist fatalities | Drivers age 20 or younger fatal crashes | Pedestrian fatalities | Bicyclist fatalities | Distracted Driving |
| 19 | 34 | 45 | 33 | 11 | 25 | 4 | 28 |

* Preliminary state data

The HSP identified the following program areas as those that encompassed major traffic safety concerns that should be addressed with projects identified in the plan:

- **Emergency Medical Services:** Ensure appropriate response and treatment through a coordinated system of emergency medical care for persons injured in roadway crashes.
- **Impaired Driving:** Remove alcohol- and other drug-impaired drivers from the roads.
- **Motorcycle, Motor Scooter, and Moped Safety:** To conduct rider safety education programs, as well as increase driver awareness of sharing the road safely with riders.
- **Occupant Protection:** To increase safety belt and child safety seat use and promote the benefits of automatic protection devices, such as air bags.

- **Pedestrian and Bicycle Safety:** To increase safety awareness and decrease dangerous behaviors among drivers, pedestrians, and bicyclists.
- **Selective Traffic Enforcement Programs (includes Distracted Driving, Speed Management, Police Traffic Services)**
 - **Distracted Driving:** To increase awareness and compliance with the existing handheld mobile electronic devices (MED) law (or distract driving law).
 - **Speed Management:** Through education and enforcement, ensure drivers travel at safe speeds and comply with posted speed limits.
 - **Police Traffic Services:** To improve investigative techniques and reduce the amount of time it takes to investigate a crash scene.
- **Traffic Records:** To support record systems that aid in identifying existing and emerging traffic safety problems and evaluate program performance.

1.3.5 Strategies or Projects to Address Safety Issues

The following program areas are the most critical problem areas in traffic safety in the State, and projects addressing these areas would receive higher priority:

- Programs to reduce impaired driving;
- Programs to reduce speeding, especially aggressive driving and excessive speeding;
- Programs to reduce pedestrian injuries and fatalities;
- Programs to increase the use of seat belts and child restraints;
- Programs to reduce motorcycle, motor scooter, and moped crashes;
- Programs to enforce traffic laws in the areas of speed, occupant protection, impaired driving, and distracted driving; and
- Programs to improve data and Hawai'i's traffic records system.

Emergency Medical Services Countermeasure #1: Equipment

- Planned Activity #1: Steel Cribbing – HFD will purchase 35 pairs of steel collapsible step cribbing. These work with the extrication kits that were purchased in previous years.
- Planned Activity #2: Extrication Equipment – To purchase one cordless extrication equipment set for the Maui County Fire Department. The equipment will reduce the amount of time it takes to safely extricate crash victims from motor vehicles.

Emergency Medical Services Countermeasure #2: Program Management

- Planned Activity #1: EMS Program Management – Cover program operations costs, including reporting, monitoring, technical assistance, and development of plans and applications for EMS Management grants; cover the salary for the EMS Management Program Manager; and cover any EMS related training and travel to further the goals and strategies of the HSP and Hawai'i SHSP.

Impaired Driving Countermeasure #1: Improve Impaired Driving Data

- Planned Activity #1: Learn from the Courts - Monitor, document, and enter data for alcohol- and drug-impaired driving cases in district courts and circuit courts; work with a contractor to create

a data dashboard for Honolulu's DWI court; and work with a contractor to conduct an evaluation of Honolulu's DWI court.

- Planned Activity #2: Attitudinal/Behavioral Survey – Hire a consultant to conduct multiple, statewide traffic safety attitudinal/behavioral surveys to measure the communities' attitudes and behaviors as they relate to alcohol- and drug-impaired driving and other program areas.
- Planned Activity #3: DRE Tablets – Purchase cellular service for the tablets and necessary tools for data entry of Drug Recognition Experts (DRE) evaluations, such as stylus pens.

Impaired Driving Countermeasure #2: Promote Safer Road Users

- Planned Activity #1: Enforcement –
 - Conduct impaired driving operations that include sobriety checkpoints and saturation patrols year-round and during specific holidays and time periods
 - Conduct youth deterrence operations targeting alcohol and drug use
 - Participate in local and national impaired driving mobilizations, including the “Drive Sober or Get Pulled Over” campaign
 - Purchase breath testing devices and other items to enhance impaired driving enforcement efforts (e.g., preliminary alcohol screening devices, power flares, DUI warning signs, etc.)
 - Develop and implement electronic search warrants for impaired driving cases
 - Send representatives to local and national trainings and conferences [DRE School, Advanced Roadside Impaired Driving Enforcement (ARIDE) trainings, DRE in-service training, DRE conference, Borkenstein Alcohol Course, Borkenstein Drug Course, Intoxilyzer Supervisor Training, Intoxilyzer Users Group Conference, Lifesavers Conference, etc.]
 - Send representatives to impaired driving meetings.
- Planned Activity #2: Prosecution & Adjudication –
 - Continue Honolulu's DWI Court
 - Coordinate a statewide training for district court judges
 - Cover costs for a deputy prosecutor conducting TSRP duties
 - Coordinate a statewide training for prosecutors and law enforcement officers
 - Send representatives to local and national trainings and conferences
 - Cover related travel and training costs
- Planned Activity #3: Toxicology –
 - Contract lab personnel
 - Purchase lab supplies such as reagents; solvents; glassware; compressed gases; top loader balance; pH meter; freezers and refrigerators for storage of specimens; solvent/corrosive cabinets; deionizer water; cleaning supplies (brushes, detergents); performance evaluation samples; etc.
 - Purchase testing instruments and equipment

- Develop the Laboratory Information Management System (LIMS) software that will be used to track specimens for chain of custody
- Cover lab accreditation and certification costs; and
- Cover related travel and training costs.
- **Planned Activity #4: Education/Communications –**
 - Contract an impaired driving coordinator and community liaison
 - Coordinate and implement an impaired driving media campaign
 - Work with partners to coordinate and conduct education, community outreach and sign waving events, and
 - Purchase related materials for community outreach (informational display boards; signs and banners for sign waving; etc.

Impaired Driving Countermeasure #3: Create Safer Roads

- **Planned Activity #1: Collaboration with Engineering –**
 - Coordinate and host the statewide Traffic Commanders meetings
 - Cover travel-related expenses to attend the Traffic Commanders meetings
 - Support joint enforcement and engineering training
 - Cover related meeting costs (meeting room rental, parking, audio-visual, internet, flipcharts, etc.)

Impaired Driving Countermeasure #4: Leverage Safer Vehicles

- **Planned Activity #1: Promote Use of Ignition Interlock –** Provide training on the ignition interlock devices (IID) statutes and the effectiveness of IID and create educational materials to supplement IID educational and enforcement efforts.

Impaired Driving Countermeasure #5: Program Management

- **Planned Activity #1: Impaired Driving Program Management -**
 - Cover program operation costs, including reporting, monitoring, technical assistance and development of plans and applications for Impaired Driving grants
 - Coordinate statewide impaired driving campaigns
 - Collaborate with communities and build partnerships
 - Collaborate with partners who can influence road user behaviors and stakeholder actions that impact traffic safety
 - Coordinate and host impaired driving meetings, including the Hawai'i Impaired Driving Task Force and the Hawai'i Drug and Alcohol Intoxicated Driving Working Group
 - Coordinate and host trainings, such as the DRE in-service training
 - Cover staff salary for the Impaired Driving program area
 - Cover related meeting/training costs (meeting room rental, parking, audio-visual, internet, flipcharts, etc.)

- Cover any impaired driving-related training and travel to further the goals and strategies of the HSP, Hawai'i SHSP, Hawai'i Impaired Driving Strategic Plan and Hawai'i DUID Blueprint.

Motorcycle Safety Countermeasure #1: Communication and Outreach

- Planned Activity #1: Media Purchase – HDOT will use grant funds to support the motorcycle rider training program, create awareness of motorcyclists on the roadways and focus on motorcyclist behaviors through media outreach, which may include but not be limited to radio, television, social media, and movie theaters.

Motorcycle Safety Countermeasure #2: Program Management

- Planned Activity #1: Motorcycle Safety Program Management – HDOT will use grant funds to manage the motorcycle safety campaign's communication and outreach.

Occupant Protection Countermeasure #1: Child Restraint Programs

- Planned Activity #1: Child Restrain Programs –
 - Continue to conduct virtual and in-person community car seat checks and inspections throughout the State as well as provide in-service educational sessions within medical centers and training sessions with select retailers that sell car seats. These will continue to be held statewide to ensure that all four counties have access to these services. Continued car seat checks are planned for the more rural and under privileged segments of the population. All four counties will conduct special events in support of the national CPS Week in September. These will all be attended by multiple nationally certified CPS Technicians.
 - New instructors will be trained and certified as well as recertify current instructors on all four counties so as to ensure that each county has enough CPS seat techs to be able to address the needs of their counties. Logistical support and working lunches for the CPS Instructor/Technician updates should the training take place where food is not easily accessible so that they may do working lunches.

Occupant Protection Countermeasure #2: Occupant Protection/CPS Media Campaign

- Planned Activity #1: HDOT CIOT/CPS Media Outreach and Campaigns -
 - Conduct a statewide media and educational campaign, including during the National CIOT mobilization May 15 through June 4, 2023 and Child Passenger Safety Week during the week of September 17 through September 23, 2023 to raise the public's awareness about the dangers of not buckling up, as well as to remind drivers that police are enforcing Hawai'i's universal seat belt and child safety seat laws year-round
 - Purchase paid media in traditional and non-traditional (social media, movie theaters, etc.) platforms
 - Printing and distribution of the new collateral to support outreach to increase awareness of the new child safety rules as well as support the Click It or Ticket initiatives.

Occupant Protection Countermeasure #3: Occupant Protection/CPS Enforcement

- Planned Activity #1: Occupant Protection Enforcement –
 - Provide safety talks/presentations/community events

- Distribute informational collateral at community events
- Work with their respective radio stations for interviews
- Work with their respective newspaper agencies for news articles
- Train officers to be certified child safety seat technicians

Occupant Protection Countermeasure #4: Program Management

- Planned Activity #1: OP Program Management –
 - Cover program operations costs, including reporting, monitoring, technical assistance and development of plans and applications for Occupant Protection grants
 - Coordinate statewide Click It or Ticket (CIOT) and Child Passenger Safety (CPS) campaigns
 - Cover the salary for the Occupant Protection Management Program Manager
 - Cover any Occupant Protection training and travel to further the goals and strategies of the HSP and Hawai'i SHSP

Non-Motorized Countermeasure #1: Education

- Planned Activity #1: DTS Pedestrian Safety Education
 - Conduct traffic safety education programs such as Be Safe Be Seen Halloween safety program, senior events and fairs, and summer fun programs
 - Print and distribute pedestrian safety tip booklets
 - Purchase visibility safety devices and print more Drive Wise and Walk Wise brochures
 - Send two representatives to the annual Lifesavers Conference

Non-Motorized Countermeasure #2: Pedestrian Safety Outreach and Media

- Planned Activity #1: HDOT Pedestrian Safety Outreach and Communications
 - Conduct statewide pedestrian safety presentations
 - Purchase and/or print related materials (e.g., posters, brochures, pledge cards) for distribution at community events
 - Services to track earned media coverage
 - Related training, travel, and equipment purchases

Non-Motorized Countermeasure #3: Enforcement and Outreach

- Planned Activity #1: Pedestrian and Bicycle Enforcement
 - Conduct at least two public education events quarterly to bring awareness about pedestrian safety to the community utilizing federally funded overtime; conduct at least half of the pedestrian safety operations during the State of Hawai'i Pedestrian Safety Month
 - Conduct bicycle engagement activities on State and County roadways where bicycle fatalities have occurred, and in high volume traffic areas and/or problem areas as identified and determined by statistical data where available.

Non-Motorized Countermeasure #4: Program Management

- Planned Activity #1: Pedestrian Safety Program Management
 - Cover program operations costs, including reporting, monitoring, technical assistance and development of plans and applications for Non-Motorized Management grants.
 - Coordinate statewide pedestrian safety campaigns
 - Cover the salary for the Non-Motorized Management Program Manager
 - Cover any non-motorized-related training and travel to further the goals and strategies of the HSP and Hawai'i SHSP.

Planning & Administration Countermeasure #1: Program and Administration

- Planned Activity #1: Program Administration
 - Funding operating costs such as: staff salaries, including for the Highway Safety Manager; travel-related costs for program management; and training expenses related to program management.
- Planned Activity #2: Fiscal Coordinator
 - Process sub-recipient reimbursement requests
 - Process HDOT reimbursements
 - Assist with administrative duties, including general correspondence, maintaining database and files of sub-recipients
 - Ensure compliance with federal and state regulations and procedures

Selective Traffic Enforcement Programs Countermeasure #1: Safe Users & Safe Speeds Enforcement and Engagement

- Planned Activity #1: Distracted Driving Enforcement and Engagement
 - Conduct year-round overtime enforcement of Hawai'i's MED law by actively seeking drivers using cell phones through special roving patrols, or through spotter techniques where a stationary officer will radio ahead to another officer once a driver is detected as using a cell phone.
 - Conduct HVE overtime enforcement during April's National Distracted Driving Awareness Month and participate in NHTSA's Connect to Disconnect campaign
 - Conduct educational media and community outreach activities such as the following:
 - Purchase traffic safety-related signs for sign-waving
 - Provide safety talks/presentations
 - Distribute informational collateral at community events
 - Conduct a distracted driving game at community events
 - Work with respective radio stations for interviews
 - Produce a public service announcement (PSA)
 - Work with respective newspaper agencies for news articles
- Planned Activity #2: Safe Speeds Speed Management Enforcement and Engagement

- Conduct year-round speed management operations in areas where speeding is a problem and speed-related crashes are known to occur, based on data sources including crash analysis, geocoded crashes, speed measurements from Stealthstats, etc.
- Educate communities on the dangers of speeding
- Conduct related training, needed not only for certification/operation of the equipment, but to train other operators, as well as for successful prosecution
- Purchase radars, lasers, tint meters, and related items (batteries, etc.) to ensure officers are properly equipped to enforce speeding laws, for distribution to traffic enforcement units and patrol districts.

Selective Traffic Enforcement Programs Countermeasure #2: Post-Crash Care & Traffic Enforcement Services

- Planned Activity #1: Police Traffic Services Training
 - Host or attend the Institute of Police Technology and Management (IPTM) courses
 - Purchase related equipment such as Crash Data Reconstruction software update and vehicle connection cables; scanner software and maintenance subscriptions and support; and Crash Data Recorder hardware updates and tools to access/download vehicle data
 - Purchase related items such as:
 - Online subscription to analyze cell phone data recovered related to crash investigation
 - Online subscription to analyze cell phone records and data provided by cell phone providers in crash investigation
 - Photogrammetry software updates for professional drone mapping
 - Vehicle System Forensics program license renewal
 - Cloud-based software for managing traffic safety data, reporting, mapping and equipment
 - Data license renewal software to download phone data in the field
 - At scene lighting for large scenes
 - Inclinometers to measure slopes and angles of skids
 - Faraday bags to hold cell phones.
- Planned Activity #2: Law Enforcement Liaison
 - Contract a Law Enforcement Liaison to oversee Hawai'i's ignition interlock program and provide a law enforcement expertise as needed.

Selective Traffic Enforcement Programs Countermeasure #3: Safe Users Communications Program

- Planned Activity #1: Distracted Driving Communication Program
 - Conduct a statewide media and educational campaign, including during National Distracted Driving Awareness Month in April, to raise the public's awareness about the dangers of distracted driving, as well as to remind drivers that police are enforcing Hawai'i's MED law year-round

- Purchase paid media in traditional and non-traditional (social media, movie theaters, etc.) platforms
- Hire a contractor to conduct an educational awareness campaign, as needed
- Produce a public service announcement, as needed.
- **Planned Activity #2: Speed Management Communication Program**
 - Conduct a statewide media and educational campaign to inform the public about the dangers of speeding, as well as remind drivers to slow down
 - Purchase paid media in traditional and non-traditional (social media, movie theaters, etc.) platforms
 - Hire a contractor to conduct an educational awareness campaign, as needed
 - Produce a public service announcement, as needed.

Selective Traffic Enforcement Programs Countermeasure #4: STEP Program Management

- **Planned Activity #1: HDOT Traffic Branch – Traffic Safety**
 - Cover website and online database fees for Hawai'i to comply with federal requirements for updating its SHSP under the HSIP, 23 U.S.C. 148, which requires States to have an updated approved SHSP
 - Cover travel-related costs for representatives to attend traffic safety meetings on O'ahu
 - Cover room rental costs for traffic safety meetings
 - Cover out-of-state travel-related costs for representatives to attend the Lifesavers Conference.
- **Planned Activity #2: STEP Program Management**
 - Cover program operations costs, including reporting, monitoring, technical assistance, and development of plans and applications for STEP grants
 - Coordinate statewide Distracted Driving and Speed Management Communication campaigns
 - Cover the salary for the STEP Program Manager
 - Purchase distracted driving simulator to be used during community outreach events
 - Cover any related training and travel to further the goals and strategies of the HSP and Hawai'i SHSP

Traffic Records Countermeasure #1: Improve the State's Traffic Records System

- **Planned Activity #1: eCitations**
 - Subcontract and work with the vendor to issue electronic citation equipment to officers in the field
 - Subcontract and work with the vendor to update interfaces and user licenses for the Departments of the Prosecuting Attorney in Maui County and the City and County of Honolulu; MPD; HPD; and the Judiciary to access the eCitation system
 - Subcontract and continue working with the vendor to develop software for the eCitation program to run on Sonim mobile phone devices via a web-connected browser

- Ensure that vehicle registration and driver's license information is scanning correctly and auto-populating the eCitations
- Continue to evaluate and make adjustments to the eCitation pilot projects on Maui and O'ahu.
- **Planned Activity #2: Upgrade of Crash Reporting System/Electronic Transfer of Crash Records**
 - Subcontract and work with the consultant to continue to develop and build the new SHACA system
 - Cover travel-related costs for HDOT representatives to travel to Hawai'i County, Maui County, and Kaua'i County to meet with the police departments' traffic divisions and IT divisions on SHACA/HIGLS development and issues
 - Work together to create interfaces between the police departments and SHACA
 - Subcontract with HCPD, KPD, MPD, and HPD's RMS vendors to incorporate and implement HIGLS
 - Purchase an upgrade to HCPD's crash data diagramming software
 - Purchase a laptop and printer for HCPD to collect, input, and analyze data
 - Work with traffic safety partners to identify data analysis needs
- **Planned Activity #3: HTRCC Meetings**
 - Cover travel-related costs for neighbor island HTRCC members to attend and participate in the HTRCC and eCitation Subcommittee meetings on O'ahu.
- **Planned Activity #4: FARS Analyst**
 - Cover the salary and travel-related costs for the FARS Analyst to attend related training, supplementing FARS funding.
- **Planned Activity #5: Traffic Records Forum**
 - Cover travel-related costs to attend the International Forum on Traffic Records and Highway Information Systems on the mainland or registration costs if the conference is offered virtually

Traffic Records Countermeasure #2: Traffic Records Program Management

- **Planned Activity #1: Traffic Records Program Management**
 - Coordinate HTRCC and eCitation Subcommittee meetings (including covering meeting room rental and related expenses)
 - Cover the salary for the Traffic Records Coordinator
 - Cover program operations costs, including reporting, monitoring, technical assistance, and development of plans and applications for Traffic Records and data management grants
 - Cover any traffic records-related training and travel to further the goals and strategies of the HTRCC and the Hawai'i Traffic Safety Information Systems Strategic Plan

1.3.6 Application to the SHSP

The SHSP will build upon the performance measures and data, safety issues, and countermeasures identified in the 3HSP. Strategies and countermeasures in the SHSP will align with those identified in the HSP for non-infrastructure improvements.

1.4 Act 100 Performance Metrics (2024)

1.4.1 Purpose and Content

In 1999, Senate Bill No. 1518 was passed, which called for an act (Act 100) relating to government operations. Section 7 of Act 100 requires that every department and agency of the State shall submit to the legislature an annual report that addresses the following:

- Statement of goals, including what the department or agency hopes to accomplish both short and long term;
- Objectives and policies, specifically setting forth how each goal can and will be accomplished;
- An action plan with a timetable indicating how the established objectives and policies will be implemented in one, two, and five years; and
- The process that the department or agency will use to measure the performance of its programs and services in meeting the stated goals, objectives, and policies.

To meet these requirements and to be transparent and data-centric, HDOT Highways provides their Act 100 report online to demonstrate how the daily operations of HDOT Highways are driven by its stated goals, mission, and objectives. The most current Act 100 report is for the current year 2024.

1.4.2 Goals and Objectives

HDOT Highways has six goals, along with related objectives. The following goals and objectives are relevant to the SHSP update:

1. Improve Safety

- a. Objective 1: Reduce Fatalities and Serious Injuries on Hawaii's Highways and Bridges
- b. Objective 2: Reduce Fatalities and Serious Injuries of non-motorized modes

2. Multi-Modal Integration

- a. Objective 2: Improve Bicycle and Pedestrian Safety, Access, and Network Connectivity

1.4.3 Performance Monitoring and Measures

Under each goal, the following performance measures are identified to measure the progress toward meeting the goals and objectives:

1. Improve Safety

- a. Number of Motor Vehicle Fatalities
 - i. Targets and actual numbers from previous years:
 1. Target CY 2023: 0*; Actual: 95
 2. Target CY 2022: 0*; Actual: 116
 3. Target CY 2021: 103; Actual: 94
 4. Target CY 2020: 101; Actual: 86

**In accordance with national initiatives, the goal for fatalities is zero.*

- b. Number of Serious Injuries
 - i. Targets and actual numbers from previous years:
 - 1. Target CY 2023: 363; Actual: 512
 - 2. Target CY 2022: 427; Actual: 572
 - 3. Target CY 2021: 427; Actual: 510
 - 4. Target CY 2020: 401; Actual: 537

2. Multi-Modal Integration

- a. Statewide Raised Crosswalk Installations
 - i. 207 total installed from 2019 – 2024, with 28 current in-progress
- b. Percentage of Raised Crosswalks Near a School
 - i. 84% from 2019 – 2024
- c. Percentage of Reduced Speeding at Raised Crosswalks
 - i. 45% from 2019 – 2024
- d. Pedestrian Fatalities at Raised Crosswalks Since Installation
 - i. 0 pedestrian fatalities from 2019 - 2024
- e. Number of Safety Projects, Estimated Costs, and Project Status for projects identified in Bike Plan Hawai'i and the Statewide Pedestrian Master Plan
 - i. Bike Plan Hawai'i
 - 1. Number of Safety Projects as of 2024: 130
 - 2. Estimated Costs as of 2024: \$2,931,435,644
 - 3. Project Status as of 2024:
 - a. 2 improvements made
 - b. 21 projects in development
 - c. 107 projects not started
 - ii. Statewide Pedestrian Master Plan
 - 1. Number of Safety Projects as of 2024: 21
 - 2. Estimated Costs as of 2024: \$28,405,000
 - 3. Project Status as of 2024:
 - a. 16 improvements made
 - b. 2 projects in development
 - c. 3 projects not started

1.4.4 Strategies or Projects to Address Safety Issues

1. Improve Safety

- a. Infrastructure Projects:
 - i. Install 25 miles Milled Shoulder & Centerline Rumble Strips
 - ii. Install 150 miles of 6-Inch Edge Line
 - iii. Install 7 miles of new guardrail
 - iv. Install 1 miles of new median barrier
 - v. Perform High Friction Surface Treatment (HFST) at 8 locations
 - vi. Install 40 new raised crosswalks/speed table/speed hump
 - vii. Lower the posted speed limit for 3 miles of highway
 - viii. Install 2 new traffic signals
- b. Non-Infrastructure Projects:
 - i. Distracted Driving: Goal is to complete five non-infrastructure projects aimed at reducing distracted driving.
 - 1. Distracted driving projects include enforcement operations on all four counties and earned and paid media efforts statewide.
 - ii. Impaired Driving: Goal is to complete 15 non-infrastructure projects aimed at reducing impaired driving.
 - 1. Impaired Driving Projects include enforcement operations on all 4 counties, court monitoring program for Oahu District Courts, Media buys for national mobilizations, DWI court project, and laboratory services and drug and alcohol judiciary, law enforcement and prosecutor trainings.
 - iii. Motorcycle Safety: Goal is to complete 1 non-infrastructure project aimed at improving motorcycle safety.
 - 1. Statewide media campaign focusing on Motorcycle Safety and promoting the Basic Rider Course.
 - iv. Occupant Protection: Goal is to Complete 7 non-infrastructure projects aimed at improving occupant protection.
 - 1. Occupant Protection Projects include seat belt and child restraint enforcement on all four counties, statewide Child Passenger Safety Technician training and certification, child passenger safety seat inspections, and earned and paid media events around our national mobilization effort Click It or Ticket and Child Passenger Safety Week.
 - v. First Responder Projects: Goal is to Complete 1 non-infrastructure first responder project.
 - vi. Pedestrian and Bicycle Safety: Goal is to complete 3 non-infrastructure projects aimed at improving pedestrian and bicycle safety.
 - 1. Pedestrian and Bicycle Projects include Statewide Pedestrian Safety promotion with Walkwise and Drivewise, Honolulu Police Department School Law Enforcement Community Engagement effort, and Dept of Transportation Services School Walk Safe and Be Seen program.

- vii. Police Training: Goal is to complete 4 police trainings.
 - 1. County enforcement agency crash reconstruction and laser training.
- viii. Speed Enforcement: Goal is to complete 5 speed enforcement projects.
 - 1. Speed Enforcement Projects include enforcement operations on all 4 counties and earned and paid media efforts statewide.
- ix. Traffic Records: Goal is to complete 1 traffic records project.
 - 1. Maui Fire Department extrication equipment purchase
- x. New Projects: 4 Projects
 - 1. Our new projects include a new Move Over Campaign with Flagman, Inc, University of Hawaii Qualitative Research Project focusing on two underserved communities identified in the Triennial Highway Safety Plan, Hawaii Bicycling League e-bike video production and promotion, and our Statewide Traffic Records project (SHACA)

2. Multi-Modal Integration

- a. Actions for Achieving Objectives:
 - i. Continue to coordinate with District Offices and other HDOT Branches on project development and delivery for projects within the next five years.
 - ii. Conduct an inventory assessment of all HDOT bridges for bicycle and pedestrian infrastructure.
 - iii. Explore bicycle counting pilot project.
- b. Ongoing Program Actions
 - i. Project delivery: Continue to identify opportunities to implement bicycle and pedestrian improvements in larger Highways Division projects.
 - ii. Coordination: Continue to coordinate with bicycle and pedestrian stakeholder groups statewide.
 - iii. Data: Continue to identify gaps in data (and ways to resolve them) to inform the bicycle and pedestrian program, identify needs in the bicycle and pedestrian network, and accurately measure performance.
 - iv. Transparency: Continue to provide data, maps, plans, and information about the Bicycle and Pedestrian Program on dedicated web pages.

1.4.5 Application to the SHSP

The SHSP will ensure that the goals, objectives, and performance measures are aligned with those used by HDOT Highways on their annual Act 100 reporting.

1.5 Draft Hawai'i Statewide Transportation Plan (November 2022)

1.5.1 Purpose and Content

The Hawaii Statewide Transportation Plan (HSTP) is a policy document that establishes the framework to be used statewide in the planning of the transportation system and is updated approximately every 10 years. The plan was established by the Hawaii Revised Statutes, Chapter 279A, to do the following:

- Establish a comprehensive, multimodal statewide transportation planning process to develop coordinated transportation plans,
- Address the obligation of the statewide transportation system to clearly serve and address social, economic, and environmental objectives, and
- Provide a connection to and encourage coordination with the State's goals and other State agencies, such as the Department of Health, State Office of Planning, and Department of Business, Economic Development & Tourism.

1.5.2 Goals and Objectives

The HSTP has seven goals, along with related objectives. The goals were from 2011 HSTP but were developed to meet future challenges that the State of Hawaii faces. The following goals and objectives are relevant to the SHSP update:

1. Provide a safe and secure multimodal transportation system.
 - a. Objective 1: Eliminate transportation-related fatalities and serious injuries.
 - b. Objective 2: Protect against security threats to transportation system users and facilities.
2. Anticipate and adapt to climate change, storms, pandemics, and other disruptions.
 - a. Improve emergency preparedness, response, and evacuation.

1.5.3 Performance Monitoring and Measures

The HSTP recommends a performance-based planning approach as it applies principles of performance management to guide long-range transportation planning. Performance indicators were also recommended to all system plans and master plans in which various State of Hawaii Department of Transportation (HDOT) programs have already been tracking a variety of performance measures. The HSTP recommends the continuation of tracking performance and encourages more opportunities to monitor progress. It also recommends that divisions be stewards of these data, ensuring that it is well-maintained and accessible to decision-makers.

1.5.4 Identified Safety Issues

The HSTP implemented scenario planning to address a range of plausible futures and strategies that align with HDOT's goals. This plan identified emerging trends that have a potential implication on Hawaii's future transportation, which were pandemics, climate change, demographics, economics, development and land use, and emerging technologies.

Traffic safety related implications identified by the HSTP are the following:

1. Pandemics

- a) More personal auto use – Apprehension around transit and shared mobility could lead to more personal auto use.
- b) Reduced transportation revenues – Reduced travel across modes could lead to reduced revenue.

2. Climate Change

- a) Climate-related migration – As natural disasters and sea level rise impacts increase, those living in vulnerable locations such as low-lying islands, may migrate to Hawaii.
- b) Heightened need for emergency preparedness – Growing risks suggest an increased need for emergency response and evacuation systems.
- c) Growing health and transportation disparities – Vulnerable communities living in coastal areas may be hit the hardest in a climate crisis. These groups may find transportation less affordable in the future.
- d) Increasing infrastructure costs – Greater levels of investment will be required to mitigate and adapt to the impacts of climate change.

3. Demographics

- a) Growing travel demand – As the population increases, so does the need to travel, potentially resulting in higher levels of congestion. Additional capacity, more efficient use, and more frequent maintenance may be necessary.
- b) Transportation affordability – Increase in income inequality. Vulnerable communities may be priced out of housing close to desirable destination and experience greater housing and transportation needs.

4. Economy

- a) Tourism – Tourism is a massive economic engine that also generates significant revenue and vehicle-miles traveled (VMT). Continued growth in tourism also translates into more demand for airport and port capacity.

5. Development and Land Use

- a) Increasing travel time and costs – Increasing housing costs may displace low- and middle-income residents to outlying areas where commutes are longer, fewer options and services are available, and transportation costs are higher.

6. Technology

- a) Increased safety and mobility – Connected and autonomous vehicles, in particular, may increase safety on the road by reducing human driver error. However, new risks from mixing of older systems with automated vehicles on the same infrastructure, or from the potential for hacking, system failure, and other cybersecurity issues.
- b) Changes in how and where people live, work, and travel – This could have repercussions on congestion and increase or decrease VMT depending on how people chose to adapt their travel patterns.

- c) Equity concerns – New transportation technology has the potential to increase access and improve mobility for all, but consideration must be made for implementation of these technologies to ensure that vulnerable populations are not left out.

1.5.5 Strategies or Projects to Address Safety Issues

The safety-focused strategies under this goal encompass actions that address elimination of transportation-related fatalities and serious injuries through policy and program implementation.

1. Provide a safe and secure multimodal transportation system.
 - a. Establish policy or initiatives that lead to zero deaths and serious injuries.
 - i. Highways: Implement the HSHSP, prioritize safety through existing programs and integrate into projects, adopt Vision Zero policy, and ensure safety of all users is a high prioritization criterion of the Mid-Range Transportation Plan.
 - ii. Airports: Develop and implement Safety Management Systems.
 - iii. Harbors: Implement the Harbors Modernization Plan and include safety as an objective in the harbor master plans.
 - b. Develop and integrate safe infrastructure design strategies.
 - i. Highways: Create a Building Safer Roadways by Design and Safeguarding Pedestrians and Bicyclists emphasis area through the HSHSP and ensure consideration of vulnerable users when implement projects.
 - ii. Airports: Maintain and update airfield safety requirements to meet updated Federal Aviation Administration standards and integrate safety-related objectives into airports' planning and design efforts.
 - iii. Harbors: Ensure harbors' master plans to support its mission, which includes safety as a goal and integrate safety-related objectives into harbors' planning and design efforts.
 - c. Identify and mitigate biosecurity, cybersecurity, and other risks to the transportation system.
 - i. Implement the Statewide Noxious Invasive Pest Program.
 - ii. Conduct interagency coordination with federal agencies, civil defense, military, and first responders.
 - iii. Partner with federal and state agencies and industry groups to assess and plan to mitigate biosecurity risk and respond accordingly.
 - d. Invest in cybersecurity through information technology improvements.
 - i. Highways: Invest in statewide Intelligent Transportation System (ITS) solutions.
 - ii. Upgrade security infrastructure such as closed-circuit television, security cameras, and other technology on the multimodal transportation system.

1.5.6 Application to the SHSP

The SHSP will ensure that the goals, objectives, and strategies are aligned with those presented in the HSTP.

1.6 Statewide Federal-Aid Highways 2035 Transportation Plan (2014)

1.6.1 Purpose and Content

This plan is Hawaii's first statewide, long-range multimodal land transportation plan for its federal-aid highways. This plan provides a comprehensive assessment of Hawaii's land transportation needs and a basis for policymakers to make informed land transportation decisions through the year 2035. It defines goals, needs, offers potential solutions, and establishes priorities for the utilization of the state's limited resources.

1.6.2 Goals and Objectives

The Statewide Federal-Aid Highways Transportation Plan aligned its goals with the Moving Ahead for Progress in the 21st Century Act (MAP-21) and its traffic safety related goals and objectives are the following.

1. Modal Integration

- a) Provide a Complete Streets transportation system of motorized and nonmotorized options.
 - i. Create transportation facilities for all modes of travel promoting a well-connected systemwide network for travel.
 - ii. Promote education and understanding of the benefits of bicycling and walking and laws applicable to each group.
- b) Promote efficient travel between modes by creating connections and removing barriers.
 - i. Promote design and development of complete integrated multimodal street systems for all users of all ages and abilities.
 - ii. Encourage transportation infrastructure and transportation service concurrency with land development.
- c) Promote safe connections between modal alternatives.
 - i. Promote modal options that address safety considerations of all users, especially at-risk population.

2. System Preservation

- a) Manage transportation assets and optimize investments.
 - i. Optimize existing transportation system improvements through maintenance, resurfacing, rehabilitation, and reconstruction.
- b) Maintain safe, efficient, complete transportation system for the long term.
 - i. Plan and implement existing system improvements to maintain transportation's system safe, efficient, and complete operations.

3. Security

- a) Further transportation system that supports evacuation, response, and recovery for incidents.
 - i. Reduce travel time during incident responses.
 - ii. Improve incident detection and response capabilities, including access and air and sea modal connections.

- iii. Promote coordination with various agencies to improve planning and execution phases of an incident response.
- iv. Provide adequate facilities and capacity for emergency response.
- v. Improve flow of information to the traveling public.
- b) Improve resiliency of the state through the transportation system.
 - i. Plan and design for transportation system to promote efficient and effective connectivity for communities during recovery periods.

4. Transportation Access Mobility

- a) Provide appropriate and reliable transportation access options statewide to all users.
 - i. Support modal alternatives for all demographics.
- b) Ensures transportation investments in programs and prioritization processes are balanced.
 - i. Prioritize projects equitably to serve all modes and demographics.

5. Safety

- a) Maintain a safe transportation system for all land transportation modes.
 - i. Address transportation through education, enforcement, and engineering solutions.
 - ii. Reduce the number of traffic related fatalities.
 - iii. Reduce the number of collisions and crashes involving serious injuries and fatalities for all land transportation modes.
- b) Improve safety of the community through connectivity of the transportation infrastructure.
 - i. Provide emergency access to all parts of the state, especially in locations with only one road in and out.

1.6.3 Performance Monitoring and Measures

Similar to its goals and objectives, the plan also aligned its performance measures with the MAP-21 and the following are its traffic safety related performance measures:

- Modal integration – expand transportation options and make connections between modes.
- System Preservation – maintain a regular schedule of rehabilitation, reconstruction, and replacement to maintain a safe and efficient multimodal system
- Security – Coordinate between all agencies to achieve common goals of risk management, incident detection, response, clearance, and preparation and recovery from disasters.
-
- Transportation Access Mobility – enhance both infrastructure and services to improve mobility, consistency, and equity.
- Safety – Reduce fatalities and serious injuries on all public roads through engineering, education, and enforcement programs and campaigns.

These performance measures are tools that can assess roadway system performance. Once implemented, projects should evaluate the results to address needs and deficiencies. A set of predetermined performance goals or targets should also be set to evaluate how well a particular project is performing. Should the results not be met, changes to the approach could be made to meet the performance measures set for the project. Ongoing tracking of system performance would provide valuable information to guide future planning for evolving needs.

1.6.4 Identified Safety Issues

Relevant plans and policies, as well as existing and future socioeconomic characteristics, land transportation network operating conditions, and travel demands, were reviewed, identifying deficiencies to existing roadways. An increase in vehicular volumes in all regions is anticipated as land uses are developed and population and employment opportunities increase. In addition, increases in traffic would result in greater demand on the state's roadway infrastructure and higher levels of congestion, which result in poorer operating conditions.

1.6.5 Strategies or Projects to Address Safety Issues

Ensuring consistency in the long-term vision of the State of Hawaii's land transportation system is vital. It is important to improve coordination between jurisdictions, existing programs, and overarching master plans to target the highest priority needs. The plan identifies the following existing implementation programs in which the state and districts can utilize to address the high-concern areas.

- System Preservation – This provides regular maintenance of transportation facilities such as pavement resurfacing and rehabilitation, bridge replacement and rehabilitation, drainage improvements, erosion control and runoff protection, and sidewalk and bicycle facility repair.
- Capacity Program – This supports capacity needs for all modes of land transportation. The type of projects implemented by this program include roadway widening, new roadway connections, bridges, and pedestrian and bicycle facilities.
- Congestion Program – This manages and optimizes the performance of the current transportation facilities to improve mobility, reliability, and predictability of travel. Typical projects include traffic signal upgrades and optimization, and intersection improvements.
- Safety Program – This provides funding for safety related education and public outreach programs. It is also responsible for roadway and infrastructure improvements to reduce the severity and number of crashes in areas characterized by high-accident occurrences. Typical projects include guardrail and shoulder improvements, rockfall and slope stabilization, shoreline erosion protection, retaining walls, improvements to pedestrian and bicycle facilities, and highway lighting.

1.6.6 Application to the SHSP

Statewide LRLTP's safety related goals, objectives and strategies will be referenced and aligned with as the SHSP Emphasis Areas are updated.

1.7 Federal-Aid Highways 2035 Transportation Plan (District of Hawai'i Island and District of Kaua'i) (2014)

1.7.1 Purpose and Content

The Hawai'i Island and Kauai Long-Range Land Transportation Plan (LRLTP) was developed in 1998 and updated in 2014. This plan provides a framework for guiding land transportation decisions for the federal-aid highway network on Hawai'i Island and Kauai through Year 2035. It defines goals, needs, and recommendations for multimodal solutions specific to the respective island for which project prioritization and funding can be developed.

1.7.2 Goals and Objectives

Several goals were identified for Hawai'i Island and Kauai land transportation system that carried more weight than others based on the community's values and priorities:

- Improve capacity and system efficiency by addressing congestion

- Maintain and improve safety for all modes
- Expand and increase Hawai'i Island's economic vitality
- Preserve and maintain the existing transportation system
- Provide modal integration and improve transit service
- Support evacuation and emergency access/egress during incidents

1.7.3 Performance Monitoring and Measures

To evaluate performance, the LRLTP recommends monitoring that particular project and measure results against a set of predetermined performance goals or targets. If targets are not met, further changes should be investigated to continue striving towards the goal. Ongoing tracking of system performance would provide valuable information to guide future planning for evolving needs.

1.7.4 Identified Safety Issues

Relevant plans and policies, as well as existing and future socioeconomic characteristics, land transportation network operating conditions, and travel demands, were reviewed, identifying deficiencies to highway safety and traffic flow.

1.7.5 Strategies or Projects to Address Safety Issues

The Hawai'i and Kauai LRLTP outlines road expansion, safety improvements, integration of multimodal facilities, and maintenance of overall transportation system to meet the existing and future demands and achieve the transportation goals of Hawai'i Island and Kauai. The safety related recommendations from the plan are the following:

- Capacity Projects – Developing solutions such as additional lanes to existing roadways and alternate circulation options could address congestion deficiencies.
- Safety Projects
 - Slope and hillside stabilization to prevent rockslides.
 - Rockfall protection to prevent erosion and may serve as a protection against road failures.
 - Investigating current speed limits.
 - Educational / enforcement campaigns.
- System Preservation and Maintenance Projects
 - Maintain overall operations of the transportation system.
 - Pavement resurfacing, rehabilitation, or reconstruction.
 - Bridge replacement or rehabilitation.
 - Vegetation clearing.
- Security and Resiliency Projects
 - Improve existing infrastructure to provide reliable operations during natural disasters.
 - Improve and maintain roadways to provide continual emergency access due to limited availability of parallel or alternate routes.

1.7.6 Application to the SHSP

The *Hawai'i Island and Kauai LRLTP's* safety related goals, objectives and strategies will be referenced and aligned with as the SHSP Emphasis Areas are updated.

1.8 Hawai'i Commercial Vehicle Safety Plan FY 2023

1.8.1 Purpose and Content

The Motor Carrier Safety Assistance Program (MCSAP) is a Federal grant program that provides financial assistance to States to help reduce the number and severity of accidents and hazardous materials incidents involving commercial motor vehicles (CMV). The goal of the program is to reduce CMV-involved crashes, fatalities, and injuries through effective CMV safety programs. To apply for MCSAP grant funding, the HDOT, Highways, Motor Vehicle Safety Office must submit a Commercial Vehicle Safety Plan (CVSP) annually in accordance with the provisions of 49 CFR 350.201 and 205.

The CVSP is a performance-based plan that outlines the State's CMV safety objectives, strategies, activities, and performance measures.



HAWAII

Commercial Vehicle Safety Plan

Federal Motor Carrier Safety Administration's
Motor Carrier Safety Assistance Program

Fiscal Years 2022 - 2024
Annual Update FY 2023

Date of Approval: June 07, 2023

FINAL CVSP



Page 3 of 60

Last updated on 11/20/2023 11:45:11 AM

1.8.2 Goals and Objectives

HDOT's mission for administering the CVSP is to "continue to reduce the number of commercial vehicle crashes, fatalities and injuries and incidents of hazardous materials on our highways and strive to keep Hawaii's roadways safe for everyone. We continue to evaluate our operations to maximize the outcome and ensure that we are moving towards our main goal of saving lives."

The goal of HDOT's Motor Vehicle Safety Office is to remain under the national rate of 0.161 fatalities per 100 million vehicle miles traveled (VMT) and to continue to reduce the number of crashes of commercial vehicles to 154 by 2024. The goal for motorcoach/passenger carrier crashes was to reduce the number of crashes from 65 in 2022 to 59 in 2024.

For roadside inspections, the goal for FY 2023 was to conduct the following:

| Roadside Inspection Types | Projected Goals for FY 2023 | | | |
|--------------------------------|-----------------------------|------------|------------|-------------|
| | Non-HAZMAT | HAZMAT | Passenger | Total |
| Level 1: Full | 860 | 90 | 200 | 1150 |
| Level 2: Walk-Around | 740 | 230 | 100 | 1070 |
| Level 3: Driver-Only | 1100 | 180 | 140 | 1420 |
| Level 4: Special Inspections | 200 | 10 | 0 | 210 |
| Level 5: Vehicle-Only | 25 | 25 | 100 | 150 |
| Level 6: Radioactive Materials | 0 | 0 | 0 | 0 |
| Total | 2925 | 535 | 540 | 4000 |

For seat belt usage, the goal was to increase the 2021 CMV drivers' seat belt usage of 79.75% by 7.5% usage by 2021, with an annual increase of 4.89% per year. Projected goal of 84.64% usage by FY 2024. Seat belt usage rate among CMV drivers in 2018 was 74.93%, 2019 was 75.26%, 2020 was 74.93%, and in 2021 was 79.75% (Source: Hawai'i Seat Belt Usage Survey).

1.8.3 Performance Monitoring and Measures

The State's fatality rate has remained under the Federal Motor Carrier Safety Administration's (FMCSA) national fatality rate of 0.138 fatalities per 100 million VMT since 2014.

The following tables provide the performance for CMV crashes, motorcoach/passenger carrier crashes, and hazardous materials (HAZMAT) crashes that involved a release/spill of HAZMAT. Completed data for 2021 and 2022 was unavailable in the FY 2023 CVSP, however only the number of reportable CMV crashes was provided.

| CMV Crash Performance | | | |
|-----------------------|----------------------|-----------------------------------|--------------------------------------|
| Year | Number of Fatalities | Number of Reportable Crashes Goal | Number of Reportable Crashes Outcome |
| 2013 | 8 | 179 | 181 |
| 2014 | 10 | 170 | 180 |
| 2015 | 7 | 161 | 182 |
| 2016 | 9 | 153 | 166 |
| 2017 | 11 | 164 | 147 |
| 2018 | 8 | 162 | 147 |
| 2019 | 4 | 142 | 236 |
| 2020 | 9 | 200 | 159 |
| 2021 | | 137 | |

| Motorcoach/Passenger Carrier Crash Performance | | | |
|------------------------------------------------|----------------------|-----------------------------------|--------------------------------------|
| Year | Number of Fatalities | Number of Reportable Crashes Goal | Number of Reportable Crashes Outcome |
| 2013 | 1 | 80 | 81 |
| 2014 | 4 | 77 | 94 |
| 2015 | 0 | 74 | 88 |
| 2016 | 1 | 71 | 77 |
| 2017 | 1 | 76 | 61 |
| 2018 | 1 | 74 | 47 |
| 2019 | 1 | 62 | 97 |
| 2020 | 1 | 58 | 44 |
| 2021 | | 58 | |

HAZMAT crashes involve a release/spill of HAZMAT that is part of the manifested load (does not include fuel spilled from ruptured CMV fuel tanks as a result of the crash).

| HAZMAT Crash Involving HAZMAT Release/Spill Performance | | | |
|---------------------------------------------------------|----------------------|-----------------------------------|--------------------------------------|
| Year | Number of Fatalities | Number of Reportable Crashes Goal | Number of Reportable Crashes Outcome |
| 2013 | 1 | N/A | 1 |
| 2014 | 0 | N/A | 0 |
| 2015 | 0 | N/A | 0 |
| 2016 | 0 | N/A | 0 |
| 2017 | 1 | N/A | 1 |
| 2018 | 3 | N/A | 4 |
| 2019 | 0 | N/A | 4 |
| 2020 | 0 | N/A | 1 |

| Roadside Inspection Types | Number of Inspections Conducted | | | | |
|--------------------------------|---------------------------------|-------------|-------------|-------------|-------------|
| | 2016 | 2017 | 2018 | 2019 | 2020 |
| Level 1: Full | 1631 | 1402 | 1625 | 2125 | 1815 |
| Level 2: Walk-Around | 422 | 295 | 279 | 572 | 326 |
| Level 3: Driver-Only | 778 | 1021 | 1066 | 1291 | 952 |
| Level 4: Special Inspections | 150 | 88 | 132 | 76 | 54 |
| Level 5: Vehicle-Only | 642 | 584 | 598 | 257 | 56 |
| Level 6: Radioactive Materials | 0 | 0 | 0 | 0 | 0 |
| Total | 3623 | 3390 | 3700 | 4321 | 3203 |

| Year | Number of Documented CMV Traffic Enforcement Stops with an Inspection | Number of Citations and Warnings Issued |
|------|-----------------------------------------------------------------------|-----------------------------------------|
| 2013 | 0 | 0 |
| 2014 | 15 | 48 |
| 2015 | 8 | 29 |
| 2016 | 15 | 48 |
| 2017 | 0 | 0 |

| Year | Number of Documented CMV Traffic Enforcement Stops with an Inspection | Number of Citations and Warnings Issued |
|------|-----------------------------------------------------------------------|-----------------------------------------|
| 2018 | 0 | 0 |
| 2019 | 0 | 0 |
| 2020 | 0 | 0 |

| Public Education and Outreach Activities | Year | | | | |
|------------------------------------------|------|------|------|------|------|
| | 2016 | 2017 | 2018 | 2019 | 2020 |
| Carrier Safety Talks | 139 | 173 | 266 | 205 | 205 |
| CMV Safety Belt Education and Outreach | 8 | 8 | 8 | 8 | 8 |
| State Trucking Association Meetings | 0 | 0 | 0 | 1 | 1 |
| State-Sponsored Outreach Events | 4 | 4 | 3 | 4 | 4 |
| Local Educational Safety Events | 0 | 0 | 0 | 0 | 0 |
| Teen Safety Events | 0 | 0 | 0 | 0 | 0 |

1.8.4 Identified Safety Issues

The CVSP identified the following difficulties and obstacles in achieving the goals for CMV and motorcoach/passenger carrier crashes:

- Shortage of personnel to conduct CMV inspections and enforcement as well as high staff turnover rates
- COVID-19 pandemic – put a hold on most operations and required the acquisition of personal protective equipment as well as the establishment of safety protocols
- Availability of safe locations to conduct roadside inspections – there is only one facility where vehicle inspections can be conducted safely
- A leading number of motorcoach/passenger carrier crashes involve buses from the City and County of Honolulu, which is not under HDOT jurisdiction

1.8.5 Strategies or Projects to Address Safety Issues

The following program activities for FY 2022 – 2024 were identified to address all CMV crashes:

- Five new motor carrier safety officers will be certified in conducting NAS Level 1, Hazardous Materials, Cargo Tank and Passenger Vehicle inspections

- Five vacant motor carrier safety officer positions will be recruited for, and training will be provided to certify them for NAS Level I, Hazardous Materials, Cargo Tank, and Passenger Vehicle inspections
- The MVSO will continue to reach out to county police officers to offer opportunities for CMV inspection certifications
- The State will schedule training with the National Training Center from October 2021 through June 2022 – the training will be provided in Hawai'i by instructors from the National Training Center
- Motor Carrier Safety Officers will maintain certifications of all levels of vehicle inspections and will conduct a total of 4,000 inspections per year – officers will target identified high crash areas and/or contributing factors each quarter and will conduct at least 100 inspections (25 per quarter) in the targeted area or contributing factor
- Inspectors will screen for Federal OOS orders and/or prohibited Drug and Alcohol Clearinghouse drivers by checking data through FMCSA Portal / CDLIS or Query Central during roadside inspections and take appropriate action – inspectors will observe driver behaviors and suspicious activities relating to human trafficking and take appropriate action.
- The MVSO will participate in CVSA sponsored activities (Operation Air Brake, Operation Safe Driver, Brake Safety Week, International Roadcheck events, etc.)
- The MVSO will work with county police officers and make job aids on basic CMV violations available to them for use in the field – MVSO officers will work with county police officers to focus enforcement on CMV speeding and other traffic and safety violations, and to issue citations
- Analyze crash data from Safetynet and A&I online quarterly and work with the Motor Carrier Safety Manager to identify high crash corridors and/or factors that may have contributed to the crashes

The following program activities for FY 2022 – 2024 were identified to address motorcoach/passenger carrier crashes:

- The Motor Vehicle Safety Office will participate in the two-week annual FMCSA National Passenger Carrier Strike Force Initiative by conducting inspections on passenger carrying vehicles, educational outreach activities, compliance reviews, and state audits on passenger carriers to increase safety awareness.
- Increase the number of Level I, II, and III inspections on motorcoaches and other passenger carrying vehicles at origin/destination sites and conduct unannounced Level V inspections at various passenger carriers to ensure vehicle safety compliance
 - During roadside inspections, citations will be issued to passenger carrier vehicles and/or drivers for critical safety violations found according to CVSA guidelines
- Conduct two compliance reviews on passenger carriers per year
- Analyze data from A&I online to address crash causation problem areas and utilize the FCMSA Portal to find carriers with high OOS rates

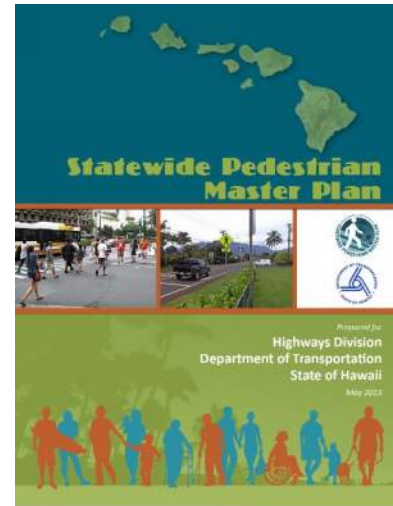
1.8.6 Application to the SHSP

The SHSP will consider incorporating the goals, objectives, performance measures, and strategies from the CVSP to address CMV-related fatalities and serious injury crashes. The CMV performance measures and strategies from the previous SHSP will be evaluated to determine if they should be carried forward in the new plan, and will also be assessed for alignment with those included in the CVSP.

1.9 Statewide Pedestrian Master Plan (HDOT Highways Division, 2013)

1.9.1 Purpose and Content

The *Statewide Pedestrian Master Plan* focuses on improving pedestrian safety on the state highways system statewide and evaluates ways to enhance pedestrian mobility and accessibility. It identifies the most critical needs of the statewide pedestrian system (including safety improvements or repairs), prioritizes projects and programs to address the needs, and provides strategies to implement the recommendations.



1.9.2 Goals and Objectives

The Pedestrian Master Plan includes seven goals and related objectives for the pedestrian system. Of the seven goals, there are three goals that are relevant to the SHSP update.

Goal 1: Improve Pedestrian Mobility and Accessibility

Objectives:

- Increase pedestrian activity.
- Encourage use of the Hawaii Pedestrian Toolbox.
- Implement projects along state highways to enhance mobility and accessibility.
- Improve maintenance of pedestrian facilities.

Goal 2: Improve Pedestrian Safety

Objectives:

- Reduce the number of crashes and fatalities involving pedestrians.
- Increase driver and pedestrian knowledge of laws, legal requirements, rights, and responsibilities.
- Modify driver and pedestrian behaviors to improve pedestrian safety.
- Use best practices for design and operation of all pedestrian crossings.

Goal 3: Improve Connectivity of the Pedestrian Network

Objectives:

- Support development of seamless and continuous pedestrian networks along state highways with connections to paths, walkways, trails, transit centers, rail stations, and other pedestrian facilities.
- Encourage pedestrian connectivity across jurisdictions.
- Support Safe Routes to School programs to encourage more students to walk to and from school.

1.9.3 Performance Monitoring and Measures

The Pedestrian Master Plan included performance measures for each of the goals and objectives of the plan. The following performance measures established for goals 1 – 3 are relevant to the SHSP:

| Goal 1: Improve Pedestrian Mobility and Accessibility | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective | Performance Measure |
| Encourage use of the Hawaii Pedestrian Toolbox | Provide training for agency staff and consultants on the Hawaii Pedestrian Toolbox |
| Improve maintenance of pedestrian facilities | Dollar amount spent on sidewalk repairs. |
| Goal 2: Improve Pedestrian Safety | |
| Objective | Performance Measure |
| Reduce the number of crashes and fatalities involving pedestrians. | Number of annual pedestrian crashes and fatalities |
| Increase driver and pedestrian knowledge of laws, legal requirements, rights, and responsibilities. | <ul style="list-style-type: none"> • Dollar amount spent on pedestrian safety educational programs sponsored or cosponsored by the HDOT • Number of public awareness campaigns related to pedestrian safety implemented each year • Hours of or number of pedestrian-related law enforcement stings implemented each year • Number of the HDOT bike/pedestrian staff per million people |
| Modify driver and pedestrian behaviors to improve pedestrian safety. | <ul style="list-style-type: none"> • Existence of laws protecting pedestrian right-of-way in crosswalks • Number of driver's test questions on pedestrians and information on pedestrians in the Hawaii Driver's Manual • Number of police citations for pedestrian-related violations |
| Use best practices for design and operation of all pedestrian crossings. | <ul style="list-style-type: none"> • Provide training for agency staff and consultants on the Hawaii Pedestrian Toolbox • Percentage of projects that include pedestrian crossing safety treatments • Number of pedestrian countdown timers installed at signalized intersections |
| Goal 3: Improve Connectivity of the Pedestrian Network | |
| Objective | Performance Measure |
| Support development of seamless and continuous pedestrian networks along state highways with connections to paths, walkways, trails, transit centers, and other pedestrian facilities | <ul style="list-style-type: none"> • Miles of new sidewalks and shared use paths along state highways |

| | |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Percentage of transportation improvement projects that have been reviewed for consideration of pedestrians |
| Encourage pedestrian connectivity across jurisdictions | <ul style="list-style-type: none"> • Adoption of Complete Streets Policy (Same performance measure as Goal 1, Objective a) Provide training for agency staff and consultants on the Hawaii Pedestrian Toolbox (Same performance measure as Goal 1, Objective b) |
| Support programs to encourage more students to walk to and from school | Presence and number of Walk/Bike to School Day programs |

1.9.4 Identified Safety Issues

Pedestrian safety issues were identified for each County and are summarized below.

County of Hawai'i

- On State highways near Hawi
 - Near Kamehameha Park and the Bond Memorial Branch public library
- On State highways near Kona
 - Near locations that attract pedestrians, such as Hulihee Palace State Monument, Hale Halawai Park, Kailua-Kona Wharf, and hotels adjacent to the wharf.
- On State highways in Hilo
 - Within urbanized areas, near a variety of locations that attract pedestrians.

County of Maui

- Urbanized areas such as Kahului and Lahaina
- Very few crashes on Moloka'i and Lāna'i

County of Kaua'i

- Clustered in town centers near pedestrian attractors
- Majority of crashes involved pedestrians under the age of 17

City and County of Honolulu

- In the Primary Urban Center
- High incidence of crashes in the southern coast, including Waikīkī, Pearl City, and Ewa
- Urbanized areas between Makaha and Nanakuli, central valley near Wahiawa, and Kalaniana'ole Highway on the east side.

In addition, the Pedestrian Master Plan developed a list of 31 areas of concern. Areas of concern were vetted against prioritization criteria which included pedestrian connectivity, pedestrian safety, environment, property impacts, cost, funding availability and pedestrian oriented populations.

For pedestrian safety, areas of concern were identified through pedestrian crash hot spots, high-complaint areas, and recommendations provided by the Technical Advisory Committee.

1.9.5 Strategies or Projects to Address Safety Issues

A prioritized list of project solutions were developed to address the areas of concern. The projects were prioritized based on criteria such as pedestrian connectivity, pedestrian safety, environment, property impacts, cost, funding availability, and pedestrian-oriented populations. The criteria was ranked by the Technical Advisory Committee, Citizen’s Advisory Committee, and the public in the order that was the most important to them; pedestrian safety ranked as the most important criteria. Each project was then ranked based on the summation of scores from the criteria analysis questions, and a weight was assigned to each criteria. The potential project solutions includes projects such as reviewing traffic signal timing and phasing, implementation of Walk Wise Hawai’i, improving pedestrian connections, installation of crosswalks, conducting traffic studies, constructing intersection improvements, reducing curb radii, and installing sidewalks, pedestrian facilities, and/or shared use paths.

As a companion to the *Pedestrian Master Plan*, the *Hawai’i Pedestrian Toolbox* was developed as a guide for project implementation throughout the state. The toolbox provides guidance for planning, design, and operation of pedestrian facilities presenting best practices through a compilation of adopted guidance tailored to the characteristics and context of Hawaii. The link to this resource is <https://hidot.hawaii.gov/highways/files/2013/07/Pedest-Tbox-Hawaii-Pedestrian-Toolbox-Low-Res.pdf>

1.9.6 Application to the SHSP

The Pedestrian Master Plan’s goal, objectives, and performance measures for improving pedestrian safety will be referenced when updating the goals, objectives, performance measures, and Emphasis Areas for the SHSP to ensure the plans are aligned.

1.10 Bike Plan Hawai’i 2003 and Bike Plan Hawai’i Refresh Priorities and Implementation Plan 2022

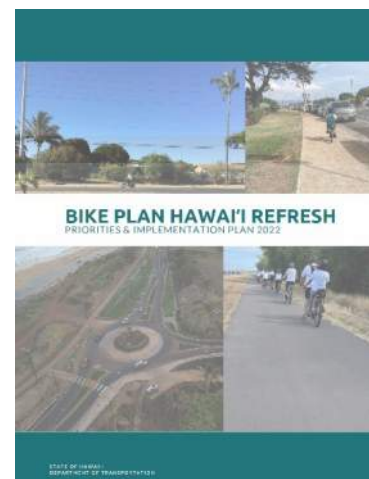
1.10.1 Purpose and Content

The HDOT completed Bike Plan Hawaii in 2003. This master plan outlined how the State would accommodate and promote bicycling within the State’s transportation system. In 2013, the HDOT developed project assessment reports as the next phase of implementation. In 2022, the *Bike Plan Hawaii Refresh* process updated the existing inventory of bicycle facilities, updated project lists and maps, reanalyzed the bicycle network, and reevaluated the proposed projects.

The purpose of the refresh was to update priority and feasible bicycle system projects statewide.

1.10.2 Goals and Objectives

A goal and objectives were established in the first Bike Plan Hawai’i completed in 2003. The goal of the plan is “To establish bicycling as a safe and convenient mode of transportation for residents and visitors throughout the State.” To realize the goal, the plan identified five tactical areas or objectives in which improvements can be made. The following objectives and recommended actions from the plan directly address bicycle safety:



| Objective | Recommended Actions |
|-----------|---------------------|
|-----------|---------------------|

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Engineering and Planning: Plan and design new and improved transportation facilities to accommodate and encourage use by bicyclists of all skill levels</p> | <ul style="list-style-type: none"> • Expand and improve each island’s network of safe, convenient, and integrated bikeways for both utilitarian and recreational travel. • Formulate and adopt policies and practices that maintain bikeways in a smooth, clean, and safe condition. |
| <p>Education: Expand the range of education activities to reduce bicycle crashes and increase ridership</p> | <ul style="list-style-type: none"> • Ensure that safety materials and curricula used in the state are consistent and address the use of bicycle safety equipment and causes of bicycle crashes. Safety education programs should also improve on-road bicycling skills and judgment, and the observance of traffic laws. • Monitor and analyze bicycle crash data to find ways of improving bicycle safety. • Create an on-line resource center to disseminate material on bicycle facilities, safety, and efforts by other communities to increase bicycle use. The website should be interactive with bicyclists given an opportunity to provide suggestions and submit maintenance requests, and to notify officials of hazardous bicycling conditions. |
| <p>Enforcement: Strengthen enforcement efforts to prevent illegal and reckless behavior by motorists and bicyclists and safeguard those using the bicycle network.</p> | <ul style="list-style-type: none"> • Cooperate with law enforcement agencies on strategies and programs to reduce traffic violations by bicyclists that are most likely to result in serious crashes with motor vehicles and pedestrians. • Cooperate with law enforcement agencies on strategies to reduce motorist errors and aggressive behaviors. |

1.10.3 Strategies or Projects to Address Safety Issues

It was assumed that all projects proposed for Bike Plan Hawai’i 2003 would improve safety for bicyclists. Thus, in order to evaluate projects for prioritization, the plan used 14 criteria to screen projects. The safety criteria used to screen projects included: exceptional (non-vehicular) hazards that bicyclists would be exposed to, and if the bike facility is accessible to emergency personnel or police surveillance. Projects were then categorized into four priority levels, which corresponded with the length of time needed to complete the project.

In the Bike Plan Hawai’i Refresh 2022, the final prioritization of projects was vetted against criteria including safety, connectivity, accessibility, equity, technical/public support, feasibility, and cost. Projects were then categorized as high, medium, or low priority, with a key consideration being the overall feasibility of the project. High-priority projects were considered to be those that addressed the most critical needs of the bicycle system for safety, connections within communities, and equity. The

plan provides a breakdown of each County’s priorities, the public’s priorities, and the final priorities with projects identified for near-term or mid-term implementation.

1.10.4 Application to the SHSP

The SHSP will be developed to ensure that the plan’s goals, objectives, strategies, and Emphasis Areas are aligned with the objectives and recommended actions included in Bike Plan Hawai’i 2003. During the SHSP update process, crash data on bicyclists and vulnerable road users will be analyzed to ensure that the plan addresses any safety issues for these users.

2. Local Agency Plans

Regional plans that were developed by the city/county and metropolitan planning organizations with a focus on traffic safety or a component dedicated to safety were reviewed. The following plans were examined:

- 1) Maui Vision Zero Action Plan
- 2) Hawai’i Island Vision Zero Action Plan
- 3) O’ahu Vision Zero (Internal Memos)
- 4) Safe Routes to School 2022 Traffic Survey
- 5) O’ahu Pedestrian Plan 2022
- 6) O’ahu Bike Plan 2019 Update
- 7) Hele Mai Maui Long-Range Transportation Plan 2040
- 8) Kaua’i Multimodal Land Transportation Plan 2035
- 9) 2045 O’ahu Regional Transportation Plan

2.1 Maui Vision Zero Action Plan (Maui MPO, 2021)

2.1.1 Purpose and Content

Vision Zero Maui is based upon Vision Zero philosophy which states that no loss of life due to traffic collisions is acceptable. The philosophy recognizes that people make mistakes, however, no one should die or be seriously injured as a result of these mistakes. The *Vision Zero Maui* initiative strives to end traffic fatalities and serious injuries by 2040.

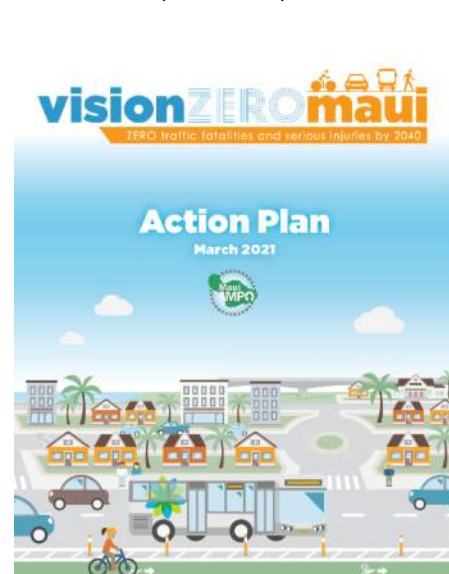
This Action Plan emphasized the human costs of traffic collisions. By humanizing the impacts of collisions, everyone can better recognize the importance of traffic safety and all of our roles in creating safer roads.

The principles that that guided the Action Plan included:

- Improve safety and promote health
- Use data to inform actions
- Improve quality of life with an equity focus
- Be accountable

2.1.2 Goals and Objectives

Seven goals were prioritized from the crash data analysis and stakeholder input:



- Eliminate impaired driving
- Create safer speeds
- Eliminate distracted driving
- Create a safety culture
- Build safe streets for everyone
- Institutionalize Vision Zero
- Improve data to support decisions

2.1.3 Performance Monitoring and Measures

The actions in this plan will be revisited on a routine basis to evaluate effectiveness and identify any required direction shifts. The Maui MPO will report on safety performance annually using the relevant performance metrics established in the Hele Mai Maui 2040 Transportation Plan.

2.1.4 Identified Safety Issues

Safety data on Maui were reviewed, identifying impairment, speed, inattention and redlight running as the predominant factors contributing to fatal crashes.

Transportation equity data also showed that a significant number of fatal crashes occurred in areas with high scores on the Transportation Equity Index.



2.1.5 Strategies or Projects to Address Safety Issues

Focused actions were identified to achieve the identified traffic safety goals:

- Eliminate impaired driving
 - Advocate for state legislation and policies designed to deter and prevent impaired driving
 - Pursue County legislation and policies designed to deter and prevent impaired driving
 - Continue to hold impaired driving checkpoints around the holidays and at other times throughout the year as part of targeted enforcement and messaging
 - Promote ride share services and encourage establishment of Designated Driver services. Work with business associations to promote ride share services and Designated Driver practices within restaurants and bars
 - Expand and promote bus service to include more night-time service hours
 - Support community-based alcohol problem assessment and treatment programs
- Create safer speeds
 - Create a speed management program to evaluate and promote safe speeds
 - Set appropriate speed limits and design roads to encourage safe speeds
 - Create “Malama Zones” in priority areas such as school zones, parks, commercial areas, and areas with a high concentration of seniors, through engineering and enforcement
 - Research and consider adopting a policy to apply Automated Traffic Enforcement (ATE) as a strategy to reduce red light running and/or speeding

- Eliminate distracted driving
 - Expand U Text. U Pay. campaign, including saturation patrols and public messaging that targets most at-risk drivers
 - Promote anti-distraction messaging among vehicle fleet operators, including rental car agencies, county and state departments, Transportation Network Companies (i.e., rideshare), waste management providers, and shuttle operators
 - Partner with youth organizations to create peer-to-peer anti-distraction messaging campaigns
- Create a safety culture
 - Implement an inclusive and collaborative campaign to heighten awareness of traffic safety among the public, county and state employees, and the media
 - Generate and publish annual public-facing reports on how Maui is doing on reaching its Vision Zero goal
 - Work with schools to promote safe, active transportation through education, school policies, and pick-up and drop off transportation procedures
 - Develop best practice messaging materials for local media to move away from victim blaming and encourage a more balanced framing of and reporting on crashes involving bicyclists or pedestrians
- Build safe streets for everyone
 - Implement the Hele Mai Maui 2040 Transportation Plan to promote safe transportation options for people of all ages and abilities
 - Apply Complete Streets principles systematically by focusing safety improvements to address high-risk roadway features throughout Maui's road network
 - Improve routine facility maintenance for all modes, particularly pedestrians and bicycles (e.g., crosswalk and bike lane restriping, brush cutting of vegetation along shoulder areas)
 - Develop and adopt a policy to prioritize and provide access to pedestrians, bicyclists, and transit riders in temporary work zone detours
 - Support and implement the State of Hawai'i Physical Activity & Nutrition Plan actions, including increasing bicycle and pedestrian infrastructure and changing land use policies to support active transportation
- Institutionalize Vision Zero
 - Integrate Vision Zero Maui goals and actions into relevant policies and planning documents at the community, county, and state level
 - Convene the Vision Zero Advisory Group regularly to review actions and share updates on crash data, resources, current activities, policy evolution, funding opportunities, equity data, traffic safety performance, enforcement, emerging issues, vehicle fleet safety, and other relevant safety information
 - Establish a multidisciplinary rapid response team to evaluate and address fatal and serious injury crashes and crash sites
- Improve data to support decisions
 - Develop a data portal and dashboard to allow stakeholders working to advance roadway safety and Vision Zero to view crash data and perform basic queries

- Facilitate systemic safety analysis by improving access to existing roadway infrastructure data and collecting more data. Data may include roadway striping, ADA ramps, sidewalks, and shoulders
- Continue efforts to improve crash reporting and data, including more accurate georeferencing and complete forms, to facilitate more accurate and informative data analysis that can support road design, enforcement, and education strategies
- Develop and deliver a training module for Maui Police Department officers responsible for crash reporting that addresses the unique attributes involved in accurately reporting circumstances of crashes involving bicyclists, pedestrians, and other vulnerable road users
- Participate in the Traffic Records Coordinating Committee and advocate for Data and Safety Management System strategies identified in the Hawai'i Strategic Highway Safety Plan

2.1.6 Application to the SHSP

The data and trend analysis will inform the SHSP regarding the safety issues identified for Maui, including the predominant crash factors and transportation equity. The Action Plan goals and associated prioritized actions will be used to inform and align the update of the SHSP Emphasis Areas and strategies.

2.2 Hawai'i Island Vision Zero Action Plan (County of Hawai'i , 2020)

2.2.1 Purpose and Content

The mission statement for the *Hawai'i Island Vision Zero Action Plan* is *“Working together, we can eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all.”* The plan is a roadmap that shifts transportation emphasis on Hawai'i Island to preservation of life over convenience of traveling.

2.2.2 Goals and Objectives

Objectives and associated goals were developed by the Vision Zero Task Force around the 5 E's; engineering, enforcement, encouragement, education and evaluation:

- Evaluation Objective: Collect data to measure the successes of Vision Zero strategies being used to help reduce traffic-related fatalities.
 - Improve crash data quality and management practices
 - Report back to the community about Vision Zero progress
- Engineering Objective: Create safe and convenient environments to drive, bike, and walk through the implementation of the complete streets policy and other transportation initiatives.
 - Develop and implement infrastructure policies to reduce traffic fatalities and injuries
 - Explore emerging techniques for improving safety in the County
 - Implement safety treatments on key corridors throughout the County
- Education and Encouragement Objectives: Educate neighbors of all ages and abilities on best practices to safely use streets. Promote and encourage behavioral change and participation through new and existing resources, public outreach and special events.



- Develop standard language regarding Vision Zero and traffic safety for use by all County partner agencies when interacting with the media and with the public directly
- Increase amount spent, and programs offered for SRTS coordination funding within DPW to expand bicycle and pedestrian education programs for staff, students, and families
- Establish a County of Hawai'i website for Vision Zero
- Enforcement Objectives: Improve traffic safety enforcement policies and practices. Build capacity for improved data collection and sharing. Create laws for improved safety of motorists, pedestrians and bicyclists. Incorporate automated enforcement.
 - Advocate for changes at legislature to address issues around intoxicants
 - Improve traffic safety enforcement policies and practices

2.2.3 Performance Monitoring and Measures

The actions in this plan were organized into short-term (2-year), mid-term (five-year) and long-term (10-year) actions, representative of two, five, and ten-year budget cycles. Annual reporting should be developed to assess the progress made and success of these actions.

2.2.4 Identified Safety Issues

Traffic safety data identified that Hawai'i County had the highest percentage of traffic fatalities per capita in the state. Data was summarized for residing zip codes, race, vulnerable users, and high fatality locations. Fatality crash factors were also assessed to identify potential trends. Factors included speed, impairment, visibility, peak traffic hours, age/gender, distracted driving, roadside crashes, vehicle model year.



A commitment to equity was acknowledged, identifying DOH's SocioNeeds Index communities of concern. The index identified communities that should be prioritized to address inequities in the transportation system.

2.2.5 Strategies or Projects to Address Safety Issues

The Vision Zero actions are identified as short-term (two years), mid-term (five years) and long-term (ten years). The recommended actions address the following categories:

- Reducing potential for conflicts between users
- Slowing motor vehicle speeds
- Reducing driving, bicycling and walking under the influence
- Encouraging safer practices among people driving, bicycling and walking
- Improving data collection processing and analysis
- Supporting an institutional commitment to Vision Zero.

2.2.6 Application to the SHSP

The data and trend analysis will inform the SHSP regarding the safety issues identified for Hawai'i , including crash characteristics and socio-economic needs. The Action Plan objectives and associated goals and prioritized actions will be used to inform the update of the SHSP Emphasis Areas and strategies.

2.3 Honolulu Vision Zero Action Plan (City & County of Honolulu, 2024)

2.3.1 Purpose and Content

The *Honolulu Vision Zero Action Plan* was developed by the City and County of Honolulu Department of Transportation Services and published in August 2024. The plan is a multi-faceted strategy to eliminate traffic deaths and serious injuries on our streets by 2040.



2.3.2 Goals and Objectives

The plan’s vision is to “save lives by eliminating serious injury and fatal crashes”. The plan used a multi-pronged approach to achieve its vision by establishing goals under each element of the Safe System Approach.

| Safe System Elements | | | | |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------|
| Safe Speeds | Safe Streets | Safe People | Post-Crash Care | Safe Vehicles |
| Safe System Goals | | | | |
| Foster safe speeds through proactive street design | Use a data driven approach | Foster a culture of shared kuleana for traffic safety through education and outreach activities | Improve the quality of crash data | Prioritize safer vehicles |
| Support changes in the enforcement and adjudication process to reduce dangerous driving behaviors | Fund and use quick-build strategies to install roadway safety features | Support funding and development of Safe Routes to School plans, programs, and infrastructure | Take care of people who have been affected by crashes | Collaborate with other agencies to require safety improvements in vehicles |
| Revise laws, policies, and procedures to support safe speeds | Invest in walking, bicycling, and transit to grow their mode share | Integrate safety into land use and private development permitting | | |
| | Integrate safety into capital and repaving projects from planning, and scoping through preliminary design and delivery | Strengthen organizational capacity | | |
| | Revise laws, policies, and procedures to support safe streets | Support our diversity of roadway users | | |

2.3.3 Performance Monitoring and Measures

The *Honolulu Vision Zero Action Plan's* ultimate target is zero fatal or serious injury crashes. The plan also provides proximal performance metrics that are both outcome-based and output-oriented. Outcome metrics describe how the plan's actions change behaviors that cause serious injury and fatal crashes, such as awareness of the risks of speeding, support for safety investments, or reduction in driving while impaired. Output metrics focus on the amount of actions or efforts completed, such as expenditures on safety, number of impressions on social media campaigns, and people participating in safety events. These metrics will be reported on the Vision Zero Performance Measures dashboard and in the City's Annual Complete Streets Progress Reports.

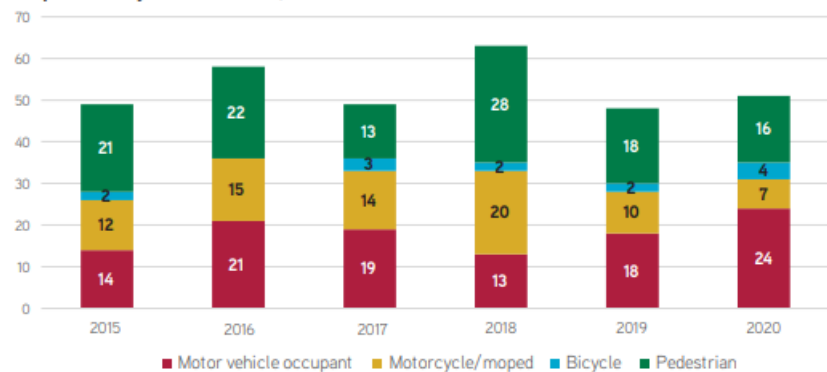
2.3.4 Identified Safety Issues

Existing crash data were analyzed for crash types and characteristics, locations, facility characteristics and demographics. Several of the higher-risk characteristics are shown. People walking, using mobility devices or riding bicycles were found to be more likely to be killed or seriously injured within the 2015-2020 data review. They accounted for 23 percent of all injury crashes and 34 percent of fatal/serious injury crashes. Motorcycles/mopeds were also more likely to result in fatalities/serious injuries.

Kupuna age 65 and older make up 28 percent of people killed or seriously injured, while comprising only 17 percent of the population.

| Metric | Source |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Number of traffic-related fatalities <ul style="list-style-type: none"> • Pedestrian fatalities • Bike fatalities • Motor vehicle fatalities • Motorcycle/moped fatalities | Fatal Analysis Reporting System (FARS) |
| Number of traffic-related serious injuries <ul style="list-style-type: none"> • Pedestrian serious injuries • Bike serious injuries • Motor vehicle serious injuries • Motorcycle/moped serious injuries | State of Hawai'i Advanced Crash Analysis (SHACA) |
| Number of fatal and serious injury crashes involving youth under age 18 | FARS |
| Number of fatal and serious injury crashes involving kupuna (65 and older) | FARS |
| Number of fatal and serious injury crashes involving impairment and percent of total | SHACA + Vision Zero dashboard |
| Number of fatal and serious injury crashes involving speed and percent of total | SHACA + Vision Zero dashboard |
| Commute mode share for walking, bicycling, and transit | U.S. Census Bureau, American Community Survey |
| Number of people participating in Vision Zero education campaigns each year | Program specific |
| Number of High-Injury Locations improved | Project list |
| Pedestrian crossing improvements implemented | Complete Streets (CS) Annual Report metric |
| Walkways implemented | CS Annual Report metric |
| Bikeways implemented | CS Annual Report metric |
| Traffic calming projects implemented | CS Annual Report metric |
| Number of miles of streets with reduced speed limit | Project list |
| Percent of projects in Title VI/Environmental Justice equity areas | Project list |
| Number of automated red-light and speed enforcement installations | Program specific |
| Percent of crash reports with preceding action and contributing factor data | Crash report review |
| Percent of traffic studies conducted on High-Injury Locations | Program specific |

People Killed by Mode on O'ahu, 2015-2020



Data Source: HDOT SHACA

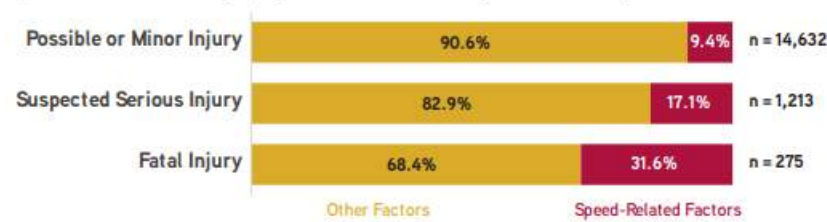
Figure 22 Contributing Factors to Fatal and Serious Motor Vehicle Crashes on State and City Surface Roads



Data Source: Hawai'i Department of Transportation SHACA. The State of Hawaii, Department of Transportation, has provided this crash information under the protection of 23 USC 407. This information may not be used in any Federal or State court proceeding in any action for damages arising from any occurrence at a location mentioned or addressed in the information provided.

The contributing factors for motor vehicle crashes identified that failure to yield and driving too fast were the most frequent characteristics in fatal and serious injury crashes.

Speed-Related Crashes by Injury Level on State and City Surface Roads, 2015-2020



Speed-related crashes include Drove Too Fast for Condition or Exceeded Speed Limit as contributing factors.

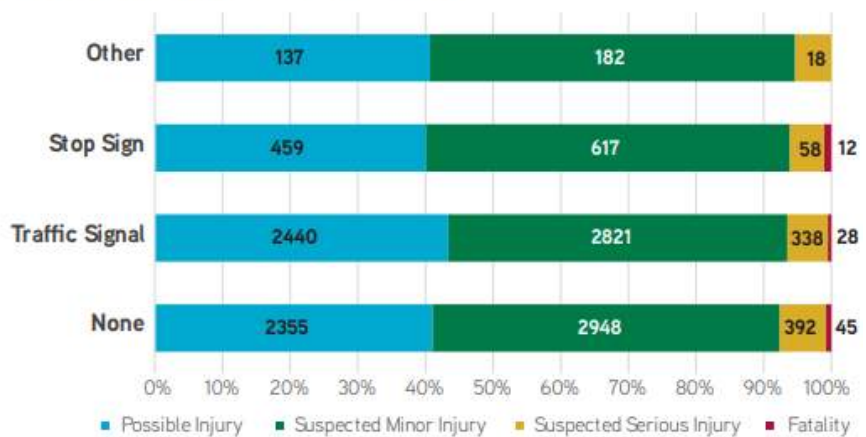
Data Source: HDOT SHACA. HDOT has provided this crash information under the protection of 23 USC 407. This information may not be used in any Federal or State court proceeding in any action for damages arising from any occurrence at a location mentioned or addressed in the information provided.

Driving too fast and exceeding the speed limit were the most frequent factors involved in motorcycle and moped crashes. Speed contributed to 32% of fatal crashes, 17% of serious injury crashes, and 9% of minor injury crashes.

Most crashes resulting in injury were found to occur at intersections, and crashes that occurred between intersections were more likely to result in a fatality or serious injury.

Approximately 70% of crashes involving pedestrians and bicyclists took place at intersections, compared to 57% of crashes involving motor vehicles only. The risk of fatal crashes were higher at unsignalized intersections and those without all-way stop signs or other traffic controls.

Traffic Control and Injury Severity at Intersections

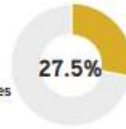


The high injury location methodology used crash thresholds normalized by year for intersections and year/distance for corridors. The thresholds are defined as

- High-injury location: street segments and intersections that experience the highest number of Vision Zero crashes

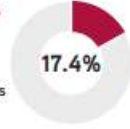
High Injury Corridors

39 miles of streets, representing 27.5% of the Vision Zero crashes
2% of the total street network*



High Injury Intersections

93 intersections, representing 17.4% of the Vision Zero crashes



*The road network does not include interstate highways

Note: The crash information in this section is under the protection of 23 USC 407. This information may not be used in any Federal or State court proceeding in any action for damages arising from any occurrence at a location mentioned or addressed in the information provided.

- High-injury corridor: street segment that experiences three or more Vision Zero crashes per mile per year
- High-injury intersection: intersection of two streets where one or more Vision Zero crashes occur per year

A webmap showing the high-injury locations, corridors, and intersections can be found at the following link: <https://nelsonnygaard.shinyapps.io/hnl-vz-hin/>

2.3.5 Actions to Address Safety Issues

A list of actions was created to realize each Safe System goal. For each action, the timeframe for implementation, level of effort, and estimated cost were provided. Short-term actions are those that could be implemented within five years, and mid-term actions are those that can be implemented within five to fifteen years. The following is a summary of the types of actions included under each Safe System goal.

- **Safe Speed Actions:** update guidelines, collect speed data, and provide physical street improvements, enforcement, and legislation.
- **Safe Streets Actions:** maintain Vision Zero dashboard, implement safety improvements, conduct before and after studies, collect data on high-injury locations, pilot and evaluate innovative design strategies, use quick-build strategies, integrate safety improvements into capital and repaving projects, and revise laws and policies.
- **Safe People Actions:** foster safe user behavior, conduct informational and education campaigns, support funding and development of Safe Routes to School plans, programs, and infrastructure, revise land use and private development permitting, build organizational capacity, and partner with community and advocacy organizations.
- **Post-Crash Care Actions:** improve crash reporting system, revise criteria for major crash reports, and establish a multi-disciplinary Crash Response Team.
- **Safe Vehicle Actions:** incentivize lighter vehicles, incorporate crash prevention technology in City vehicles, integrate ignition locks in fleet manufacturing, and conducting an assessment of O'ahu needs in preparing for autonomous and connected vehicles and infrastructure.

2.3.6 Application to the SHSP

The data and methodology from the *Honolulu Vision Zero Action Plan* provide the SHSP information regarding the context of O'ahu Island. Continued collaboration with the Honolulu Vision Zero team will help to inform trends and the traffic safety performance for O'ahu.

2.4 Safe Routes to School 2022 School Traffic Survey Results (City and County of Honolulu Department of Transportation Services, 2022)

2.4.1 Purpose and Content

The City and County of Honolulu's Department of Transportation Services Safe Routes to School (SRTS) Program implemented a school traffic survey to gauge traffic issues in the vicinity of O'ahu public schools. The survey responses were provided by the school personnel in charge of traffic issues. This report summarizes the results of the online survey.

2.4.2 Goals and Objectives

To obtain comprehensive input, a distribution letter with a link to the online survey was provided to the Department of Education, Office of Facilities and Operations. O'ahu Schools were also notified of the survey via their Complex Area Superintendent.

2.4.3 Performance Monitoring and Measures

The survey focused on gathering traffic issue information and did not include monitoring measures.

2.4.4 Identified Safety Issues

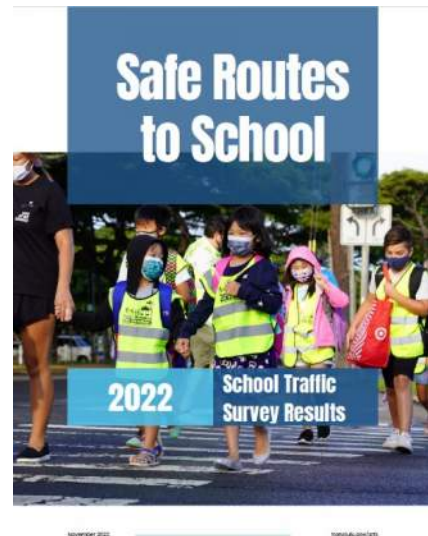
The top three traffic safety concerns that deter students from walking and biking include driver behavior (speeding and ignoring traffic rules/signs), traffic congestion and infrastructure (lack of pedestrian/bicycle facilities and sight line issues).

2.4.5 Strategies or Projects to Address Safety Issues

Recommendations to address driver behavior issues include driver education and awareness program implementation, speed evaluations and (if applicable) speed enforcement. Congestion relief could be achieved through staggered schedules, increasing queuing capacity and encouraging mode shifts. Infrastructure improvements include sidewalks, bike lanes and sightline/crosswalk improvements. Additionally, coordination with the school traffic/safety administrators should be performed in conjunction with roadway projects adjacent to schools.

2.4.6 Application to the SHSP

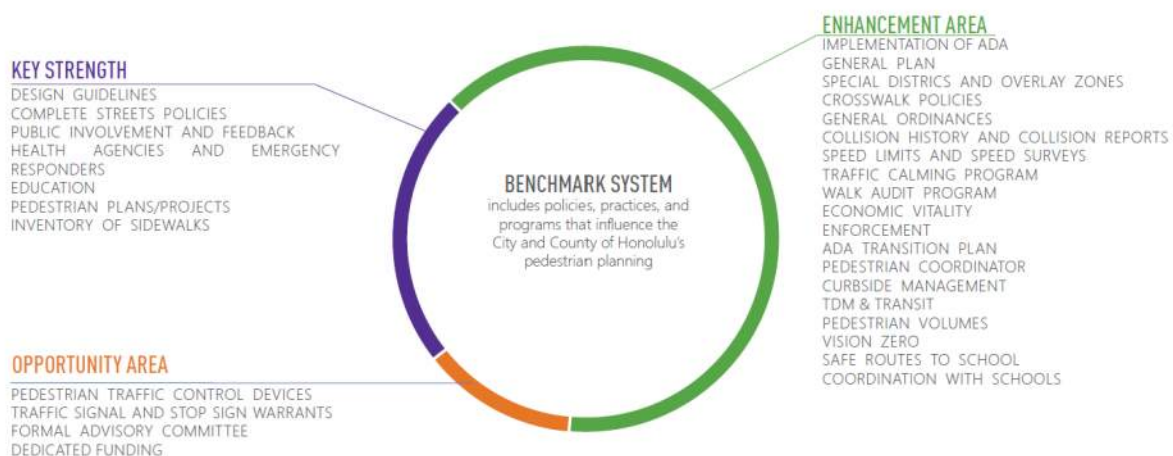
Partnerships between the schools and agencies that have jurisdiction over the roadways, operations and enforcement are important to holistically approach walking/biking safety for our children. The SHSP will use the input provided by the survey to inform concerns, trends and strategies related to traffic safety for children and school properties.



2.5 O'ahu Pedestrian Plan (City and County of Honolulu Department of Transportation Services, 2022)

2.5.1 Purpose and Content

The City and County of Honolulu's Department of Transportation Services developed a long-term plan to create safe and accessible streets on O'ahu. Existing policies and programs were benchmarked against best practices, resulting in identification of strengths, areas of enhancement and opportunities. These benchmarks were used to focus the plan recommendations and resource utilization.



Existing travel mode split, pedestrian demands, and pedestrian facility inventories were reviewed to identify current usage and characteristics. 2014 through 2018 crash data, facility characteristics, and related socioeconomic data were also reviewed to identify locations and trends related to pedestrian safety.

2.5.2 Goals and Objectives

The Plan was developed around a primary goal of pedestrian safety and the principle that everyone should be able to walk in their community without fear of harm. The four specific goals include:

- **Safe and Healthy** – Make O'ahu's pedestrian environment safe, comfortable, and clean, including prioritization of modes that improve physical fitness and public health.
- **Sustainable** – Prioritize modes of travel and infrastructure projects that preserve O'ahu's natural environment, limit the use of natural resources, and optimize economic return on investment.
- **Responsive** – Engage the people of the City in a transparent manner to ensure that O'ahu creates and maintains an active and context-sensitive pedestrian environment.
- **Equitable** – Focus investment to form geographically and demographically equitable walking conditions among O'ahu's diverse communities.

Each of the ten objectives in the Plan aligns with a Complete Streets objective that was modified to have a focus on the pedestrian mode.

PEDESTRIAN PLAN OBJECTIVE

- Improve pedestrian safety.
- Apply a context-sensitive approach to pedestrian planning that integrates community context and the surrounding environment, including land use.
- Protect and promote accessibility and mobility for all pedestrians.
- Balance the needs and comfort of pedestrians with other modes.
- Encourage consistent use of national industry best practice guidelines to select pedestrian design elements, policies, and programs.
- Mitigate vehicle emissions by providing pedestrian connectivity to key destinations and transit.
- Encourage opportunities for physical activity and recognize the health benefits of walking for transportation and recreation.
- Recognize Complete Streets as a long-term investment that can save money over time.
- Build partnerships with stakeholders and organizations statewide.
- Incorporate trees and landscaping as integral components of the pedestrian environment.

2.5.3 Performance Monitoring and Measures

Performance targets were set for the horizon year 2031 and interim targets on an annual basis. Progress toward the targets is expected to be steadily achieved through the course of ten years.



2.5.4 Identified Safety Issues

There has been a significant increase in pedestrian fatalities and injuries in recent years. In the 5 years between 2009-2013 there were a total of 76 pedestrian fatalities and in the 5-years between 2014-2018

there were 105 pedestrian fatalities, a 38% increase. Two populations have experienced disproportionate fatalities: Kupuna age 65 and older as well as Title VI/EJ areas.

Urbanized streets with speed limits of 30 mph or higher represent only 2% of City streets, yet account for 24% of fatalities.

The High Pedestrian Injury Corridors account for 60% of fatalities and 43% of pedestrian injuries on City and County of Honolulu streets, while these 31 miles only represents 2% of City street network.

2.5.5 Strategies or Projects to Address Safety Issues

Common roadway characteristics at the high crash locations were identified to recognize common characteristics at that may need changes to address safety:

- Corridors – arterials with 4 or more lanes, >30mph, lack of frequent crossings
- Signalized Intersections – on arterials with 4 or more lanes, >30 mph, turning vehicle conflicts, missing a pedestrian crossing leg (or channelized right turn)
- Uncontrolled crossings – 4 or more lanes, marked crosswalks only, lack of medians/curb extensions/other crossing enhancement

Overarching strategies were identified to address the safety needs of pedestrians:

Signalized Intersections

- Reduce crossing distance
 - Curb extensions
 - Crossings on all legs
 - Crossing refuge on wide streets
- Reduce pedestrian-motorist conflicts with signal phasing
 - Pedestrian scramble
 - All-pedestrian phase
 - Leading pedestrian interval
 - Protected left-turns
 - Protected right-turns
 - Prohibit right turns on red
- Reduce speed of turning vehicles
 - Eliminate channelized right turns
 - Raised crossings at channelized right turns
 - Tight turning radius
 - Protected intersections
- Maximize opportunities for walking in signal phase

- Pedestrian recall
- Rest-in-walk along major streets
- Additional crossing time
- Short signal cycles
- Convert intersection to roundabout
- Red light enforcement cameras
- Street lighting at intersections

Uncontrolled Crossings

- Reduce crossing distance
 - Refuge islands
 - Curb extensions
 - Lane reconfiguration
- Increase visibility of crossing
 - Rectangular rapid flashing beacon
 - Pedestrian hybrid beacon
 - In-street pedestrian crossing signs
 - Parking restrictions on crosswalk approach
 - Advanced stop bar
 - Lighting
 - Solid lane line treatment
- Reduce speeds of approaching motorists
 - Raised crosswalks
 - Raised intersections
 - Speed humps
 - Tight turning radius
 - Narrow lanes/edge of lane line/parking line
 - Neighborhood traffic circles
- Relocate or consolidate crossings
- Provide adequate walkways
- Provided well-designed crossings
- Implement lane reconfigurations
 - Road diets
 - Turn lane removal

- Construct walkways with cost-saving strategies to complete gaps in the pedestrian priority network on non-major streets
 - At-grade walkways
 - Shared-use paths
- Implement low-cost improvements
 - Paved shoulders
 - Advisory shoulders
 - Bike lanes
 - Shared streets

Provide clear sidewalks

- Require placement of utilities to provide preferred pedestrian zone width
- Place bike parking, bus shelters, and seating outside of the pedestrian zone.

Upgrade Walkways

- Widen sidewalks in high pedestrian traffic areas
- Upgrade existing walkways to meet accessibility standards
- Provide buffers to separate pedestrians from motorists
 - Landscaped buffer with trees to maximize separation
 - Parking or bike lane to provide greater separation

Enhance the pedestrian environment

- Provide protection from the elements
 - Trees
 - Awnings
- Provide bus shelters/seating

Pedestrian-oriented development

- Provide a high level of pedestrian connectivity
- Provide safe and convenient pedestrian site connections to transit
- Avoid development-based road widening
- Orient sites to the sidewalk
- Provide primary entries directly from the sidewalk
- Provide active and inviting facades on high pedestrian traffic streets
- Shield parking, vehicular circulation areas, and utilities from the sidewalk
- Provide seating in commercial areas
- Promote the development of neighborhood sized schools

Additionally, education campaigns, encouragement and enforcement efforts were outlined to integrate with the engineering solutions.

2.5.6 Application to the SHSP

The *O'ahu Pedestrian Plan's* goals, objectives and strategies will be referenced and aligned with as the SHSP Emphasis Areas are updated. The identified crash data, and safety trends will be assessed and integrated with the statewide pedestrian trends.

2.6 O'ahu Bike Plan 2019 Update (City and County of Honolulu Department of Transportation Services, 2019)

2.6.1 Purpose and Content

The City and County of Honolulu's Department of Transportation Services O'ahu Bike Plan 2019 Update builds from the 2012 plan and focuses on projects, policies and programs aimed to expand facilities and ridership.

The vision of the plan is: O'ahu is a bicycle friendly community where bicycling is a safe, viable, and popular travel choice for residents and visitors of all ages and abilities.

As part of the Compete Streets commitment to meet the needs of all transportation users, the Bike Plan Update took a specific focus on programs and infrastructure that target "interested but concerned" riders (riders that may not currently ride or may only ride occasionally but would be more likely to if they felt more safe or comfortable).

2.6.2 Goals and Objectives

The goals of this plan include:

- To encourage and promote bicycling as a safe, convenient, and pleasurable means of travel
- To enhance cooperation between roadway users
- To increase mode share of bicycle trips
- To be recognized by the League of American Bicyclists as a gold level Bicycle-Friendly-Community

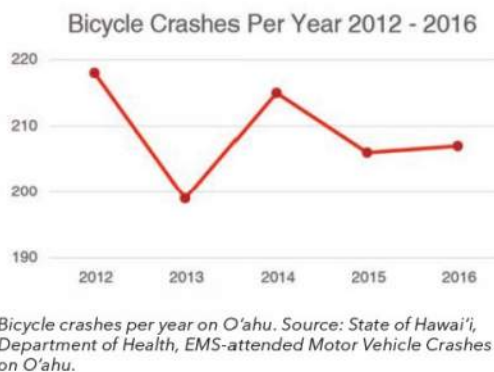
2.6.3 Performance Monitoring and Measures

Performance measures were developed based upon the goals of this plan. The target date for the measures was associated with the next update cycle of the plan in 2024.



| 5-year Performance Measure (2024) | Baseline | Data Source | Plan Goals | | | |
|---------------------------------------------------------------------------------------------|-------------------------------|--------------|--------------------------------|--------------------------------|---------------------------------------------------------|------------------------------------------|
| | | | 1. Increase bicycle mode share | 2. Enhance roadway cooperation | 3. Encourage safe, convenient and pleasurable bicycling | 4. Gold level Bicycle Friendly Community |
| Double the bicycle commuting mode share. | 1.2% average (2013 - 2017) | ACS | ✓ | | | ✓ |
| Eliminate bicycle fatalities. | 1.2 per year (2013 - 2017) | HDOH | | ✓ | ✓ | ✓ |
| Reduce bicycle crashes by 25%. | 199 per year (2013 - 2017) | HDOH | | ✓ | ✓ | ✓ |
| Complete 100% of priority 1 bikeway projects. | 0% | DTS | ✓ | ✓ | ✓ | ✓ |
| Provide secure bicycle parking at all HART stations and allow bikes on transit. | N/A | DTS/HART | ✓ | | ✓ | ✓ |
| Double the number of participants in education and outreach events. | 11,358 participants (FY 2018) | HBL/DTS | | ✓ | ✓ | ✓ |
| Assess the condition of all shared use paths and complete or program repairs. | N/A | DTS/DFM/HDOT | ✓ | | ✓ | ✓ |
| Conduct and publish annual bike counts for at least five separate locations. | N/A | DTS | ✓ | | | ✓ |
| Achieve gold level Bicycle Friendly Community status from the League of American Bicyclists | Bronze | LAB/DTS | | | | ✓ |

2.6.4 Identified Safety Issues



Investment in biking was identified as improving safety, addressing affordability/mobility, improving health/wellness, investing in economic development, and enhancing the environment.

Key themes that emerged from public engagement included; safety, connectivity, Aloha, and enforcement.

2.6.5 Strategies or Projects to Address Safety Issues

Six key recommendations arose from the plan, laying out program and policy recommendations:

- Commit to Vision Zero
 - Implement traffic calming measures
 - Identify and implement emerging best practices
 - Develop a collaborative interagency approach to transportation safety
 - Cooperate with HPD on effective enforcement
- Develop seamless connections between bikes and transit
 - Provide safe bike access to transit stations

- Accommodate bikes on transit
- Integrate bikeshare around transit stations
- Provide secure bike parking
- Expand encouragement and education efforts
 - Support the establishment of ongoing Open Streets events
 - Prioritize support for programs that target underserved populations
 - Increase staff positions to oversee the City's active transportation education and encouragement efforts
 - Leverage the City's network of community partners
- Establish a comprehensive bikeway maintenance program
 - Create a maintenance and quick build team dedicated to bikeways
 - Develop a facility conditions inventory and prioritized maintenance schedule for all off-street shared use paths
 - Publicize the 311 app and the pothole reporting hotline/online request system
 - Establish work zone accommodation standards for bikeways, paths, and sidewalks
- Implement a consistent signage and wayfinding program
 - Prioritize signage on low-stress bikeways
 - Brand and sign major regional paths
 - Develop specialized treatments along iconic bikeway segments
- Evaluate bicycle facilities and programs
 - Collect, analyze, and publish ridership data
 - Evaluate the safety of new design treatments
 - Assess the effectiveness and distribution of bicycle programs

Specific project recommendations would add 575 miles of new bikeways to the transportation system. Recommendations were split into priority 1, 2, and 3 categories: with priority 1 projects focusing on dedicated bike lanes and paths and priority 2 and 3 focusing on lanes, shoulders and shared facilities.

2.6.6 Application to the SHSP

The *O'ahu Bike Plan 2019 Update's* goals, objectives and strategies will be referenced and aligned with as the SHSP Emphasis Areas are updated.

2.7 Hele Mai Maui Long-Range Transportation Plan 2040 (Maui Metropolitan Planning Organization, 2019)

2.7.1 Purpose and Content

Hele Mai Maui is the 20-year plan to make moving around Maui safe and comfortable. It identifies projects, services, programs and helps to prioritize limited transportation funds that best serve the values identified by the community.

2.7.2 Goals and Objectives

The goals of this plan include:

- Improve safety and promote health
- Enhance cultural and natural resources, climate resilience, and sustainability
- Expand mobility choices to reduce traffic congestion
- Connect and strengthen communities to improve quality of life
- Maintain assets and invest strategically for economic vitality



2.7.3 Performance Monitoring and Measures

Performance measures were developed based upon the goals of this plan. The performance measures and metrics for the safety related goal are shown below.

| Goal 1: Improve safety and promote health | | Target Direction (Increase or Decrease) |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Measure: | Metrics: | |
| ▶ Eliminate traffic-related fatalities and reduce serious injuries from traffic collisions | ▶ Number and rate of injuries and fatalities from crashes ▶ Number of projects installed that are anticipated to reduce crashes at high crash locations using crash modification factors (CMFs) | ↓ ↑ |
| ▶ Increase the amount of safe facilities for people walking and biking | • Total and annual lane miles of bicycle facilities constructed • Total and annual blocks of sidewalks constructed | ↑ ↑ |
| ▶ Increase physical activity by making walking and biking preferred modes of travel | • Key corridor and project bicycle and pedestrian volumes (pre-/post-project) • Level of traffic stress (pre-/post-project) | ↑ ↓ |

2.7.4 Identified Safety Issues

Equity was integrated into the plan framework to enable investment in places where transportation projects and programs can support historically underrepresented communities that may have fewer transportation options.

Between 2010 and 2017, there were 66 pedestrian collisions on average, including an average of 4 fatalities per year. 17% of collisions resulted in a fatal or sever injury.

During the same period, there were 36 pedestrian collisions on average, including an average of 1 fatality per year. 11% of collisions resulted in a fatal or severe injury.

Between 2012 and 2017, there were 75 fatalities due to crashes involving vehicles only.

Here's what we know about why fatal motor vehicle crashes occurred:

- ▶ More than 75% of these fatalities were caused by drivers under the influence of alcohol or drugs.
- ▶ Speeding accounted for 8% of crashes, while no other individual factor accounted for more than three fatal crashes.
- ▶ These data suggest the importance of education and enforcement as well as better roadway design.

2.7.5 Strategies or Projects to Address Safety Issues

The priority project recommendations were developed under the following categories:

- New Connections
- Multi-Use Paths
- Transit Improvements
- Safety Corridors
- Maintenance and Preservations
- Intersection Improvements
- Complete Streets

Eighty-eight projects were identified by the above category, area within the island, and near/medium/long-term priorities.

Non-capital program recommendations and partnerships were also recommended. The safety related programs include:

- Safe Routes to Transit
- Safe Routes for Seniors
- Safe Routes to School
- Vision Zero Initiative
- Neighborhood Slow Streets Program
- Complete Streets Program

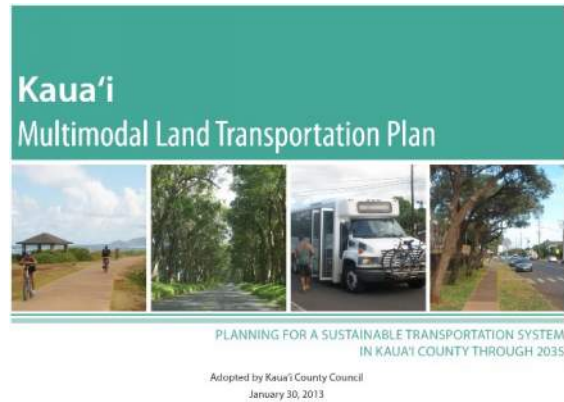
2.7.6 Application to the SHSP

The *Hele Mai Maui* safety related goal, projects/programs, performance measures and safety data trends will be referenced and aligned with as the SHSP Emphasis Areas are updated.

2.8 Kaua'i Multimodal Land Transportation Plan (County of Kaua'i, 2013)

2.8.1 Purpose and Content

The Multimodal Land Transportation Plan outlines the steps to achieve a balanced multimodal transportation system through 2035. It will be used to guide policies, ordinances, the allocation of transportation funding, the prioritization of transportation projects, and future transportation plans throughout the County. The greatest challenge that the plan addressed included “accommodating a growing population while preserving the rural character and high quality of life that is so important to the people of Kaua'i”. Related to safety, the lack of safe places to walk and bicycle, particularly for children was also identified as one of the greatest challenges for the County.



2.8.2 Goals and Objectives

The 8 goals of this plan include:

- Kaua'i County will be served by a balanced multimodal transportation system that provides choice, flexibility and resiliency in personal access and circulation for all.
- Kaua'i County will be served by a freight transport system that supports the island's economic sectors, including food and agriculture, health and wellness, sports and recreation, arts and culture, science and technology, and sustainable technologies and practices.
- Kaua'i County will be served by a transportation system that supports economic vitality and provides affordable access to jobs and economic opportunity.
- The Kaua'i County transportation system will support and enhance public health.
- The Kaua'i County transportation system will be planned and designed to protect and enhance the island's natural landscapes and environmental quality.
- Kaua'i County will be served by a transportation system that makes efficient use of energy and is less dependent on imported petroleum.
- The Kaua'i County transportation system will be maintained in a state of good repair.
- Kaua'i County will be served by a transportation system that protects and enhances the cultural values of Kaua'i, the rural character of the island and a high quality of life.

The safety related objectives fall under the goal related to enhancing public health. These objectives include:

- Improve the safety of walking in neighborhoods, villages and towns
- Improve the safety of bicycling in neighborhoods, villages and towns
- Provide safe, convenient pedestrian connections between homes and schools
- Provide safe, convenient bicycle connections between homes and schools

2.8.3 Performance Monitoring and Measures

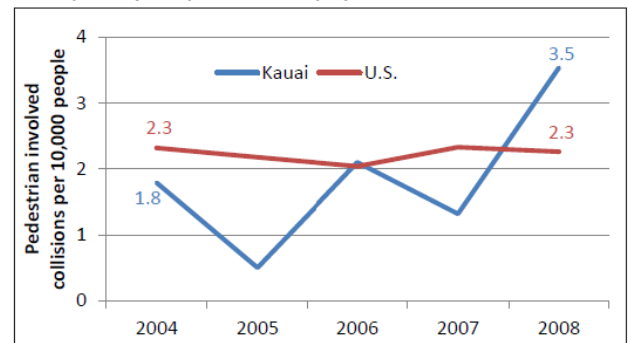
Progress for the Bicycle Program will be measured by increased mode share. The 2010 share is 2% of person trips, and the County has set a policy target for the bicycle mode share of 8% by 2035. Progress for the Pedestrian Program will be measured by increased mode share. The 2010 share is 5% of person trips, and the County has set a policy target for the pedestrian mode share of 12% by 2035.

2.8.4 Identified Safety Issues

Collision data for Kaua'i was reviewed for motor vehicles, pedestrians and bicyclists. Trends that were identified include:

- Between 1980 and 2010, the number of collisions per person decreased by nearly one-half
- Between 2000 and 2010, the number of motor vehicle involved fatalities per 100 million VMT increased from 0.77 to 1.30 per year, while the national averages have been decreasing
- Between 2004 and 2008, Kaua'i averaged 15 pedestrian involved collisions and 11 bicycle involved collisions per year
- Motor vehicle and bicycle collisions per capita are declining, however pedestrian collisions per capita appears to be increasing

Figure 4-10: Yearly pedestrian-involved motor vehicle collisions per capita (per de facto population)



Source: Hawai'i Traffic Safety Section, BTS

2.8.5 Strategies or Projects to Address Safety Issues

The Long-Range Plan outlines a Bicycle Program to meet the existing demand and achieve many of the County's transportation goals, including increasing affordable transportation options, improving public health, reducing energy consumption, reducing traffic growth and making Kaua'i a more enjoyable place. The program elements that address the safety objectives are identified as Town and Village Bicycle lanes, including:

- Giving priority to "Safe Routes to School" and transit corridors
- Connecting local destinations
- Providing access to separated paths
- Prioritizing streets with posted speeds >30 mph and 5,000 vehicles per day

The Pedestrian Program addresses feasibility, comfort and safety of pedestrian travel for short trips. The program elements that address the safety objectives relate to identifying Safe Routes to School needs, incorporating pedestrian provisions within town core planning/implementation and identifying and addressing safety needs based on accident reports.

The County Roads Program focuses on making improvements to streets to accommodate all modes. The safety elements focus on upgrading design standards including Complete Streets features and identifying and addressing safety needs based on accident reports.

2.8.6 Application to the SHSP

The *Kaua'i Multimodal Land Transportation Plan's* safety related goal, programs, performance measures and safety data trends will be referenced and aligned with as the SHSP Emphasis Areas are updated.

2.9 2045 O'ahu Regional Transportation Plan (O'ahu Metropolitan Planning Organization, 2021)

2.9.1 Purpose and Content

The O'ahu Regional Transportation Plan described the vision and goals for the future transportation network, projects and programs. It includes both short and long-range strategies and actions that provides for the development of an integrated multimodal transportation system. The plan is fiscally constrained and updated every 5 years.

The vision for the plan is "in 2045, O'ahu's path forward is multimodal and safe. All people on O'ahu can reach their destinations through a variety of transportation choices, which are reliable, equitable, healthy, environmentally sustainable, and resilient in the face of climate change."



2.9.2 Goals and Objectives

The 7 goals of this plan include:

- Improve the safety of the transportation system
- Support active and public transportation
- Promote an equitable transportation system
- Improve the resiliency of the transportation system
- Preserve and maintain the transportation system
- Support a reliable and efficient transportation system
- Improve air quality and protect environmental and cultural assets.

The plan aligned the federal planning factor, performance measures and objectives. For the safety goal, the resulting objectives include:

- Reduce the deaths and serious injuries on our roads, bridges, and paths
- Reduce the rate of deaths and serious injuries of people walking and biking

2.9.3 Performance Monitoring and Measures

The plan aligned the federal planning factor, performance measures and objectives. For the safety goal, the resulting performance measures include:

- Number of fatalities
- Rate of fatalities
- Number of serious injuries
- Rate of Serious injuries

- Total bus and paratransit fatalities
- Bus and paratransit fatalities per 1M vehicle revenue miles
- Total Bus and paratransit injuries
- Bus and paratransit injuries per 100K vehicle revenue miles
- Total bus and paratransit safety events
- Bus and paratransit safety events per 100K vehicle revenue miles
- Bus and paratransit system reliability (vehicle revenue miles/mechanical road calls)
- Number of non-motorized fatalities and serious injuries

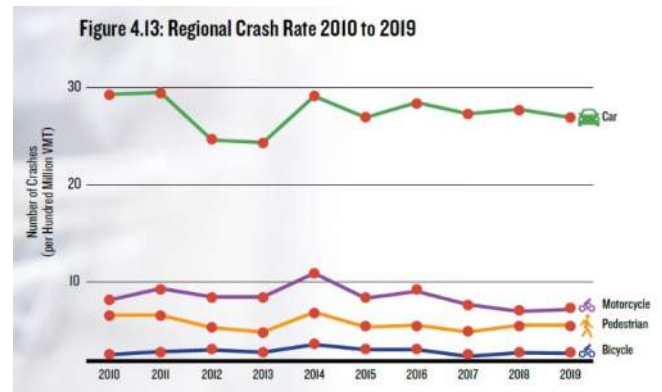
Table 4.9: Safety Target and Achievement Under Review Period

| No. | Measure | Target | 2014-18 Performance |
|-----|----------------------------------------------------------|--------|---------------------|
| 1 | Fatalities | 97.6 | 106.4 |
| 2 | Fatalities Rate (fatalities/100 million VMT) | 0.946 | 1.006 |
| 3 | Serious Injuries | 517.4 | 437 |
| 4 | Serious Injuries Rate (serious injuries/100 million VMT) | 4.978 | 4.156 |
| 5 | Non-Motorized Fatalities and Serious Injuries | 119.4 | 112.6 |

Safety performance and initial targets during the review period were not met for fatalities and fatality rates, but were achieved for serious injuries and non-motorized modes.

2.9.4 Identified Safety Issues

Crash rates between 2010 and 2019 are shown for the region by mode. Generally, there was a slight decrease in crash rates.



2.9.5 Strategies or Projects to Address Safety Issues

A prioritization process was used to evaluate potential projects and programs using measurable criteria based on the goals of the plan. The draft list was evaluated by a Title VI/Environmental Justice block groups assessment. The resulting final constrained list of projects are shown in an interactive GIS map, here: <https://arcg.is/GieTf>. Examples of the safety programs/projects include:

- The HDOT Safety Program collects data to identify areas characterized with high crash occurrences; implementing both infrastructure and non-infrastructure improvements, education, and outreach and maintaining the integrity of roadways to reduce injuries and increase survivability of crashes.
- The DTS Alternatives Projects implement enhancement projects, including but not limited to safe routes to school projects, pedestrian safety improvements and projects from the Transportation Alternatives Program.

2.9.6 Application to the SHSP

The *O’ahu Regional Transportation Plan’s* safety related goal, programs, performance measures and safety data trends will be referenced and aligned with as the SHSP Emphasis Areas are updated.



Appendix C: Evaluation of Previous SHSP Technical Memorandum



2025 – 2029 Strategic Highway Safety Plan Evaluation of the Previous 2019 – 2024 Plan

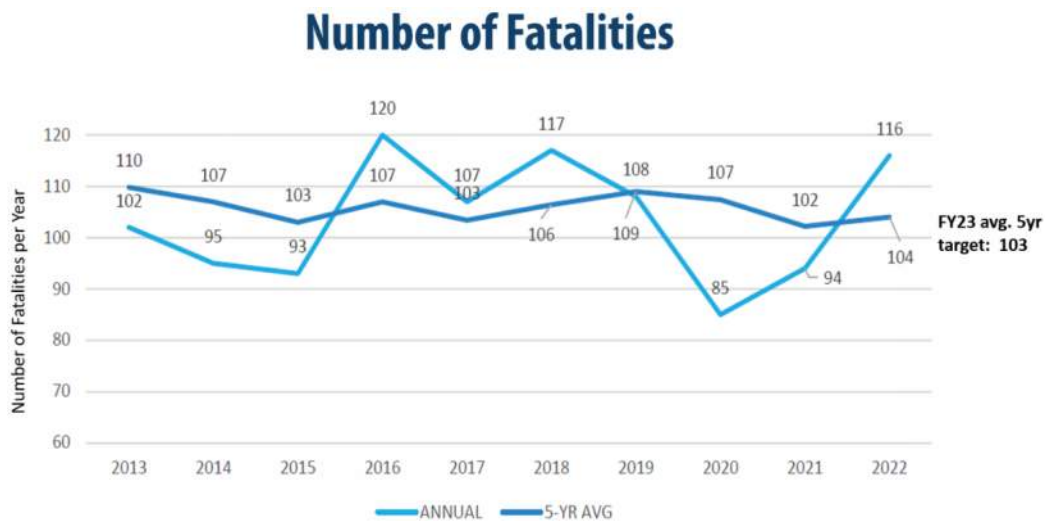
The State of Hawai'i, Department of Transportation (HDOT) Strategic Highway Safety Plan (SHSP) will be developed using a data-driven approach to provide a comprehensive framework for reducing traffic-related fatalities and serious injuries across all transportation modes and promote investments in transportation safety. As part of the data-driven approach, the previous SHSP will be evaluated to analyze the plan's performance. SHSPs must be evaluated on a regularly recurring basis (in alignment with the update process) as required under the Highway Safety Improvement Program (HSIP), codified under Title 23, United States Code (U.S.C.), Section 148(c)(1)(C), to ensure the accuracy of the data and priority of proposed strategies.

1. Federal Performance Measures

Under 23 Code of Federal Regulations (CFR) Part 490.207, there are five performance measures to assess each state's performance in carrying out the Highway Safety Improvement Program: 1) number of fatalities, 2) rate of fatalities per 100 million vehicle miles traveled (VMT), 3) number of serious injuries, 4) rate of serious injuries per 100 million VMT, and 5) number of non-motorized fatalities and non-motorized serious injuries. Each measure is based on a 5-year rolling average. In addition, each state is required to establish annual targets for each performance measure.

1.1 Number of Fatalities

During the 10-year period from 2013 to 2022, the least number of fatalities occurred in 2020, which is assumed to be due to the impacts from the COVID-19 pandemic. Since then, the number of fatalities has seen an increasing trend, with an 11% increase in 2021, and a 23% increase in 2022. The five-year rolling average has remained fairly consistent over the 10-year period, with the greatest increase of 4% in 2016. Since 2019, the five-year rolling average has seen a slight decrease from 108 to 104 in 2022.



1.2 Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT)

The rate of fatalities per 100 million VMT per year follows a similar trend line as the number of fatalities graph. However, as shown in the table below, the number of vehicle miles traveled has only seen an increasing trend over the 10-year period, with the exception of 2019 to 2020 due to the COVID-19 pandemic. With the exception of 2021 (which illustrates travel behaviors returning to “normal” following the COVID-19 pandemic), the greatest increase in the number of VMT was from 2015 to 2016 (3%) and from 2021 to 2022 (3%). This also correlates to the highest increase in fatalities, where from 2015 to 2016 fatalities increased by 29%, and from 2021 to 2022 it increased by 23%.

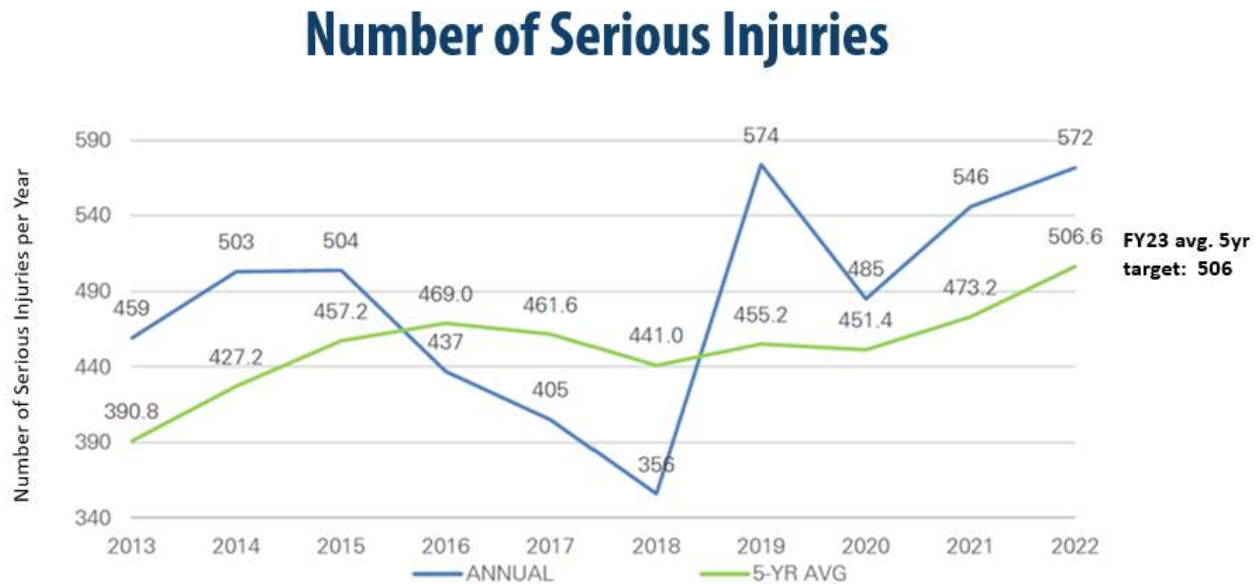
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|--------|--------|---------|
| Fatalities | 102 | 95 | 93 | 120 | 107 | 117 | 108 | 85 | 94 | 116 |
| Number of VMT (in 100 Million) | 100.990 | 101.822 | 102.422 | 105.633 | 107.322 | 108.837 | 109.756 | 87.719 | 99.156 | 102.112 |
| Rate of Fatalities | 1.01 | 0.933 | 0.908 | 1.136 | 0.997 | 1.075 | 0.984 | 0.969 | 0.948 | 1.136 |

Rate of Fatalities per 100 million VMT



1.3 Number of Serious Injuries

The number of serious injury crashes fluctuated between 2013 and 2022. The highest number of serious injuries crashes occurred in 2019 followed by 2022. The five-year moving average has been trending upwards, with the average increasing by 115.8 from 2013 to 2022. The increase in serious injury crashes and the five-year average from 2019 to 2022 may be a result of the revisions to the injury categories in the Motor Vehicle Accident Report (MVAR).

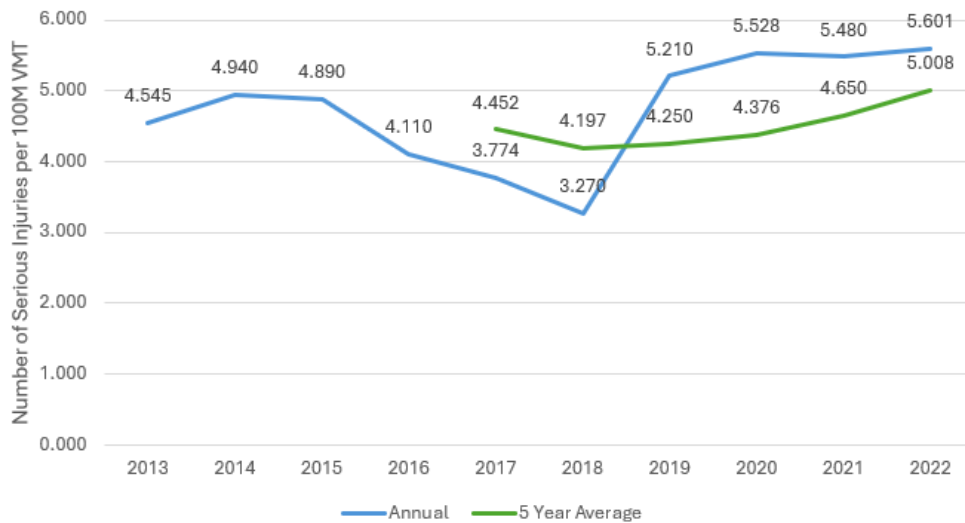


1.4 Rate of Serious Injuries per 100 Million VMT

The rate of serious injuries per 100 million VMT follows a similar trend line as the number of serious injuries graph. Within the timeframe of the current SHSP, the five-year moving average has been increasing from 4.25 in 2019 to 2.65 in 2021. As previously noted, this increase may be associated with the revised injury categories in the MVAR.

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|--------|--------|---------|
| Serious Injuries | 459 | 503 | 504 | 437 | 405 | 356 | 574 | 485 | 546 | 572 |
| Number of VMT (in 100 Million) | 100.990 | 101.822 | 102.422 | 105.633 | 107.322 | 108.837 | 109.756 | 87.719 | 99.156 | 102.112 |
| Rate of Serious Injuries | 4.545 | 4.940 | 4.890 | 4.110 | 3.774 | 3.270 | 5.210 | 5.528 | 5.480 | 5.601 |

Rate of Serious Injuries per 100 million VMT

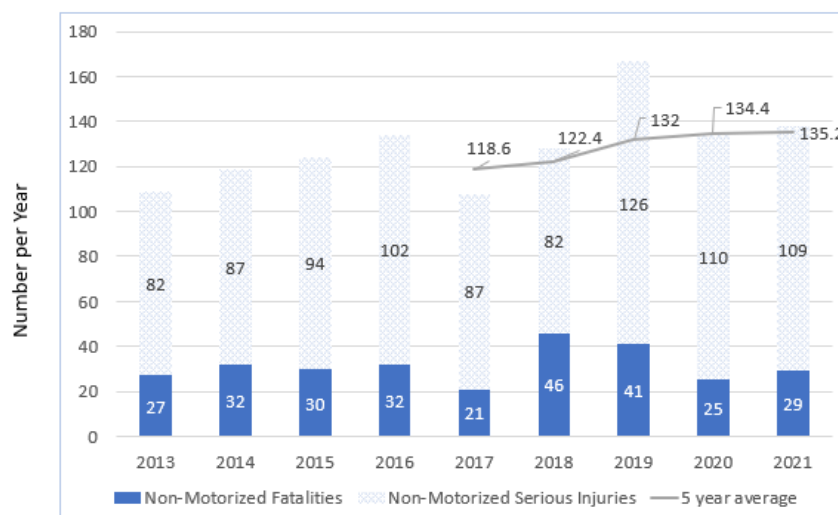


FY23 avg. 5yr target: 5.032

1.5 Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries

In general, the number of non-motorized fatalities have decreased in recent years. However, the number of serious injuries has been increasing from 2013 to 2021. The five-year average of non-motorized fatalities and serious injuries has also been increasing between 2019 to 2021, from 132 to 135.2. The increase in non-motorized serious injuries may be related to the revisions to the injury categories in the MVAR.

Number of Non-Motorized Fatalities and Serious Injuries



FY23 avg. 5yr target: 142.4

2. 2019-2024 SHSP Goal

The 2019 – 2024 SHSP was a collaborative effort of over 150 traffic safety experts and stakeholders. The five-year plan addressed the greatest traffic safety concerns in Hawaii, identifying eight emphasis areas, that are discussed in more detail in Section 3.

- Putting the Brakes on Speeding
- Combating Impaired Driving
- Protecting Vehicle Occupants
- Safeguarding Pedestrians and Bicyclists
- Ensuring Motorcycle, Motor Scooter and Moped Safety
- Building Safer Roadways by Design
- Enhancing First Responder Capabilities
- Improving Data and Safety Management Systems

Strategies and Actions Plans focused on each of these Emphasis Areas were developed, embracing the five Es of safety – engineering, education, enforcement, emergency medical services and everyone else. The overall goal of the five-year plan was “Working together, we will reduce the fatality rate from 7.2 to 6.5 fatalities per 100,000 population, or less, by 2024, with the ultimate goal of zero traffic deaths.” Between 2019 to 2023, the average fatality rate per 100,000 population decreased to 6.9.

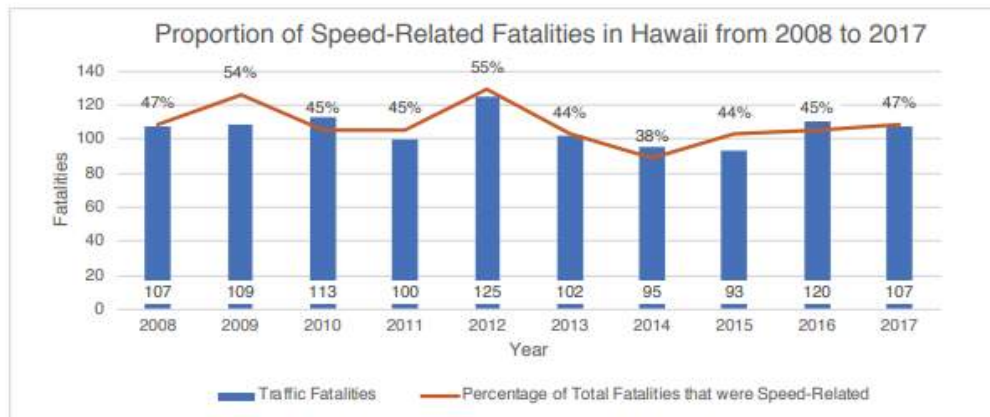


3. Evaluation of Emphasis Areas (EA)

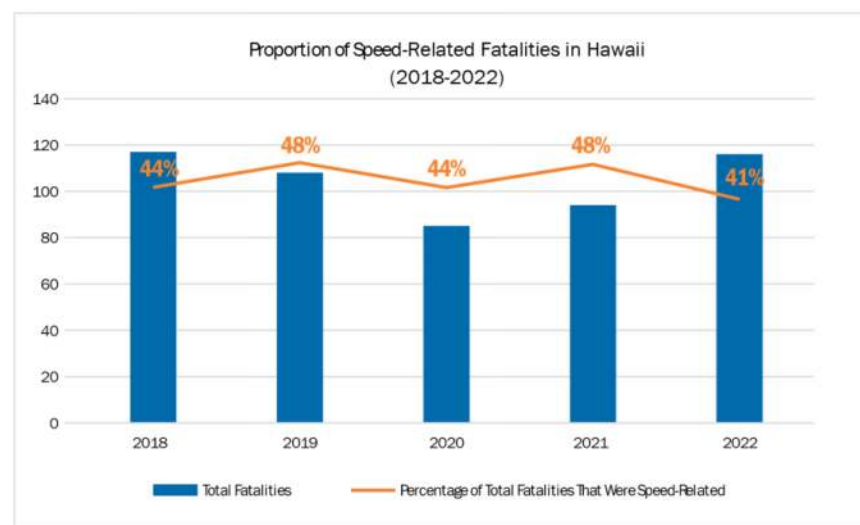
The current 2019 – 2024 SHSP identified strategies, actions, and performance measures for each Emphasis Area (EA). The performance measures in each EA will be used to evaluate the progress of implementing the strategies and actions, or to measure the outcomes or measurable changes that may be attributed to the implementation of the SHSP strategies and actions. Examples of outcome performance measures include the number and rate of crashes, fatalities, and serious injuries, observed behavior, emergency response times, knowledge and behavior, etc. It is noted that the link between SHSP implementation and crash reduction is indirect, however, correlations can be identified and used in outcome evaluation.

3.1 Putting the Brakes on Speeding

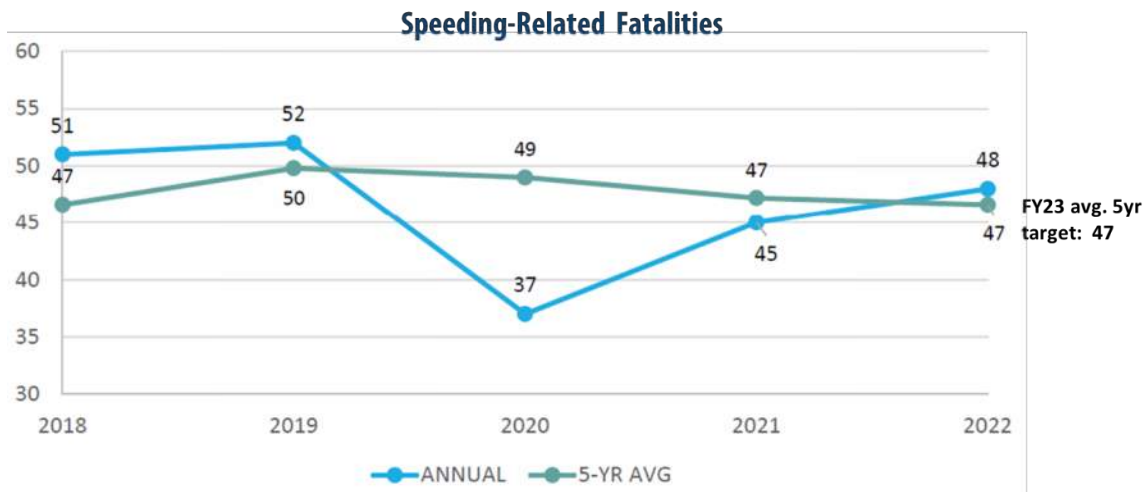
Focusing on speed-related crashes was selected as an Emphasis Area as they accounted for nearly half (47%) of all traffic fatalities over a 10-year period from 2008 to 2017. During the time when the previous SHSP was being updated, the National Highway Traffic Safety Administration (NHTSA) ranked Hawai'i as having the fifth highest proportion of speed-related fatal crashes.



Between 2018 to 2022, speeding accounted for at least 40% of all traffic fatalities.



Although the latest data shows an annual increase in fatalities, the moving average has remained fairly constant, with a slight decrease between 2019 to 2022, from 50 to 47.



Performance Measure: Number of speed-related enforcement contacts

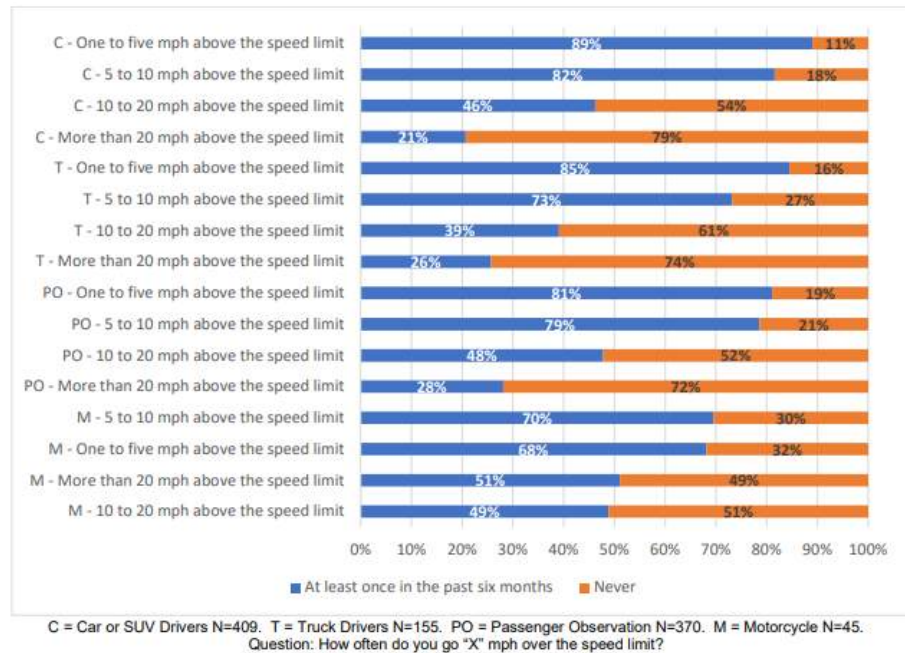
The performance measure for the speeding emphasis area is the number of speed-related enforcement contacts. The number of speed enforcement efforts fluctuated within the five-year period, however, they were conducted throughout each year and the table below highlights the prominent enforcement efforts put forth by all of the County police departments. Since 2019, over 115,000 speed contacts have been made statewide.

| Fiscal Year | Number of Speed Contacts (made by County Police Departments) |
|-------------|--------------------------------------------------------------|
| FY 2023 | 9,960 |
| FY 2022 | 24,868 |
| FY 2021 | 55,602 |
| FY 2020 | 19,161 |
| FY 2019 | 5,710 |

Other Outcomes

In 2023, HDOT solicited SMS to conduct five statewide Attitudes and Behaviors Surveys that were intended to provide the HDOT with quantitative data about the general public’s views of behavioral traffic safety issues. SMS collected 523 survey results from Hawai’i residents 18 years or older across all counties within the State. The results of the surveys are documented in the HDOT Statewide Attitudinal Survey report (herein referred to as “Attitudinal Survey”).

One of the questions in the survey asked participants “How often do you go “X” mph over the speed limit?”. Responses show that speeding is a common occurrence across all vehicle types surveyed (car or SUV drivers, truck drivers, passenger observations, and motorcyclists). Over 80% of car/SUV drivers drove 5 – 10 mph above the speed limit. Motorcyclists were recorded to speed at higher speeds than any other mode. Over 50% of motorcyclists reported that they sped 20 mph over the speed limit and 49% traveled between 10 – 20 mph over the speed limit at least once in the past six months.



Core Strategies and Implemented Actions

Seven core strategies were identified to combat speeding. The table below highlights some of the key actions taken over the past five years that addressed each strategy. Safe System elements were applied, resulting in a holistic approach that incorporated education, enforcement, media, engineering and community engagement throughout the five-year plan. Several legislative bills were also introduced this year to address automated enforcement and penalties, both are currently still in the review process.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Enact legislation enabling counties to implement a photo enforcement program. | <ul style="list-style-type: none"> Senate Bill 2443 establishes the Automated Speed Enforcement Systems Program, to be implemented by the State in only those locations where a photo red light imaging detector system has been implemented. The bill appropriates funds and creates a new offense of noncompliance with maximum speed limit under an automated speed enforcement system. As of May 3, 2024 it is being reviewed by the Governor. |
| 2 | Re-examine existing reckless driving and speeding laws to improve conviction rates and effectiveness of penalties. | <ul style="list-style-type: none"> Conducted Speed Management meetings with federal, state and local agency partners to identify issues, resources and solutions – such as lowering of speed limits and placement of speed data recorders in problem areas. |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | <ul style="list-style-type: none"> Senate Bill 2308 authorizes additional fines and penalties for convictions of speeding in a school zone. Currently being reviewed. |
| 3 | Develop and implement media campaigns, public service announcements, and public education initiatives that address speeding and aggressive driving. | <ul style="list-style-type: none"> Enforcement efforts were enhanced by coordinating outreach, media and enforcement campaigns such as Vision Zero’s messaging for speeding, and the “No Excuses” PSA reminding drivers that there is no excuse for driving while impaired or speeding. HDOT Speed media campaign focused on males 18-25 years old. In 2021, over 190 TV spots and over 2000 radio spots were aired resulting in 2,908,976 exposures |
| 4 | Evaluate and/or implement road safety design elements and infrastructure to reduce speeding and speed-related crashes (e.g., speed limits, speed feedback signs, intelligent transportation system technologies, etc.) | <ul style="list-style-type: none"> Installed physical deterrents such as speed humps, tables and raised crosswalks. Between 2019 to 2024, over 233 have been installed. |
| 5 | Use timely crash data to identify high-risk locations in order to direct resources in enforcement, education and engineering. | <ul style="list-style-type: none"> Used the Selective Traffic Enforcement Programs (STEP) and Traffic Commanders Meeting venues to engage law enforcement, engineers and planners – this collaboration allowed for data driven decisions and identification of high-risk areas. |
| 6 | Conduct studies to identify ways to address speeding. | <ul style="list-style-type: none"> The Maui Police Department did speed evaluations at eight locations, capturing average speeds and determining if additional patrols were warranted. |
| 7 | Develop aggressive driving/speed management programs. | <ul style="list-style-type: none"> Police departments conducted overtime speed enforcement and purchased new lasers (40 total) and vehicle mounted radars (9 total) Maui Police Department placed speed data monitors in locations identified by community members and stepped up enforcement in warranted areas. HDOT coordinated speed management meetings. |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about the positive strategies and/or actions resulting from the 2019-2024 SHSP. Some of the successes in implementation included:

- More collaboration between agency partners
- More collaboration efforts between statewide media campaigns and enforcement, in conjunction with greater enforcement
- Providing more of an emphasis on design to make roads safer
- Increasing installation of traffic calming features (speed humps/tables/raised crosswalks, roundabouts)

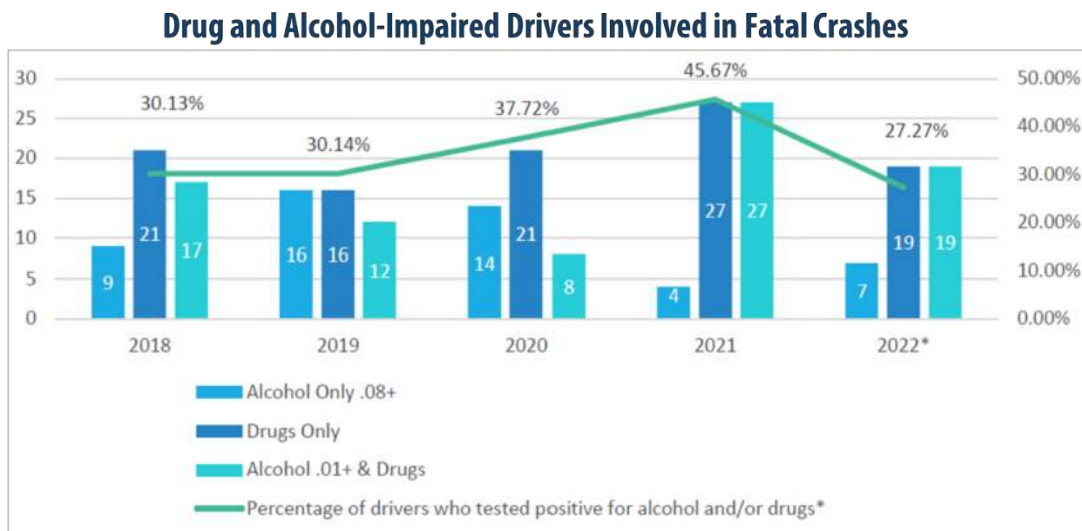
Areas that could be improved upon were also identified, these included:

- Sharing of data summaries and/or data gaps, e.g. red-light camera safety impacts, or motorcycle speeding
- Automated speed enforcement
- A comprehensive approach to speed management system wide

3.2 Combating Impaired Driving

Based on the previous SHSP data, Hawai'i was ranked the fourth highest in the nation for impaired driving-related fatal crashes.

The table below shows the number of fatal crashes that involved alcohol only (with a blood alcohol concentration of .08+), drugs only, or alcohol (with a blood alcohol concentration of .01+) and drugs between 2018 and 2022. While alcohol only fatalities has been decreasing, the number of fatalities involving drugs only or a combination of alcohol and drugs has been increasing.



Performance Measure: Proportion of OVUII convictions

The performance measure for impaired driving was the proportion of operating a vehicle under the influence of an intoxicant (OVUII) convictions. Between 2019 and 2022, there were four felony convictions and 93 discharged or dismissed cases. During the same time period, there were nearly 10,700 misdemeanor convictions and slightly under 9,000 discharged or dismissed cases. The ratio of felony convictions and misdemeanor convictions to the total number of cases has been increasing over the years, with the exception of 2021. In 2022, approximately 72% of all convictions and cases were felony or misdemeanor convictions, which is a 9% increase from 2019.

| Fiscal Year | Felony Conviction | Felony Discharged or Dismissed | Misdemeanor Conviction | Misdemeanor Discharged or Dismissed |
|-------------|-------------------|--------------------------------|------------------------|-------------------------------------|
| FY 2022 | 1 | 19 | 2,131 | 817 |
| FY 2021 | 3 | 24 | 1,236 | 4,364 |
| FY 2020 | 0 | 32 | 3,135 | 1,294 |
| FY 2019 | 0 | 18 | 4,197 | 2,487 |

Performance Measure: Ignition interlock installs

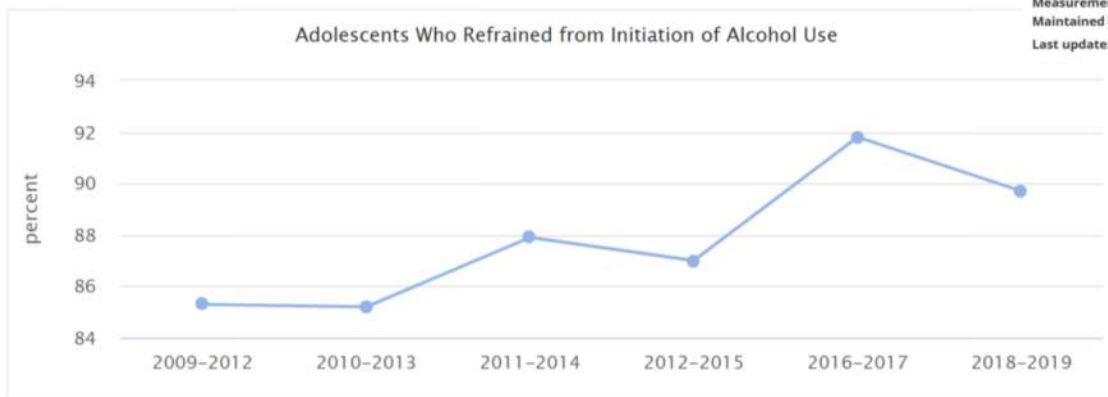
The second performance measure for impaired driving are ignition interlock installs. There are currently 1,034 active ignition interlock installs. Since January 2011, interlocks have prevented over 128,600 alcohol-positive starts.

Performance Measure: Percentage of youth surveyed who refrain from alcohol and/or drugs

The third performance measure for impaired driving was the percentage of youth surveyed who refrained from alcohol and/or drugs. Based on the survey maintained by the State Department of Health (DOH), just under 90% of youth surveyed refrained from alcohol and drugs.

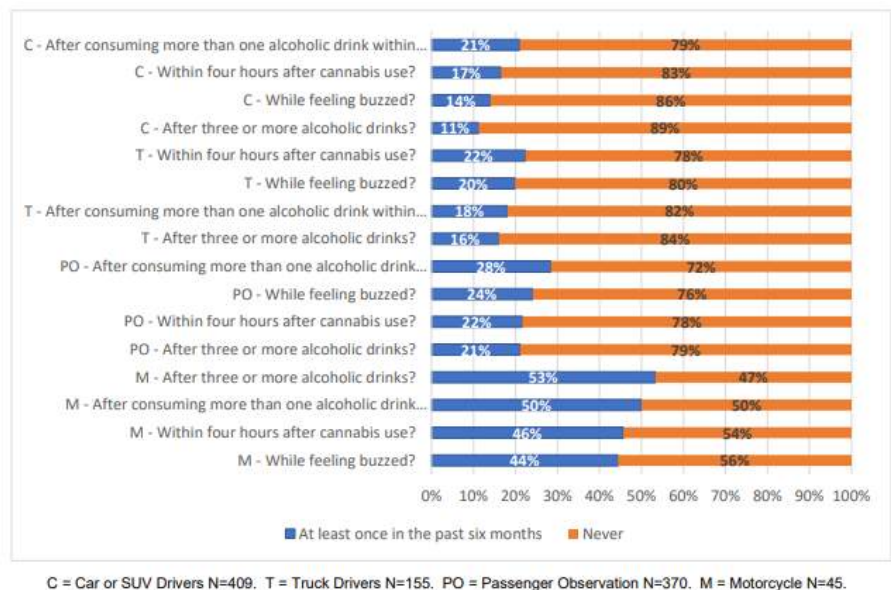
State: Hawaii

89.7%



Other Outcomes

In the 2023 Attitudinal Survey, participants were asked how often they operated a vehicle after consuming cannabis, alcoholic drinks, and while feeling buzzed. Approximately 28% or less of car/SUV drivers, truck drivers, and passenger observations reported to have operated a vehicle under the influence at least once in the past six months. A higher proportion of motorcyclists indicated that they drive under the influence of at least one impaired driving category. It should be noted that motorcyclists accounted for a much smaller proportion of survey respondents (45 total).



Core Strategies and Implemented Actions

Nine core strategies were identified to combat impaired driving. The table below highlights some of the key actions taken over the past five years that addressed each strategy. Most of the actions implemented centered around enforcement, education, and encouragement. Two legislative bills were also introduced during this time, one of which passed in 2022 as Act 94.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Evaluate and improve the entire impaired driving process from prevention to post-adjudication, including but not limited to e-search warrants, establishment of a state forensic toxicology lab, ignition interlock, DWI court and laws pertaining to OVUII | <ul style="list-style-type: none"> DWI court contracted NPC Research and began evaluation of its program (in progress). Court monitoring of impaired driving court proceedings, assisting with database entries and tracking, attended training Ongoing evaluation of the process and outcomes of Court Monitoring DWI Court Program has 67 graduates. Has demonstrated a 14% reduction in recidivism for subsequent OVUII after 2 years. The Kauai Prosecutors Office's Traffic Safety Resource Prosecutor provided statewide support regarding legislative and technical requests. The Judiciary's DWI Court Judge and Case Manager attended the National Association of Drug Court Professionals RISE21 Training gaining best practices and emerging research knowledge. |
| 2 | Establish and implement e-warrant system | <ul style="list-style-type: none"> County Police Departments continued with the E-search warrant program utilizing DocuSign Hawai'i County Police Department implemented the electronic search warrant |
| 3 | Establish and maintain a forensic toxicology lab to conduct testing for alcohol and drug-impaired driving cases | <ul style="list-style-type: none"> Senate Bill 1411 - Legislation providing funding for an in-state drug and alcohol toxicology testing lab. Carried over to the 2024 Regular Session. DOH State Laboratories Division filled it's branch chief position, which will assist with establishing Hawaii's first forensic toxicology lab. |
| 4 | Strengthen the ignition interlock program in Hawai'i | Act 94 Relating to Operating a Vehicle Under the Influence of an Intoxicant – Shortens the driver's license revocation period for first-time offenders of OVUII if they show proof they are using the interlock ignition system in their car continuously for six to nine months. |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | Develop and implement prevention, communications and community outreach initiatives | Police conducted impaired driving operations, sobriety checkpoints and saturation patrols, especially during holidays and periods known for drinking. Agencies also supported these mobilization efforts and enhanced operations with outreach and media. |
| 6 | Improve upon collection, analysis and application of impaired driving-related data | Trained volunteers monitored OVUII court proceedings in District and Circuit courts. Data was collected and entered into HDOT's database |
| 7 | Establish and/or maintain partnerships with government agencies, community coalitions, the private business sector, other industries, etc. to combat impaired driving, including collaboration on and incorporation of other group's strategic plans | <ul style="list-style-type: none"> • Hosted/coordinated with partners for a number of training courses (listed in the annual report) • Partnered with Keep It Flowing, Hawaii to prevent underage drinking. Hosted a statewide Impaired Driving Summit. |
| 8 | Align with priorities identified by the Impaired Driving Task Force or similar groups | <ul style="list-style-type: none"> • Hawai'i County Police Department participated in Drive Sober or Get Pulled Over, focusing enforcement efforts in the injury/fatality corridors highlighted by the Vision Zero Action Plan • Participated in the NGA Impaired Driving Learning Collaborative. Met with national experts and other chosen 9 states to shared challenges, successes and ideas culminating in an Action Plan |
| 9 | Adapt priorities, training and initiatives to emerging impaired driving-related trends and issues | <ul style="list-style-type: none"> • Participated in a number of training courses (listed in the annual report) • Equipping and training law enforcement through DRE training • Conducted DRE and Intoxilyzer trainings for law enforcement and prosecutors • Borkenstein Alcohol and Drug Course, Intoxilyzer Supervisors Training, IACP DAID Conference, Lifesavers Conference, DRE Certification Nights, ARIDE, SFST Instructor Course, PAS Class, Impaired Driving Summit • Provided funds for trainings and conferences and equipment purchases • Hawai'i County Police Department held its first DRE School. Participation in the Lifesavers |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|---------------|----------------------------------------------------------|
| | | Conference, Intl. Assoc. of Chiefs of Police Training |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about the positive strategies and/or actions resulting from the 2019-2024 SHSP. Some of the successes in implementation included:

- More collaboration between agency partners
- More collaboration efforts between statewide media campaigns and enforcement, in conjunction with greater enforcement

Areas that could be improved upon, as well as opportunities for the upcoming SHSP were also identified, these included:

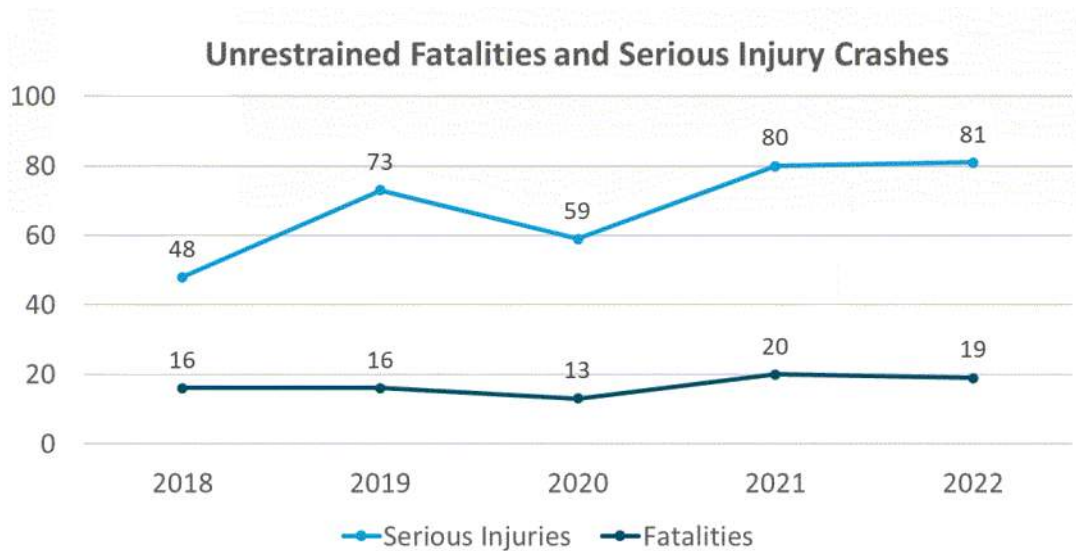
- Addressing sharing of data summaries, data gaps, and consistency
- Implementing the in-state forensic laboratory

3.3 Protecting Vehicle Occupants

Occupant protection is an area that addresses all generations of motor vehicle users. The 2019-2024 SHSP focused on policy, education, enforcement and resources to improve occupant protection for all ages.

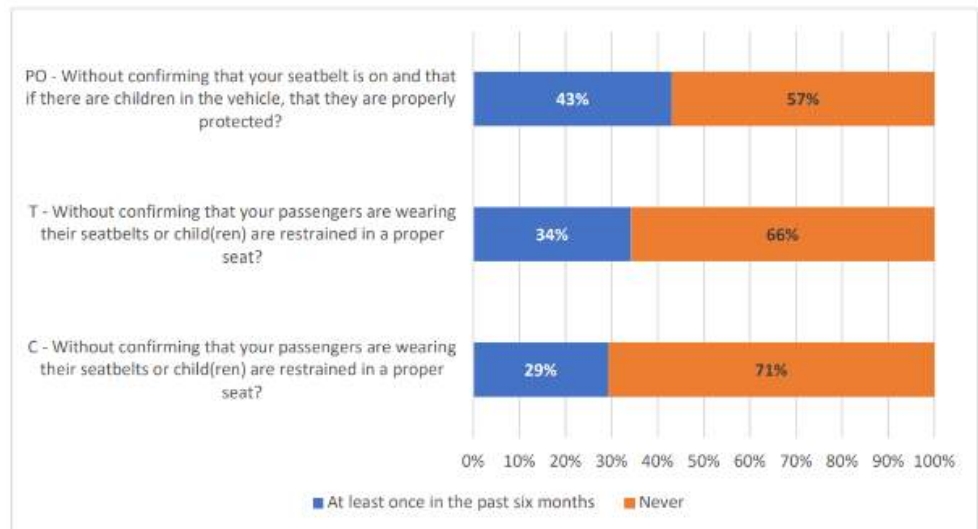
Performance Measure: Number of unrestrained motor vehicle occupants in vehicular crashes

The performance measure for the Protecting Vehicle Occupants Emphasis Area was the number of unrestrained motor vehicle occupants in vehicular crashes. The number of reported serious injury crashes where the occupants were unrestrained has been on the rise from 2018 to 2022. During the same time period, there has been a slight increasing in fatalities involving unrestrained occupants.



Other Outcomes

In the 2023 Attitudinal Survey, participants were asked how often they drove without confirming that passengers were wearing their seatbelt and/or children were properly restrained. Approximately 43% of passengers reported that the driver had not checked to see if they had their seatbelt on, or if children were properly restrained.



Question: "Over the past six months, how often have you [drove without confirming that your passengers are wearing their seatbelts or child(ren) are restrained in a proper seat]?"
 C = Car or SUV Drivers. T = Truck Drivers. PO = Passenger Observation.
 n = 409 (C), n = 156 (T), n = 370 (PO)

Core Strategies and Implemented Actions

Six core strategies were identified to address occupant protection. The table below highlights some of the key actions taken over the past five years that addressed each strategy. The actions implemented throughout the five-year plan focused on enforcement, training, and community engagement. Act 122 was signed into law in 2022, amending requirements for child passenger restraint.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Enact policies and legislation to enhance enforcement and adjudication of occupant protection laws to reduce crashes that result in serious injury or death | ACT 122 enhanced legislation for child passenger restraints, aligning with the American Academy of Pediatrics and NHTSA. The law requires rear facing child safety seats for children less than two years of age, increases the age through which a child must use a child passenger restraint or booster seat to 10 years old, and raises fines for certain violations. |
| 2 | Outreach education to increase restraint and seat belt use through media and community activities | The County Police Department technicians, CPS Keiki Injury Prevention Coalition, and East Hawaii Kiwani's provided virtual and in-person child seat assessments, as well as provided car-seats for families in need. |
| 3 | Identify and maintain key partnerships to promote occupant protection | <ul style="list-style-type: none"> East Hawai'i Kiwanis Club working with a DOH epidemiologist and UH Hilo sociology professor implementing and assessing the Belts on Bones project The Keiki Injury Prevention Coalition continued to provide virtual and in-person assistance (585) with child seat protection and distributed |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 118 car seats to families. The East Kiwanis held 8 clinics and 136 one-on-one safety seat checks. |
| 4 | Advocate for occupant protection resources for child passenger safety initiatives | <p>Approximately 40 training courses were conducted since 2019 to continue to grow the number of child passenger safety technicians statewide.</p> <ul style="list-style-type: none"> • Continue to rebuild the number of child passenger safety technicians on all islands <ul style="list-style-type: none"> ○ FY19: 51 trained ○ FY20: 22 trained ○ FY21: 7 trained ○ FY22: 66 trained |
| 5 | Support of law enforcement to continue their enforcement and education efforts, with emphasis on nighttime enforcement | High visibility enforcement and education for seat belt and child restraint laws were conducted in areas identified with low restraint use by the annual Observational Studies. |
| 6 | Conduct focus groups in low-use areas | Maui Police Department focused enforcing in areas with low restraint use compliance, resulting in approximately 1500 contacts. Kaua'i Police Department provided in-person and virtual car seat checks, allowing outreach in rural/hard to reach areas resulting in 679 car seat checks and 61 new car seats provided to families in need |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about the positive strategies and/or actions resulting from the 2019-2024 SHSP. Some of the successes in implementation included:

- Increased enforcement
- Increased helmet use and emphasis on safety practices
- More media awareness

Areas that could be improved upon were also identified, these included:

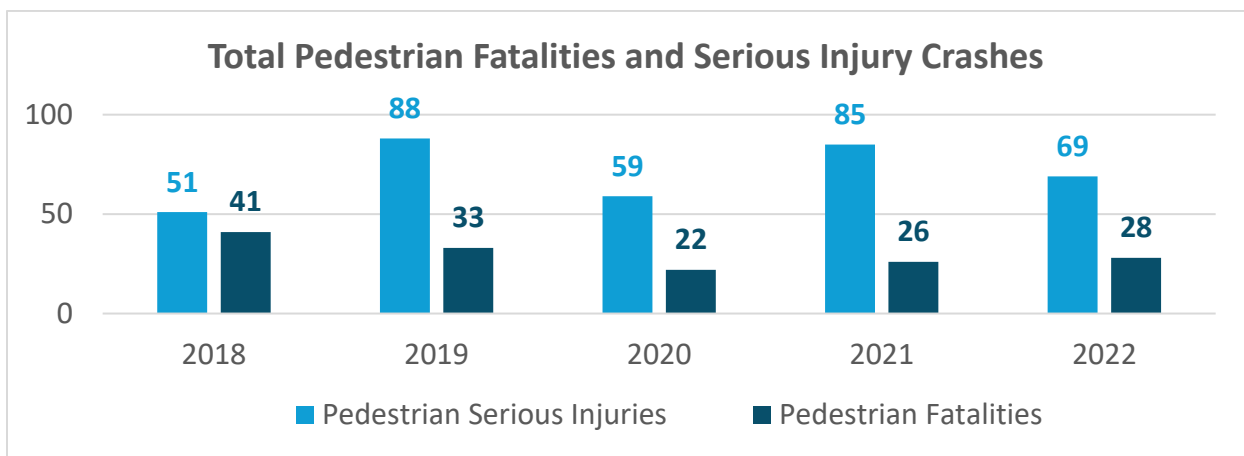
- Driver and pedestrian education
- Seat belt usage
- Targeted awareness campaigns

3.4 Safeguarding Pedestrians and Bicycles

Pedestrian fatalities and serious injuries have seen an increasing trend over recent years. In the previous SHSP, it was noted that older pedestrians or kupuna were involved in more fatal pedestrian-vehicle crashes, but children were often injured in crashes, especially during school start (7 – 8AM) and end (2 – 3PM) times. It was also noted that the most fatal bicycle crashes occurred between 6 – 10AM, and men over 55 years old made up a majority of those involved in bicyclist fatalities. Children were found to be often injured in crashes during school start times and during the hours of 2 – 6PM.

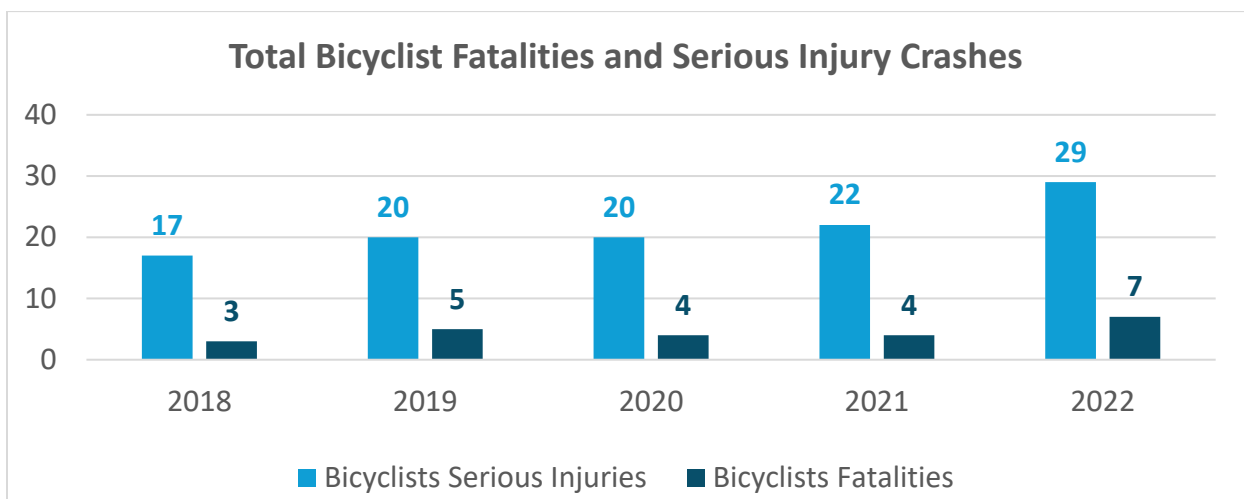
Performance Measure: Number of pedestrian fatalities and serious injuries

The first performance measure for this Emphasis Area is the number of pedestrian fatalities and serious injuries. In 2018, there were 41 pedestrian fatalities, which is the highest number of fatalities over the past decade from 2012 to 2022. Since then, there has been a slight decrease in the number of pedestrian fatalities. However, the number of pedestrian serious injury crashes has been increasing from 2018 to 2022.



Performance Measure: Number of bicyclist fatalities and serious injuries

Bicyclist fatalities and serious injuries have seen an overall increasing trend from 2018 to 2022. In 2022, the number of bicyclist fatalities and serious injuries were at its highest during this five-year period, with 29 serious injuries and 7 fatalities.



Core Strategies and Implemented Actions

Eight core strategies were identified to address pedestrian and bicyclist safety. The table below highlights some of the key actions taken over the past five years that addressed each strategy. Safe System elements were applied, resulting in a holistic approach that incorporated education, enforcement, media, engineering and community engagement throughout the five-year plan. Act 134, also known as the Vision Zero Act, was passed in 2019. Since then, each City and County has made progress towards creating a Vision Zero Action Plan.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Evaluate and implement context-sensitive speeds that consider adjacent land use and population to decrease fatalities and serious injuries | HDOT lowered speeds along Waokanaka Street, Jack Lane and Piilani Highway to align with raised cross walks and multi-modal use areas. |
| 2 | Expand, improve and maintain state and local pedestrian and bicycle facilities and networks | <ul style="list-style-type: none"> • HDOT continued to address bicycle and pedestrian safety through infrastructure improvements. <ul style="list-style-type: none"> ○ 2023: 29 miles of bike and/or pedestrian projects, including 36 improvement projects (shoulders, striping, crosswalks) and 45 new projects (sidewalk, curb ramp, speed humps, shared use paths) ○ 2022: 16.7 miles of bike/pedestrian improvements, with 41 improvement projects and 14 new projects. ○ 2021: 30 miles of bike improvements in project delivery estimated to be completed in 2022 or 2023. There were 8 miles of sidewalk added in 2020 and 24 new raised crosswalks. |
| 3 | Implement Complete Streets, Vision Zero and other policies and programs to increase safety for all modes of transportation | <ul style="list-style-type: none"> • Hawai'i passed the Vision Zero Act (ACT 134), leading to the state's adoption of a Vision Zero policy. So far, Maui and Hawai'i Island have published Vision Zero Action Plans, and the City and County of Honolulu and the County of Kaua'i are currently in the process of completing a plan. • Honolulu Police Department implemented at least half of its engagements (38) based on the Oahu Pedestrian Plan high injury corridor information |
| 4 | Improve safety for children walking and bicycling to school | <ul style="list-style-type: none"> • DTS distributed 50,000 Halloween activity books to be handed out in next year's Keiki Pedestrian Safety Week. Honolulu Police |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | <p>Department partnered with schools to enhance community engagement.</p> <ul style="list-style-type: none"> • DTS restarted the School Traffic Safety Committee. They conducted Walk Ed presentations and field trips. • From 2019 to 2020, a total of \$1,490,000 has been distributed from the HDOT's Safe Routes to School program Special Fund to the City and County of Honolulu, and the Counties of Hawai'i, Kaua'i, and Maui. |
| 5 | Improve enforcement in high-crash areas involving people walking and bicycling | <ul style="list-style-type: none"> • Worked with HPD on pedestrian and bicycle enforcement and education to reduce fatalities and injuries |
| 6 | Improve data and performance measures | <ul style="list-style-type: none"> • Continue piloting Fieldbook to collect data for enforcement, education and engineering response • Deployed use of Headlight to capture bike/ped observations. Revamped data collection pertaining to houseless individuals • Developing online mapping of bicycle and pedestrian facilities as well as planned projects |
| 7 | Educate all road users to take responsibility for road safety | <ul style="list-style-type: none"> • HDOT continued its Walk Wise Hawaii initiative to increase awareness of pedestrian safety and safety infrastructure changes through community events, sign waving, presentation and media events. Focused on seniors, schools, and driver awareness outreach. • DTS performed outreach and education for elementary school children through the Keiki Pedestrian Safety Week and leading Walking field trips and crosswalk education at schools and summer funs • Conducted outreach on O'ahu and Maui to houseless individuals during Pedestrian Safety Month. • Walk Wise Hawai'i partnered with Girl Scouts Hawai'i and developed a music/rap video "Look at Me Now" with Angry Locals group. Pedestrian Safety Month activities were focused at schools, with a different initiative each day. Walk Wise Hawai'i, DTS, and Honolulu Police Department partnered in two |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | events to educate pedestrians to be seen and traverse crosswalks safely. |
| 8 | Maximize the opportunity to use existing funding | <ul style="list-style-type: none"> • Utilize STEP meetings and SHACA data to identify areas • Updating data and reevaluating costs and priorities for Bike Plan Hawaii |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about the positive strategies and/or actions resulting from the 2019-2024 SHSP. Some of the successes in implementation included:

- Increasing installation of traffic calming features (speed humps/tables/raised crosswalks, roundabouts)
- More pedestrian infrastructure was installed
- A focus on vulnerable road users
- Increased emphasis on safety practices

Areas that could be improved upon were also identified, these included:

- Driver and pedestrian education
- More attention to Complete Streets and Vision Zero
- Increased mobility options for seniors
- Addressing houseless pedestrian and bicyclist fatalities

Stakeholders also identified existing traffic safety problems or emerging trends that should be considered as Focus Areas in the 2025 – 2029 SHSP update. These included:

- More use of e-bikes, personal conveyances, micromobility, and small electric vehicle technology
- Better sidewalk and bicycle infrastructure
- Disregarding traffic signals, laws, and pedestrians crossing the road
- Road design and maintenance should be improved to address vulnerable road users

3.5 Ensuring Motorcycle, Motor Scooter, and Moped Safety

As noted in the previous SHSP, according to FARS 2013-2017 data, 129 individuals died riding either a moped, motorcycle or motor scooter, which accounted for 25% of the total fatalities.

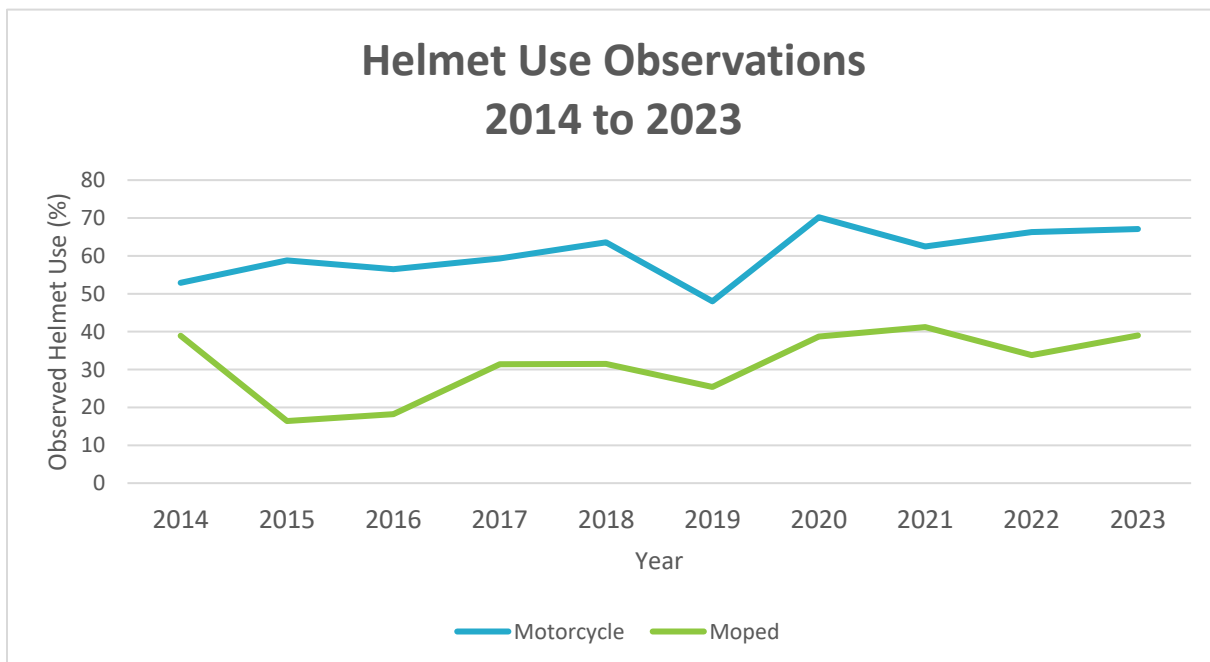
Performance Measure: Number of trained riders

The first performance measure for this Emphasis Area is the number of trained motorcycle riders. Since 2019, there have been over 300 motorcycle training classes offered, and over 4,000 motorcycle riders have been trained. The Basic Rider Course offered at the Leeward Community College has also made a portion of the course available online, which has allowed it to be more accessible to the neighbor islands.

| Year | Training Classes | Trained Riders |
|------|------------------|----------------|
| 2022 | 58 | 983 |
| 2021 | 101 | 1,178 |
| 2020 | 85 | 943 |
| 2019 | 75 | 970 |

Performance Measure: Observed helmet use among moped and motorcycle riders

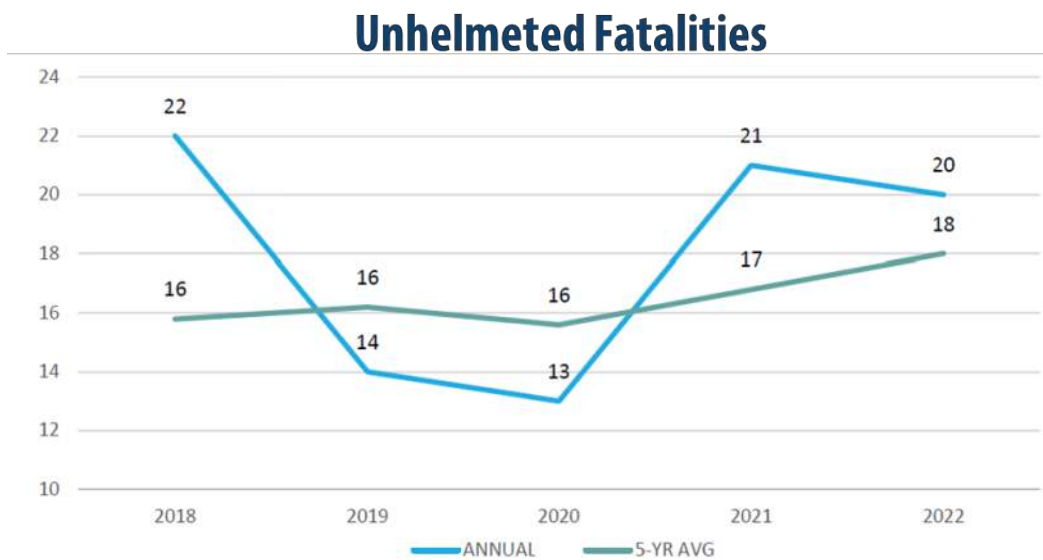
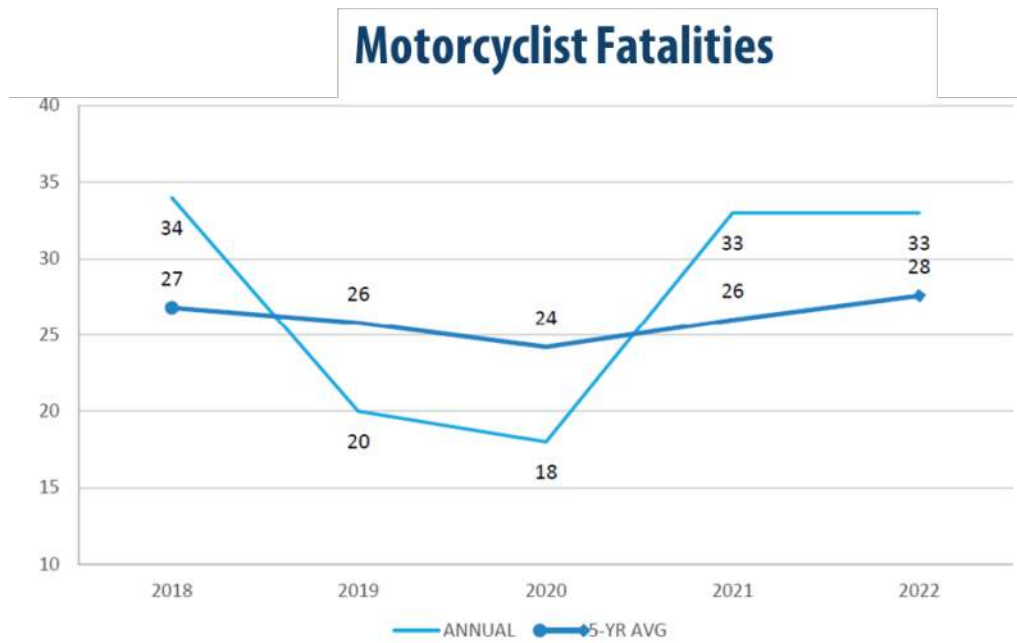
The second performance measure is the observed helmet use among moped and motorcycle riders. Within the timeframe of the current SHSP, the general trend of helmet use has increased for both



motorcycle riders (shown in the blue line) and moped riders (shown in the green line). Motorcyclists have been observed to have a higher helmet usage rate compared to moped riders.

Other Outcomes

Although it has been observed that helmet use is increasing, the number of motorcyclist fatalities has also increased since 2020. The number of unhelmeted motorcyclist fatalities has also seen an increasing trend since 2019.



Core Strategies and Implemented Actions

Six strategies were identified to address motorcycle, motor scooter, and moped safety. The table below highlights some of the key actions taken over the past five years that addressed some of the strategies,

which included education, outreach and awareness campaigns, and changes to the Hawai'i Administrative Rules.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Support helmet usage legislation and judicial initiatives as well as those laws and regulations that improve motorcycle, motor scooter and moped safety | <ul style="list-style-type: none"> Supported policy to change the helmet law to a universal motorcycle helmet law. Promoted the use of appropriate helmets within the existing law for e-bike riders Queens Medical Center provided helmet education to patients who have been impacted by a head injury and at community events |
| 2 | Ensure that the public has access to basic and advanced rider safety courses as well as identify unendorsed riders, and develop strategies and incentives to encourage riders to obtain proper endorsement | <ul style="list-style-type: none"> HDOT encouraged extended coverage of motorcycle safety, which resulted in updating the Hawaii Administrative Rules to expand basic rider course training. |
| 3 | Continue to outreach and partner with law enforcement on impaired and speeding riders | Radio, movie theater and television PSA's have been aired. In addition, the state continues to work with partners to support the motorcycle safety program with earned media outreach, policy adjustments and social media outreach. |
| 4 | Encourage safety activities with the public and partners as a part of a comprehensive plan that includes centralized program planning, implementation, coordination and evaluation to maximize the effectiveness of programs | <ul style="list-style-type: none"> The motorcycle working group was reactivated, with a focus on curriculum and availability of the Basic Rider Course. |
| 5 | Manage motorcycle safety through engineering practices as a part of a comprehensive plan that includes centralized program coordination, planning, design, implementation and evaluation to maximize the effectiveness of programs and practices | To address speeding, the HDOT lowered the speed limit for 31.8 miles of highway and installed more than 233 raised crosswalks, speed humps, and/or speed tables. Approximately 108 miles of milled shoulder/rumble strips were also installed to reduce lane departure crashes. |
| 6 | Maximize the opportunities for existing funds for all motorcycle, moped and motor scooter safety initiatives, and continue to identify and utilize new funding source | Alcohol funds assisted in extending airtime for impaired motorcycle use |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about the positive strategies and/or actions resulting from the 2019-2024 SHSP. Some of the successes in implementation included:

- More collaboration efforts between statewide media campaigns and enforcement, in conjunction with greater enforcement
- Increased helmet use
- Increased emphasis on safety practices

Areas that could be improved upon were also identified, these included:

- Sharing of data summaries and/or data gaps, e.g. red-light camera safety impacts, or motorcycle speeding

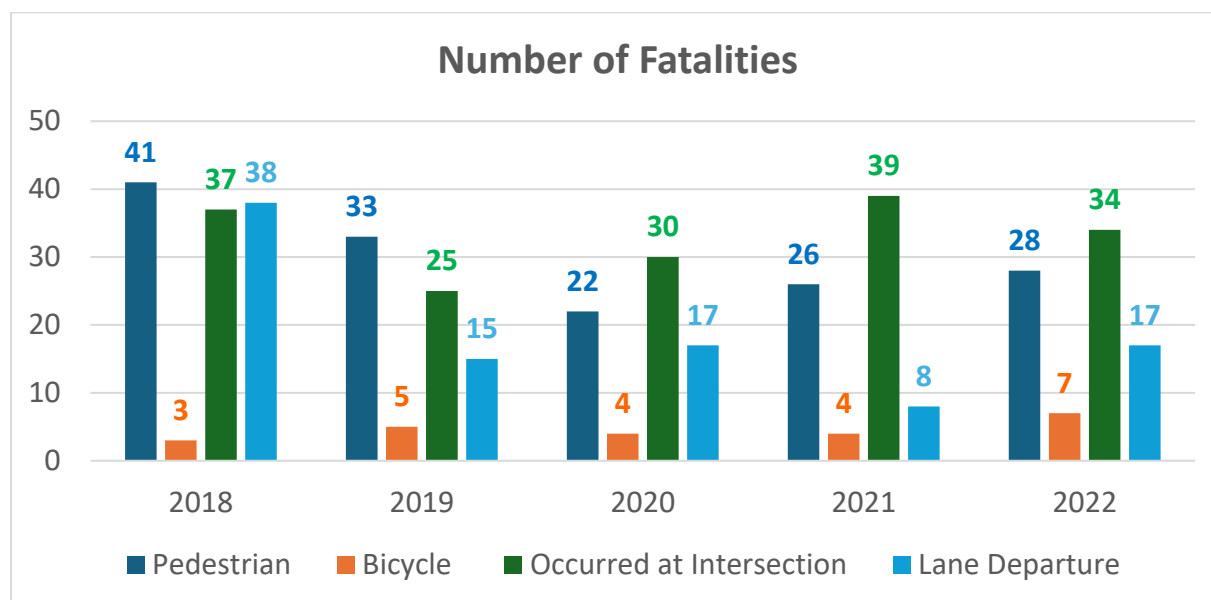
3.6 Building Safer Roadways by Design

Lane departure and intersection crashes are the two most frequent and severe crash types in the United States, as well as in Hawai'i. From 2014-2018, 39.8% of fatal crashes in Hawaii were lane departure crashes, and 15.4% of the fatal crashes occurred at an intersection or at the approach to an intersection. During the reporting period of the current SHSP, lane departure crashes accounted for a lower percentage of the total fatal crashes (14%), and crashes that occurred at intersections accounted for 32% of fatal crashes, which is more than double the percentage from the previous reporting period.

Since the first SHSP in 2007, more emphasis has been given to installing low-cost countermeasures on the roadways to minimize the damage caused by intersection and lane departure crashes.

Performance Measure: Number of fatal lane departure, intersection, pedestrian-involved and bicycle-involved crashes

The performance measure for this Emphasis Area is the number of fatal lane departure, intersection, pedestrian-involved, and bicycle-involved crashes. The graph below shows the number of fatal crashes in Hawai'i by type, from 2018 to 2022. While the total number of fatal crashes fluctuates each year between 2018 to 2022, there has been a slight decrease in fatal lane departures and pedestrian crashes.



Core Strategies and Implemented Actions

Four strategies were identified to address building safer roads by design. The table below highlights some of the key actions taken over the past five years that focused on engineering and designing improvements to reduce the number and severity of crashes.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Improve safety of roadway infrastructure through the development and implementation of policies, guidelines and procedures to ensure traffic safety is incorporated into each roadway project | <ul style="list-style-type: none"> Worked with the University of Hawai'i to develop a Systemic Roadway Departure Plan |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | <ul style="list-style-type: none"> • Legislation was authorized for an automated enforcement of red-light running cameras, with the pilot locations installed on Oahu. |
| 2 | Improve roadway infrastructure by installing countermeasures to reduce lane departure crashes | <ul style="list-style-type: none"> • Working with UH to develop a Systemic Roadway Departure Plan • In 2023: Installed 50 miles of milled shoulder/rumble strips, 150 miles of 6 inch edge line, 1 mile of new median barrier • In 2022: Installed 23 miles of milled shoulder/rumble strips, 215 miles of 6 inch edge line, 3 miles of new guardrail • In 2021: Installed 35 miles of milled shoulder/rumble strips, 235 miles of 6 inch edge line, 1.76 miles of new guardrail |
| 3 | Improve roadway infrastructure by installing countermeasures to reduce intersection crashes | <ul style="list-style-type: none"> • Goal to install 1 new traffic signal • Installed 3 new traffic signals • Installed 2 new traffic signals |
| 4 | Improve roadway infrastructure to increase safety for vulnerable road users | <ul style="list-style-type: none"> • Goal to lower posted speed limit for 5 miles of highway. Install 60 new raised crosswalks/speed table/speed hump • Lowered posted speed limit for 21.5 miles of highway. Installed 137 new raised crosswalks/speed table/speed hump • Lowered posted speed limit for 10.3 miles of highway. Installed 14 new raised crosswalks/speed table/speed hump • Installed 15 new raised crosswalks/speed table/speed hump |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about the positive strategies and/or actions resulting from the 2019-2024 SHSP. Some of the successes in implementation included:

- More collaboration between agency partners
- Providing more of an emphasis on design to make roads safer
- Increasing installation of traffic calming features (speed humps/tables/raised crosswalks, roundabouts)

Areas that could be improved upon were also identified, these included:

- Infrastructure improvements (pedestrian leading intervals, standardize/lengthen red light duration, quicker implementation of traffic calming, strategy testing, defining standard lane width)
- Improved road maintenance (striping, vulnerable road user infrastructure maintenance)
- A comprehensive approach to speed management system wide

Stakeholders also identified existing traffic safety problems or emerging trends that should be considered as Focus Areas in the 2025 – 2029 SHSP update. These included:

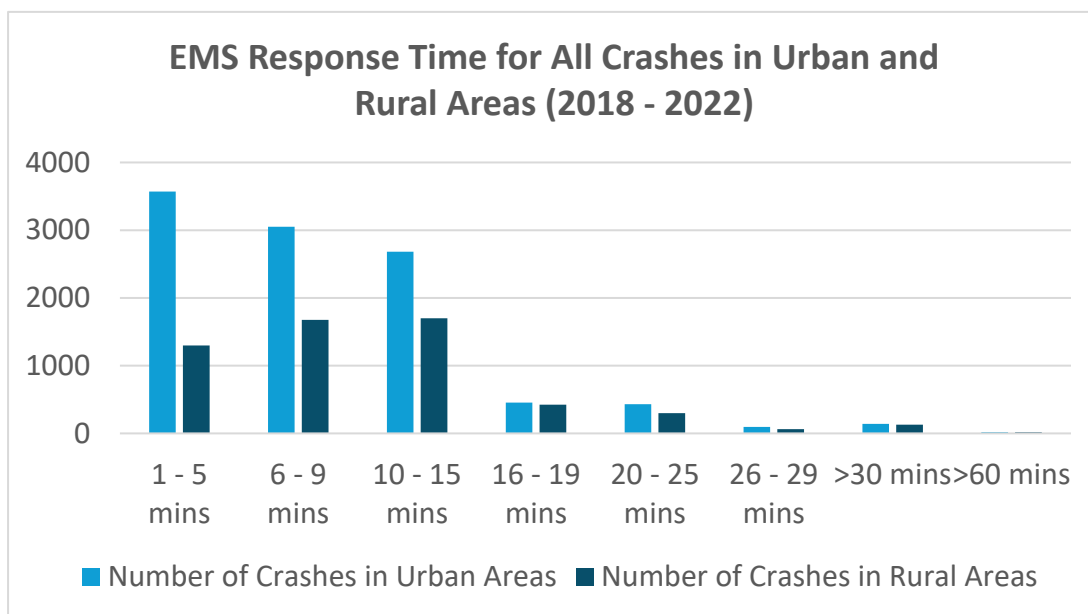
- Better sidewalk and bicycle infrastructure
- Road design, maintenance needs to be improved to better address vulnerable road users

3.7 Enhancing First Responder Capabilities

Providing timely first response services play a critical role in a crash victim’s survival. First responders also provide vital information and data related to crashes, such as response times, location of incident, timeliness of extrication efforts, and the patient’s condition at the scene.

Performance Measure: Response time to and from crash scenes in rural and urban environments.

The performance measure for this Emphasis Area is the response time to and from crashes scenes in rural and urban environments. Between 2018 to 2022, a majority of responses occurred within 15 minutes of a call for crashes of all severity types, in both urban and rural areas. A higher proportion of crashes that occurred in urban areas were responded to within the 1 – 5 minute timeframe, while a higher proportion of crashes that occurred in rural areas were responded to within the 6 – 9 and 10 – 15 minute timeframes.



Core Strategies and Implemented Actions

Five strategies were identified to address first responder capabilities. The table below highlights some of the key actions taken over the past five years that addressed the fourth strategy, which included education, training, and equipment and technology updates.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Expand EMS capacity to meet the population and community demand (ambulance units and staff) | <ul style="list-style-type: none"> Maui obtained a new 911 helicopter Hawai’i Life Flight continued operations of 10 aircraft throughout the State at base locations on Kaua’i, Moloka’i, Maui, Kona, Waimea, and Hilo, with fully staffed teams including air medical crews (critical care/paramedic nurses) and pilots |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | Expand voluntary bystander training programs to targeted communities and drivers (such as compression-only CPR, and Stop The Bleed initiative) | Continued Stop the Bleed training to provide education to non-medical audiences to address the needs of immediate response to control life-threatening bleeding until help arrives. The training courses were offered at locations such as Pali Momi, North Hawai'i Community Hospital, and the John A. Burns School of Medicine. |
| 3 | Improve and expand EMS data capabilities through Hawaii Emergency Medical Services Information System (HEMSIS) | In 2020, the EMR/HEMSIS medical records system was selected and implementation began in 2021. |
| 4 | Provide training, education, equipment and technologies to improve first responder capabilities for traffic-related crashes | <ul style="list-style-type: none"> • Emergency response equipment upgrades have been purchased, including extrication equipment at various County Fire Department stations. • Police Departments participated in various traffic safety related training, including At-scene Traffic Crash, Traffic Homicide Investigation, Advanced Traffic Crash Investigation, and Traffic Crash Reconstruction. • Police Departments participated in the Institute of Police Technology and Management traffic crash reconstruction courses. • Maui Police Department purchased the Berla iVe Eco System to analyze fatal crashes, PIX4D mapping software, Traffic Cloud Stats Suite and ZETX software to analyze cell phone data |
| 5 | Conduct NHTSA EMS assessment and apply resulting assessment recommendations | <p>National Highway Traffic Safety Assessment (NHTSA) reassessment of Hawaii's EMS system, conducted in October 2019. The State Department of Health, EMS branch has selected these initial priorities:</p> <ol style="list-style-type: none"> 1. EMS Workforce study 2. EMS system cost analysis 3. Inclusion of data on all EMS class, including fixed wing air transports, ground interfacility transports and ground 911 ambulance calls 4. License all qualified first responders that treat patients |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|---------------|------------------------------------------------------------------------------------------------|
| | | 5. Make Prehospital care licensure independent from employment 6. Hire an EMS Data manager. |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about areas that could have been improved in the 2019-2024 SHSP. First responder training was identified as an area that could be improved.

3.8 Improving Data and Safety Management Systems

Quality and timely data provides the foundation for addressing traffic safety issues and directing the Emphasis Areas of the SHSP. Having consistent and accurate data allows a baseline to be established, and measures to be tracked to show progress or regression towards meeting set goals and objectives. In the previous SHSP, the following issues in the traffic records system were identified and used as a basis for the core strategies:

- Lack of integration of systems, at the county, state and federal levels;
- Antiquated data systems;
- Underreported data that do not paint an accurate and clear picture of the traffic safety issues in Hawaii; and
- Limited funding and resources.

Performance Measure: Timeliness of traffic records data, completeness of traffic safety data such as crash reports, integration of traffic records systems, accessibility of traffic records data and systems, accuracy of traffic data, and uniformity of traffic data

The performance measure for this Emphasis Area is the timeliness of traffic records data, completeness of traffic safety data, integration of traffic records systems, accessibility of traffic records data and systems, accuracy of traffic data, and uniformity of traffic data. During the current SHSP timeframe, the eCitations program has decreased the processing time from the date of citation to the data of entry into the database for both O’ahu and Maui. From 2019 to 2023, the average processing time was 4.8 days faster when using eCitations versus paper citations on O’ahu. During this same time period on Maui, the average processing time was 2.7 days faster when using eCitations.

The continued development of the SHACA system has been addressing the timeliness, completeness, accuracy, and uniformity of traffic data, and has also been integrating traffic records systems to improve the accessibility of traffic records data.

- 2021 - 2022: Reporting time from crash occurrence to entry into the SHACA database was 11 days (FY22 Highway Safety Annual Report)
- The First Circuit (O’ahu) implemented the eCitation program in August 2018. From 2019 to 2023 (Q1 & Q2), the average processing time was 4.8 days faster when using eCitations.

| First Circuit (O’ahu) – Average Number of Days from Citation Date to Data Entry Date | | | | | |
|--------------------------------------------------------------------------------------|----------|----------|----------|----------|--------------------|
| Citation Type | FFY 2019 | FFY 2020 | FFY 2021 | FFY 2022 | FFY 2023 (Q1 & Q2) |
| Paper Citations | 7.74 | 9.25 | 9.48 | 7.82 | 8.13 |
| eCitations | 2.63 | 3.64 | 4.06 | 3.93 | 4.07 |

- The Second Circuit (Maui) implemented the eCitation program in April 2017 and also experienced an improvement in overall processing times.

| Second Circuit (Maui) – Average Number of Days from Citation Date to Data Entry Date | | | | | | | |
|--------------------------------------------------------------------------------------|--------------------|----------|----------|----------|----------|----------|--------------------|
| Citation Type | FFY 2017 (Q3 & Q4) | FFY 2018 | FFY 2019 | FFY 2020 | FFY 2021 | FFY 2022 | FFY 2023 (Q1 & Q2) |
| Paper Citations | 6.02 | 5.69 | 5.03 | 4.6 | 4.61 | 4.8 | 5.18 |
| eCitations | 2.53 | 2.36 | 2.16 | 2.25 | 2.4 | 2.02 | 1.98 |

- Implementation and continuing development of the SHACA system are addressing all of the existing SHSP performance metrics for this Emphasis Area.

Core Strategies and Implemented Actions

Six strategies were identified to improve data and safety management systems. The table below highlights some of the key actions taken over the past five years that addressed some of the strategies, which included continued development of the SHACA data system, the eCitation Pilot Program, and the Hawai'i Incident Geo-locating system.

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Support the goals and priorities of the Traffic Records Coordinating Committee (TRCC) | <ul style="list-style-type: none"> • The TRCC has continued to hold meetings with its members from multiple State and County agencies to coordinate traffic and safety data requests and to ensure alignment with the SHSP and other plans and projects' data goals. • The eCitation subcommittee of the TRCC conducted over eight meetings between 2021 and 2022 to coordinate the eCitation pilot program. |
| 2 | Improve linkage and integration of data | <ul style="list-style-type: none"> • There is continuing development and integration of interfaces between SHACA and the County Police Departments. Working with the police departments on building the Hawaii Incident Geo-Locating System (HIGLS). Researching options to move the eCitation pilot programs into a state-funded, self-sustaining system. • Implement SHACA data system and continue development of HIGLS. Continue eCitation pilot program. • Continue development and upgrade of SHACA data system. HPD/MPD continued e-citation pilot program. |

| # | Core Strategy | Implemented Actions during 2019 to 2024 |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | Improve existing processes to turn data into useful information for law enforcement and other traffic partners, to be used for problem identification and evaluation; to direct resources in enforcement, education and engineering; and to make positive behavior changes | The eCitation Pilot program is also continuing to improve quality and decrease the amount of time for the availability of data |
| 4 | Obtain funding needed to improve data and information flow, and develop an effective safety management system including TRCC | HDOT submitted its application for Section 405(c) Grant for Federal Fiscal Year 2023, which is for State Traffic Safety Information System Improvements. |
| 5 | Improve data/information and the process to track, monitor and assess the progress in each of the other emphasis areas | Continued use of both behavioral, crash, and citation data to assist in problem identification with emphasis areas |
| 6 | Improvement upon the six core traffic records data systems – crash, vehicle, driver, roadway, citation/adjudication, and EMS/injury surveillance | <ul style="list-style-type: none"> • HDOT and the Police Departments have been working on the HIGLS system, which improves both accuracy and quality of the data records • Agency representatives have attended the annual Traffic Records Forum. |

At the April 2024 Traffic Commanders/SHSP Core Committee meeting, traffic safety stakeholders were asked about the positive strategies and/or actions resulting from the 2019-2024 SHSP. Some of the successes in implementation included:

- More data review and data driven decisions

Areas that could be improved upon were also identified, these included:

- Data gaps and consistency
- Sharing of data summaries and/or data gaps, e.g. red-light camera safety impacts, or motorcycle speeding



Appendix D: Vulnerable Road User Safety Assessment



HAWAII VULNERABLE ROAD USER SAFETY ASSESSMENT



Hawai'i Vulnerable Road User Safety Assessment



Final
November 3, 2023

Prepared for
State of Hawai'i
Department of Transportation



Table of Contents

| | | |
|----------|-------------------------------------------------------------------------------------------|-----------|
| 1 | Introduction | 2 |
| 1.1 | National Guidance | 3 |
| 1.2 | Relevant Plans and Documents | 6 |
| 2 | Overview of Vulnerable Road User Safety Performance | 14 |
| 2.1 | Pedestrian Crashes | 15 |
| 2.2 | Bicyclist Crashes | 16 |
| 2.3 | Progress Towards Safety Performance Targets for Non-Motorized Modes | 17 |
| 2.4 | VRU Safety Special Rule | 20 |
| 3 | Summary of Quantitative Analysis..... | 22 |
| 3.1 | Data Collected | 22 |
| 3.2 | Data Limitations and Insufficiencies | 24 |
| 3.3 | Pedestrian and Bicycle Crash Characteristics from the Crash Reports..... | 25 |
| 3.4 | High-Crash Area Methodology | 37 |
| 3.5 | Other Crash Characteristics Analyzed for Pedestrian Clusters and Bicycle Crashes | 54 |
| 3.6 | High-Risk Areas | 62 |
| 4 | Summary of Consultation | 64 |
| 4.1 | Technical Advisory Committee (TAC)..... | 64 |
| 4.2 | Stakeholder Advisory Committee (SAC)..... | 66 |
| 4.3 | Key Findings..... | 67 |
| 4.4 | Focus Group/Consultation Meetings | 69 |
| 5 | Program of Projects and Strategies..... | 71 |
| 5.1 | Systemic Approach to Strategy Identification..... | 71 |
| 5.2 | Program of Projects | 75 |
| 5.3 | Program of Strategies | 87 |
| 5.4 | Safe System Approach | 93 |
| 5.5 | Recommendations for Implementation | 96 |

List of Figures

| | |
|--------------------------------------------------------------------------|----|
| Figure 1: Total Pedestrian and Bicycle Crashes and 2019 Population | 26 |
| Figure 2: Age of Pedestrians and 2019 Population..... | 27 |
| Figure 3: Age of Bicyclists and 2019 Population | 27 |
| Figure 4: Gender of Pedestrians and 2019 Population..... | 28 |
| Figure 5: Gender of Bicyclists and 2019 Population | 28 |

| | |
|------------------------------------------------------------------------------------------------------------|----|
| Figure 6: Race of Pedestrians and 2016 - 2020 Population | 29 |
| Figure 7: Race of Bicyclists and 2016 - 2020 Population..... | 29 |
| Figure 8: Lighting of Pedestrian and Bicyclist Crashes..... | 30 |
| Figure 9: Posted Speed Limit of Pedestrian and Bicyclist Crashes | 31 |
| Figure 10: Traffic Controls | 31 |
| Figure 11: Intersection Type Where Pedestrian and Bicycle Crashes Occurred | 32 |
| Figure 12: Vehicle Maneuver | 32 |
| Figure 13: Vehicle Types Involved in Fatalities and Serious Injury Pedestrian and Bicycle Crashes | 33 |
| Figure 14: Human Factors for Vehicle Drivers Involved in Pedestrian Crashes | 34 |
| Figure 15: Human Factors for Vehicle Drivers Involved in Bicycle Crashes..... | 34 |
| Figure 16: Human Factors for Pedestrians | 35 |
| Figure 17: Human Factors for Bicyclists..... | 35 |
| Figure 18: Location Where Crash Occurred vs. Pedestrian/Bicyclist Home Location | 36 |
| Figure 19: O’ahu Pedestrian Crash Clusters | 38 |
| Figure 20: Kaua’i Pedestrian Crash Clusters | 39 |
| Figure 21: Maui Pedestrian Crash Clusters..... | 40 |
| Figure 22: Hawai’i Island Pedestrian Crash Clusters..... | 41 |
| Figure 23: Location Where Crash Occurred vs. Pedestrian Home Location (Crash Clusters)..... | 42 |
| Figure 24: Age of Pedestrians in Crash Clusters and 2019 Population | 42 |
| Figure 25: Intersection Type Where Pedestrian Crashes and Pedestrian Cluster Crashes Occurred | 43 |
| Figure 26: Traffic Control Devices in Pedestrians Crashes and Pedestrian Crash Clusters | 43 |
| Figure 27: High-Crash Corridor Trends | 45 |
| Figure 28: O’ahu Bicycle Crash Locations | 46 |
| Figure 29: Kaua’i Bicycle Crash Locations..... | 47 |
| Figure 30: Maui Bicycle Crash Locations | 48 |
| Figure 31: Hawai’i Island Bicycle Crash Locations..... | 49 |
| Figure 32: O’ahu High Crash Corridors | 50 |
| Figure 33: Kaua’i High Crash Corridors | 51 |

| | |
|------------------------------------------------------------------------------------------------------------|----|
| Figure 34: Maui High Crash Corridors..... | 52 |
| Figure 35: Hawai'i Island High Crash Corridors..... | 53 |
| Figure 36: Land Uses Surrounding Fatal and Serious Injury Pedestrian Clusters and Bicycle Crashes..... | 54 |
| Figure 37: O'ahu Disadvantaged Census Tracts..... | 57 |
| Figure 38: Kaua'i Disadvantaged Census | 58 |
| Figure 39: Maui Disadvantaged Census Tracts | 59 |
| Figure 40: Hawai'i Island Disadvantaged Census Tracts | 60 |
| Figure 41: Systemic Approach to Bicycle Strategies | 72 |
| Figure 42: Systemic Approach to Pedestrian Strategies | 74 |
| Figure 43: Program of Projects Development Process | 82 |
| Figure 44: EMS Response Times for All Pedestrian and Bicycle Fatalities and Serious Injury Crashes..... | 96 |

List of Tables

| | |
|-----------------------------------------------------------------------------------|----|
| Table 1: Plans and Documents Relevant to the VRUSA | 7 |
| Table 2: Number of Non-Motorized Fatalities and Serious Injuries..... | 17 |
| Table 3: O'ahu MPO Safety Targets..... | 17 |
| Table 4: Timeline of VRU Safety Special Rule Determination | 20 |
| Table 5: Social Vulnerability Indicators | 23 |
| Table 6: MVAR Fields Analyzed for Crash Trends | 25 |
| Table 7: Total Pedestrian High-Crash Areas/Clusters by Island | 37 |
| Table 8: Total Bicycle Crashes by Island | 44 |
| Table 9: Total High-Crash Areas and Corridors by Island..... | 45 |
| Table 10: Disadvantaged Census Tracts Based on Social Vulnerability Indicators... | 55 |
| Table 11: 2022 Houseless Pedestrian and Bicyclist Fatalities | 61 |
| Table 12: Houseless Population from PIT Counts..... | 62 |
| Table 13: Technical Advisory Meetings and Purpose | 65 |
| Table 14: Stakeholder Advisory Meetings and Purpose | 67 |
| Table 15: Bicycle Systemic Approach Results..... | 76 |
| Table 16: Pedestrian Systemic Approach Results for High-Risk Clusters | 80 |

| | | |
|-----------|---------------------------------------------|----|
| Table 17: | Initial Screening Criteria | 83 |
| Table 18: | Evaluation Criteria | 83 |
| Table 19: | Other Areas of Concern and/or Projects..... | 85 |
| Table 20: | Recommended Educational Strategies | 89 |
| Table 21: | Recommended Enforcement Strategies | 92 |
| Table 22: | Recommended Encouragement Strategies..... | 93 |

List of Appendices

| | |
|-------------|------------------------------------------------|
| Appendix A: | Plan Review |
| Appendix B: | State of Hawai'i Motor Vehicle Accident Report |
| Appendix C: | Households with No Vehicles Available Maps |
| Appendix D: | List of Areas of Concern/Opportunities |

List of Acronyms

| | |
|-------|------------------------------------------------|
| AADT | Average Annual Daily Traffic |
| ACS | American Community Survey |
| BAC | Blood Alcohol Concentration |
| BPH | Bike Plan Hawai'i |
| CEJST | Climate & Economic Justice Screening Tool |
| CIP | Capital Improvement Program |
| COH | County of Hawai'i |
| DPW | Department of Public Works |
| EMS | Emergency Medical Services |
| ETC | Equitable Transportation Community |
| FARS | fatality analysis reporting system |
| FHWA | Federal Highway Administration |
| FY | Fiscal Year |
| g/dL | grams per deciliter |
| GIS | Geographic Information System |
| HDOT | State of Hawai'i, Department of Transportation |
| HSHP | Hawai'i Strategic Highway Safety Plan |
| HSIP | Highway Safety Improvement Program |
| IIJA | Infrastructure Investment and Jobs Act |
| mph | Miles per hour |
| MPO | Metropolitan Planning Organization |
| MPVH | Multi-Purpose Vehicles |
| MVAR | Motor Vehicle Accident Report |
| NHSTA | National Highway Traffic Safety Administration |
| NRSS | National Roadway Safety Strategy |

| | |
|--------|----------------------------------------------|
| OHHS | Office on Homelessness and Housing Solutions |
| PIT | Point in Time |
| PMP | Statewide Pedestrian Masterplan |
| PSC | Proven Safety Countermeasures |
| SAC | Stakeholder Advisory Committee |
| STEP | Safe Transportation for Every Pedestrian |
| SUV | Sports Utility Vehicle |
| TAC | Technical Advisory Committee |
| U.S.C. | United States Code |
| US-DOT | U.S. Department of Transportation |
| VRU | Vulnerable Road User |
| VRUSA | Vulnerable Road User Safety Assessment |



SECTION ONE
INTRODUCTION

1 Introduction

In November 2021, the Bipartisan Infrastructure Law, also known as the Infrastructure Investment and Jobs Act (IIJA), was passed by Congress with the intent to rebuild the nation’s aging infrastructure. One of the transportation focuses of the IIJA is to repair and rebuild roads and bridges with a focus on climate change mitigation, resilience, equity, and safety for all users, particularly vulnerable road users. The IIJA amended 23 United States Code (U.S.C.) Section 148 to include a requirement for all states to develop a Vulnerable Road User Safety Assessment (VRUSA) as part of their Highway Safety Improvement Program (HSIP).

In 2020, an estimated 38,680 people were killed in motor vehicle crashes nationwide. An estimated 6,236 were pedestrians and 891 were bicyclists.¹ Compared to 2019, nationwide bicyclist fatalities increased by 10.3% and pedestrian fatalities increased by 4.7% in 2020. Nationally, the increasing rate of pedestrian fatalities was further demonstrated in 2021 where there were 7,388 pedestrian fatalities, marking the highest number of fatalities in 40 years when 7,837 pedestrians died in traffic crashes in 1981.



A pedestrian was killed every 71 minutes in traffic crashes in 2021

In comparison to national statistics, the State’s total traffic fatalities in 2020 was 85. Pedestrians accounted for 21 of those fatalities, while bicyclists accounted for 4 of the fatalities. Compared to 2019, pedestrian fatalities decreased by 43.2% and the number of bicyclist fatalities remained the same. Hawai’i has seen decreases in pedestrian and bicyclist fatalities in recent years, however the number of fatalities has been increasing on average since 2010. In recent years, the highest number of bicyclist fatalities occurred in 2017 with 6 bicyclist fatalities, and the highest number of pedestrian fatalities occurred in 2018 with a total of 44 pedestrian fatalities.

To combat the increasing trend of vulnerable road user serious injuries and fatalities across the State, the VRUSA will assess the State’s roadway safety performance and identify a program of projects and strategies to increase the safety of vulnerable road users.

Definition of a Vulnerable Road User



Within the context of this assessment, a vulnerable road user (VRU) is a non-motorist, including pedestrians, bicyclists, pedalcyclists (cycles other than with two wheels), other cyclists, rollers (e.g., skates, scooter, skateboard, etc.), and persons on personal conveyance. A VRU encompasses people walking, biking, or rolling, but does not include motorcyclists.

¹ U.S. Department of Transportation. “The Roadway Safety Problem.” February 2, 2023.

1.1 National Guidance

Federal Requirements

This assessment was conducted in accordance with 23 U.S.C. 148(l), which requires that all VRUSAs:







- 1) Use a data-driven process to identify areas of high-risk for vulnerable road users,
- 2) Consult with local governments, metropolitan planning organizations, and regional transportation planning organizations that represent a high-risk area,
- 3) Take into consideration a Safe System Approach, and
- 4) Develop a program of projects or strategies to reduce safety risks to vulnerable road users in areas identified as high-risk.

The data-driven process requires that VRUSAs conduct a quantitative analysis of VRU fatalities and serious injuries from the most recent 5-year period for which crash data is available that includes information such as location, roadway functional classification, speed limit, and time of day of the crash, and considers the demographics of the locations of fatalities and serious injuries, including race, ethnicity, income, and age. This VRUSA will analyze the safety performance of the State across all roadway jurisdictions.

Safe System Approach

The U.S. Department of Transportation’s (US-DOT) National Roadway Safety Strategy (NRSS) is responding to the current trend in traffic fatalities. At the core of the strategy is the adoption of the Safe System

Approach. The Safe System Approach aims to improve safety culture, increase collaboration across all stakeholders, and refocus transportation system design and operation on anticipating human mistakes and lessening impact forces to reduce crash severity and save lives. The approach has been embraced by the transportation community as an effective way to address and mitigate the risks within our transportation system by employing

| SAFE SYSTEM PRINCIPLES | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  Death/Serious Injury is Unacceptable While no crashes are desirable, the Safe System approach prioritizes crashes that result in death and serious injuries, since no one should experience either when using the transportation system. |  Humans Make Mistakes People will inevitably make mistakes that can lead to crashes, but the transportation system can be designed and operated to accommodate human mistakes and injury tolerances and avoid death and serious injuries. |  Humans Are Vulnerable People have limits for tolerating crash forces before death and serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates human vulnerabilities. |
|  Responsibility is Shared All stakeholders (transportation system users and managers, vehicle manufacturers, etc.) must ensure that crashes don't lead to fatal or serious injuries. |  Safety is Proactive Proactive tools should be used to identify and mitigate latent risks in the transportation system, rather than waiting for crashes to occur and reacting afterwards. |  Redundancy is Crucial Reducing risks requires that all parts of the transportation system are strengthened, so that if one part fails, the other parts still protect people. |

Source: FHWA_SafeSystem_Brochure_V9_508_200717


multiple layers of protection to prevent crashes and lessen the severity of crashes when they do occur. In following the Safe System Approach, safety programs focus on infrastructure, human behavior, responsible oversight and emergency response.

The six Safe System Approach “principles” are the fundamental beliefs that the approach is built on. A successful Safe System Approach weaves together all six principles, which are described in the graphic on page 3.


The Safe System Approach also includes five “elements” through which the approach is implemented. Making a commitment to zero deaths means addressing crash risks through all of the five elements.

SAFE SYSTEM ELEMENTS


Making a commitment to zero deaths means addressing every aspect of crash risks through the five elements of a Safe System, shown below. These layers of protection and shared responsibility promote a holistic approach to safety across the entire transportation system. The key focus of the Safe System approach is to reduce death and serious injuries through design that accommodates human mistakes and injury tolerances.




Safe Road Users
The Safe System approach addresses the safety of all road users, including those who walk, bike, drive, ride transit, and travel by other modes.




Safe Vehicles
Vehicles are designed and regulated to minimize the occurrence and severity of collisions using safety measures that incorporate the latest technology.



Safe Speeds
Humans are unlikely to survive high-speed crashes. Reducing speeds can accommodate human injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility.



Safe Roads
Designing to accommodate human mistakes and injury tolerances can greatly reduce the severity of crashes that do occur. Examples include physically separating people traveling at different speeds, providing dedicated times for different users to move through a space, and alerting users to hazards and other road users.



Post-Crash Care
When a person is injured in a collision, they rely on emergency first responders to quickly locate them, stabilize their injury and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.

THE SAFE SYSTEM APPROACH VS. TRADITIONAL ROAD SAFETY PRACTICES

| Traditional | Safe System |
|------------------------------|----------------------------------------|
| Prevent crashes | Prevent deaths and serious injuries |
| Improve human behavior | Design for human mistakes/limitations |
| Control speeding | Reduce system kinetic energy |
| Individuals are responsible | Share responsibility |
| React based on crash history | Proactively identify and address risks |

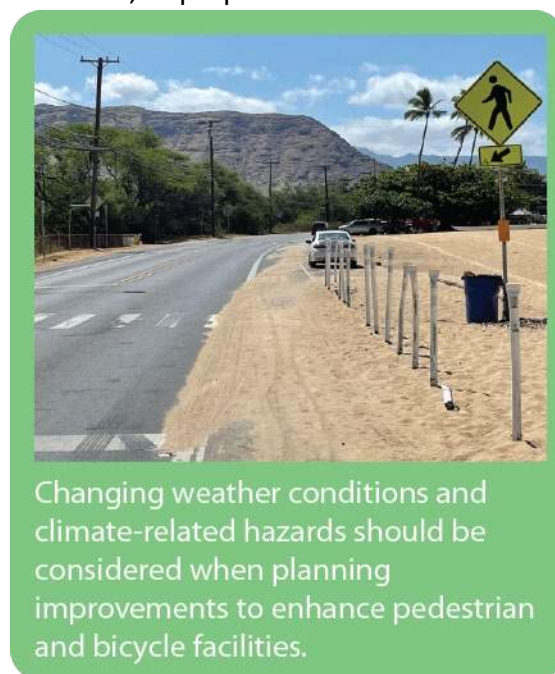
Whereas traditional road safety strives to modify human behavior and prevent all crashes, the Safe System approach also refocuses transportation system design and operation on anticipating human mistakes and lessening impact forces to reduce crash severity and save lives.

Source: FHWA_SafeSystem_Brochure_V9_508_200717

Other FHWA Requirements

In October 2022, the US-DOT Federal Highway Administration (FHWA) published a VRUSA Guidance memorandum that provides further details on the requirements of the assessment. The memorandum also outlines other requirements and considerations that should be addressed by the VRUSA, including:

- **Equity:** Reduce inequities across our transportation systems and the communities they affect. Support and engage people and communities to promote safe, affordable, accessible, and multimodal access to opportunities and services while reducing transportation-related disparities, adverse community impacts, and health effects.
- **Climate and Sustainability:** Reduce greenhouse gas pollution in the transportation sector and improve the resilience of transportation infrastructure, to prepare for hazards exacerbated by climate change. Support environmental justice commitments, fiscally responsible land use, and transportation efficient design.
- **FHWA’s Proven Safety Countermeasures (PSC):** The FHWA’s collection of countermeasures and strategies is effective in reducing fatalities and serious injuries on our Nation’s highways. Transportation agencies are encouraged to consider widespread use of the PSCs to achieve safety goals.
- **Complete Streets Principles:** Follow the State’s Complete Streets policies that prioritize the safety of all users in transportation network planning, design, construction, and operations, including the careful consideration of measures to set and design for appropriate speeds; separation of various users in time and space; improvement of connectivity and access for pedestrians, bicyclists and transit riders, including for people with disabilities; and addressing safety issues through implementation of safety countermeasures.
- **Accessibility:** Support accessibility of pedestrian facilities in the public right-of-way, such as curb ramps, sidewalks, crosswalks, pedestrian signals, and transit stops in accordance with applicable regulations and Americans with Disabilities Act transition plans.
- **Transportation System Access:** Safety risks to vulnerable road users should not be mitigated through efforts that reduce opportunities for, or the attractiveness of, walking, bicycling, rolling, or accessing transit.



Changing weather conditions and climate-related hazards should be considered when planning improvements to enhance pedestrian and bicycle facilities.

- **Access to Transit:** Consider transit access while developing the program of projects or strategies for the Vulnerable Road User Safety Assessment. Regardless of how a person began their trip, they walk, bike, or roll to access transit. Transit agencies and roadway owners both play critical roles in improving the safety of pedestrians and bicyclists.

1.2 Relevant Plans and Documents

One of the initial steps in the VRUSA process was to review relevant State and County pedestrian, bicycle, and transportation safety plans, studies, and other documents related to vulnerable road users. This allowed our team to build upon the work and community outreach that has already been done. The goals and objectives, areas of concern, strategies, recommendations, and public engagement and consultation efforts of the plans were reviewed to help inform the methodologies to identify high-risk areas and the program of projects and strategies. Consultation with the VRUSA's technical and stakeholder advisory committees was also conducted during the review of relevant plans and documents.

The table below provides a summary of the relevant content derived from each document. The areas of concern or opportunities, noted from the plans and studies, that were identified to also be near the high-risk areas (which are discussed and shown in Section 3) are included in the table. A detailed review of each document and its application to the VRUSA can be found in Appendix A.

In addition, throughout the development of the VRUSA, stakeholders provided additional plans, resources, walk audits, and Vision Zero efforts, which were all used to inform the program of strategies and projects.

Table 1: Plans and Documents Relevant to the VRUSA

| Plans and Documents | Goals/ Objectives/ Emphasis Areas | Areas of Concern | Strategies/Action Items/ Recommendations | Public Engagement/ Consultation |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Hawai'i Strategic Highway Safety Plan (HDOT, 2019) | Improve traffic safety, data collection, safety awareness | | <ul style="list-style-type: none"> -Context-sensitive speeds -Pedestrian/bicycle facilities - Programs to increase safety for all modes - Children walking/biking to school -Enforcement -Data/performance measures -Education | Collaboration of >150 traffic safety experts and stakeholders |
| Statewide Pedestrian Master Plan (HDOT, 2013) | Improve pedestrian mobility, accessibility, and safety; improve connectivity of the network; encourage walking to reduce overall energy and greenhouse gas use | <ul style="list-style-type: none"> - Farrington Highway near Nanakuli and Waianae (Improvements completed since publication of plan) - Ward Avenue and Ala Moana Boulevard - Liliha Street at Kukui Street intersection (Improvements completed since publication of plan) - Ala Moana Boulevard at Hobron Lane (Improvements completed since publication of plan) - Fort Weaver Road in the vicinity of Ilima Middle School (Improvements completed since publication of plan) | <ul style="list-style-type: none"> - Location for proposed improvements identified - Hawai'i Pedestrian Toolbox - guide for project implementation throughout the state | Convened a Technical Advisory and Citizen Advisory Committee, conducted public workshops, and maintained a project website |

| Plans and Documents | Goals/ Objectives/ Emphasis Areas | Areas of Concern | Strategies/Action Items/ Recommendations | Public Engagement/ Consultation |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | <ul style="list-style-type: none"> - Queen’s Lei path in North Kona - Kuhio Highway at Kawaihau Road intersection (Improvements completed since publication of plan) | | |
| <p>Bike Plan Hawai’i Refresh Priorities and Implementation Plan (HDOT, 2022)</p> | <p>Integrate bicycling into the state’s transportation system by accommodating and promoting bicycling</p> | <ul style="list-style-type: none"> - Kailua-Kona along Highways 19 and 11 (Queen Kaahumanu shoulder bikeway signing & Hawai’i Belt Road/Mamalahoa Highway shoulder bikeway) - Nanakuli along Route 93 (Farrington Highway path & shoulder improvements) - Ewa Beach along Route 76 (Fort Weaver Road in the vicinity of Papipi Road bike lane/buffer/path improvements) - Windward along Route 83 (Kahekili Highway east of Valley of the Temples Memorial Park bikeway improvements with other projects) | <ul style="list-style-type: none"> - Location for proposed improvements identified | <ul style="list-style-type: none"> - Public survey via online platform collected 1,100 responses statewide. - Virtual meetings with bicycle stakeholder groups in each region. |
| <p>Highway Safety Plan FFY 2023 (HDOT, 2023)</p> | <ul style="list-style-type: none"> - Performance target for pedestrian fatalities: 5-year average at 29 fatalities for fiscal year (FY) 2022 and 2023 | | <ul style="list-style-type: none"> - Pedestrian and bicycle projects approved for FY 2023 - Education countermeasures - Outreach and communications strategies | <p>The HSHSP Core Committee was made up of traffic safety, emergency medical services, bike/pedestrian advocacy groups, engineers, law</p> |

| Plans and Documents | Goals/ Objectives/ Emphasis Areas | Areas of Concern | Strategies/Action Items/ Recommendations | Public Engagement/ Consultation |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <ul style="list-style-type: none"> - Performance target for bicycle fatalities: 5-year average at 3 fatalities for FY 2022 and 6 fatalities for FY 2023 (external factors such as increase in e-bikes and e-scooters) | | <ul style="list-style-type: none"> - Public education events | <p>enforcement, attorneys, and other stakeholders</p> |
| <p>Triennial Highway Safety Plan (3HSP) (HDOT, 2023 - in progress)</p> | | <p>Walk audits conducted at:</p> <ul style="list-style-type: none"> - Nimitz Hwy at Sumner Lane - Nimitz Hwy, Puuhale Rd to Sand Island Access Rd - Kapolei Parkway in Ewa Beach - Hilo | <ul style="list-style-type: none"> - Community outreach - Training - Resources - Continued education - Enforcement of speeding and distracted driving - Enforcement related to pedestrian safety around the schools - Follow-up with bringing “safety chick” and VISTA to Kaua’i to conduct walk audits | <p>Walk audits were conducted at areas of concern, and interviews conducted with key stakeholders to capture area context for Nimitz Hwy and Kaua’i.</p> |
| <p>Maui Vision Zero Action Plan (Maui Metropolitan Planning Organization, 2021)</p> | <ul style="list-style-type: none"> - Eliminate impaired driving - Create safer speeds - Eliminate distracted driving - Create a safety culture - Build safe streets for everyone - Institutionalize Vision Zero - Improve data to support decisions | | <ul style="list-style-type: none"> - Create “Malama Zones” in priority areas - Traffic safety education for schools - Develop best practice messaging materials - Implement the Hele Mai Maui 2040 Transportation Plan - Apply Complete Streets principles - Improve facility maintenance for all modes - Develop and adopt a policy to prioritize and provide access | <ul style="list-style-type: none"> - Consultation with County and State agencies - Consultation with community groups and members |

| Plans and Documents | Goals/ Objectives/ Emphasis Areas | Areas of Concern | Strategies/Action Items/ Recommendations | Public Engagement/ Consultation |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| | | | to pedestrians, bicyclists, and transit riders - Support and implement the State of Hawai'i Physical Activity & Nutrition Plan actions | |
| Hawai'i Island Vision Zero Action Plan (County of Hawai'i, Planning Department, 2020) | | | - Coordination with Safe Routes to School program - Prioritize safety in areas of concern - Adoption of policies for safety of multimodal users - Conduct safety reviews of the transportation networks - Provide bicycling education programs - Encourage events such as National Walk to School Day - Provide bicyclist and pedestrian awareness training to officers | Vision Zero Task force consisted of state and county agencies and Hawai'i Island community groups |
| Honolulu Vision Zero (Internal Memos, City and County of Honolulu, Department of Transportation Services, 2022 – in progress) | | Identification of intersections and corridors based on the following criteria: - High injury corridor – 3 or more Vision Zero Focus crashes per mile per year - High injury intersection – 1 or more Vision Zero Focus crashes per year | | One public workshop conducted to date and a public survey currently being conducted and available online |

| Plans and Documents | Goals/ Objectives/ Emphasis Areas | Areas of Concern | Strategies/Action Items/ Recommendations | Public Engagement/ Consultation |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Resulted in the identification of 63 corridor segments and 93 intersections. | | |
| Safe Routes to School 2022 Traffic Survey (City and County of Honolulu, Department of Transportation Services, 2022) | | | <ul style="list-style-type: none"> - Driver education and awareness program implementation - Speed evaluations - Speed enforcement (if applicable) - Congestion relief through staggered schedules, increase in queuing capacity, and encouraging mode shifts - Infrastructure improvements (sidewalks, bike lanes, sightline/crosswalk improvements) - Coordination with school traffic/safety administrators in conjunction with roadway projects adjacent to schools | 80 O’ahu schools provided responses to an online school traffic survey |
| O’ahu Pedestrian Plan (City and County of Honolulu, Department of Transportation Services, 2022) | Making O’ahu’s transportation environment safe & healthy, sustainable, responsive and equitable | | <ul style="list-style-type: none"> - Cost of over \$2.6 billion to provide missing walkways on O’ahu - Overarching strategies identified for signalized intersections, uncontrolled crossings, and system-wide. | Public engagement coordinated with the O’ahu Bike Plan update and Complete Streets implementation projects (public meetings, participatory mapping, social media, and stakeholder meetings) |
| O’ahu Bike Plan 2019 Update (City and County of | Vision of the plan: “O’ahu is a bicycle friendly community where bicycling is a safe, | | - Commit to Vision Zero | Technical Advisory Group included City and County of Honolulu Department of |

| Plans and Documents | Goals/ Objectives/ Emphasis Areas | Areas of Concern | Strategies/Action Items/ Recommendations | Public Engagement/ Consultation |
|--------------------------------------------------------|------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Honolulu, Department of Transportation Services, 2019) | viable, and popular travel choice for residents and visitors of all ages and abilities.” | | <ul style="list-style-type: none"> - Develop seamless connections between bikes and transit - Expand encouragement and education efforts - Establish a comprehensive bikeway maintenance program - Implement a consistent signage and wayfinding program - Evaluate bicycle facilities and programs - Project recommendations would add 575 miles of new bikeways. Projects were split into three priority levels; priority 1 focused on dedicated bike lanes and paths, and priorities 2 and 3 focused on bike lanes, shoulders, and shared facilities. | Transportation Services, State of Hawai'i Departments of Transportation and Health and the Honolulu Bicycle League. Community engagement conducted through stakeholder meetings, community workshops, online surveys, and an interactive crowdsourcing map. |



SECTION TWO

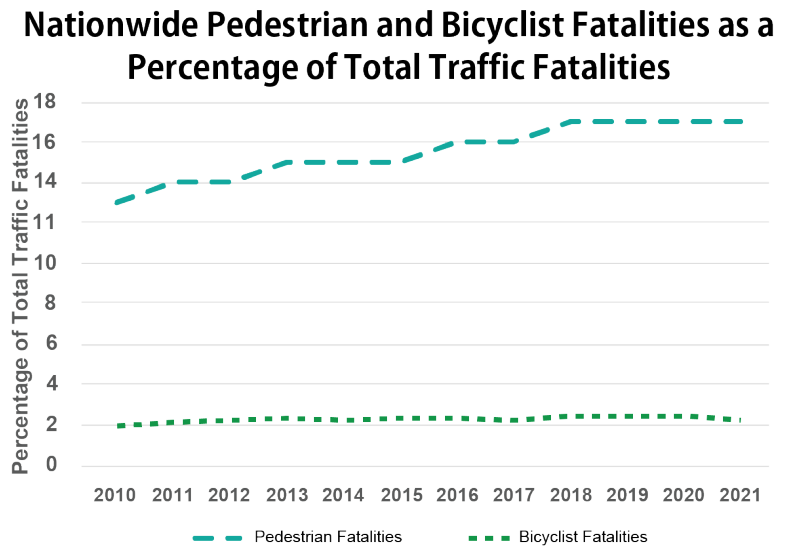
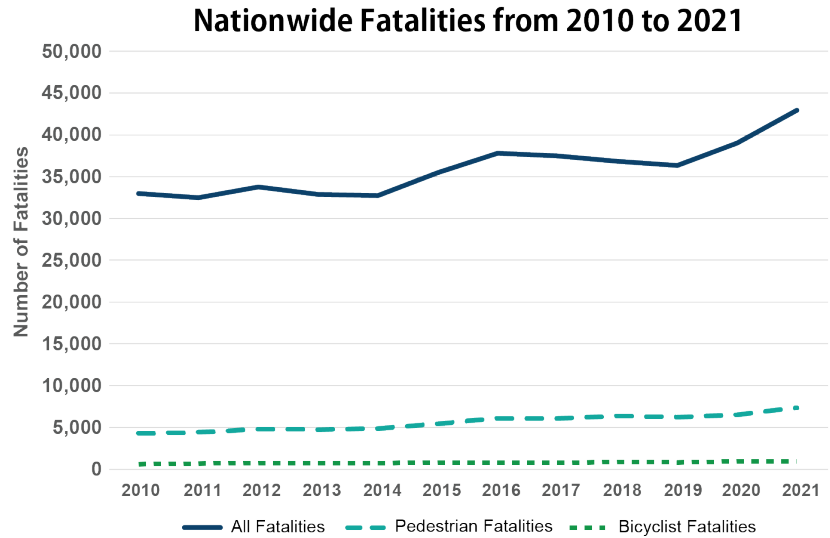
OVERVIEW OF
VULNERABLE ROAD
USER SAFETY
PERFORMANCE

2 Overview of Vulnerable Road User Safety Performance

Across the nation, traffic fatalities have been increasing and vulnerable road users have been accounting for an increasing share of roadway fatalities, claiming the lives of more pedestrians, bicyclists, and rollers in recent years. In 2010, there was a total of 32,999 traffic fatalities, which encompassed 4,302 pedestrian fatalities and 623 bicyclist fatalities. As illustrated in the graph on the right, total fatalities, including pedestrian and bicyclist fatalities, have been following an increasing trend from 2010 to 2021. In 2021, there were 42,939 traffic fatalities, of which 7,388 were pedestrian fatalities and 966 were bicyclist fatalities. Compared to 2010 fatality numbers, the number of traffic fatalities increased by 30%, pedestrian fatalities increased by 72%, and bicyclist fatalities increased by 55% in 2021.

Since 2010, pedestrian and bicyclist fatalities as a percentage of total fatalities have only increased.

Pedestrian fatalities accounted for 13% of total fatalities in 2010 and 17% of total fatalities in 2021. Bicyclist fatalities have been increasing at a slower rate compared to pedestrian fatalities, where bicyclist fatalities accounted for 1.9% of total fatalities in 2010 and 2.2% of total fatalities in 2021.



In Hawai'i, pedestrian and bicyclist fatalities have seen a higher average annual increase rate compared to total traffic fatalities between 2010 to 2021. Total traffic fatalities have seen an annual decrease of 0.4% on average, while pedestrian and bicycle fatalities have seen an average annual increase of 9.5% and 0.6%, respectively. In 2010, there were 113 traffic fatalities, of which 26 were pedestrian fatalities and 3 were bicyclist fatalities. In comparison, there were 94 traffic fatalities, 26 pedestrian fatalities, and 4 bicyclist fatalities in 2021.

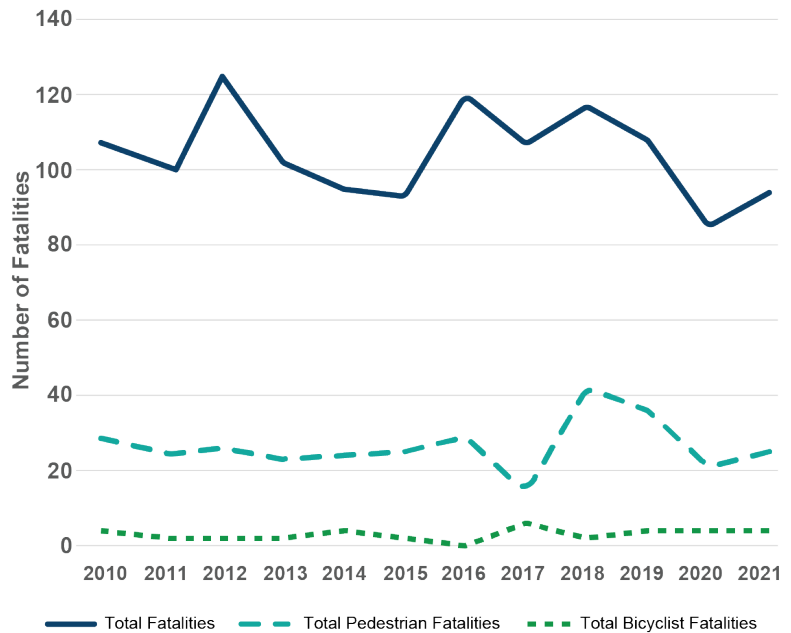
Similar to national statistics, pedestrians and bicyclists have been accounting for a greater share of total traffic fatalities, even as total traffic fatalities have been decreasing on average. Pedestrian and bicyclist fatalities as a percentage of total fatalities have increased at an annual rate of 25% and 3% on average between 2010 and 2021, respectively.

2.1 Pedestrian Crashes

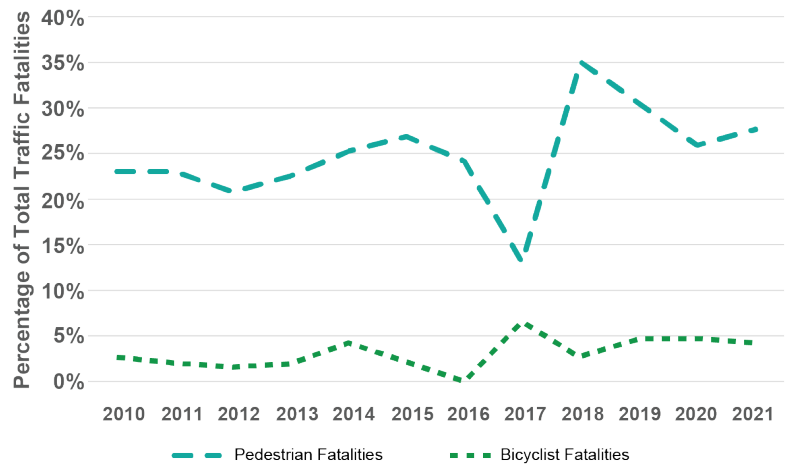
Across the state, a total of 36,564 traffic crashes occurred during the 5-year period from 2017 to 2021. Crashes involving pedestrians accounted for 7.5% of the total crashes, with 2,736 pedestrian crashes. Of those crashes, 137 resulted in a fatality and 336 resulted in a suspected serious injury. A suspected serious injury is defined as any injury other than fatal resulting in one or more of the following:

- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)

Hawaii Traffic Fatalities from 2010 to 2021



Hawaii Pedestrian and Bicyclist Fatalities as a Percentage of Total Traffic Fatalities

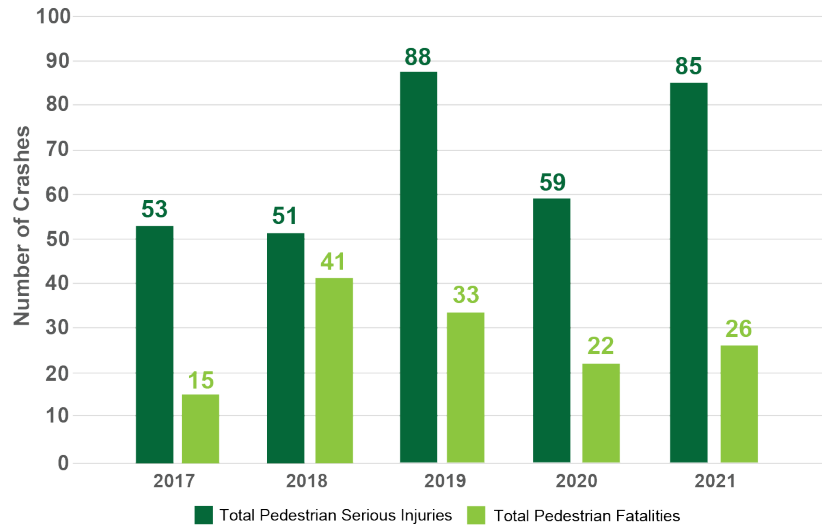


- Unconsciousness when taken from the crash scene
- Paralysis²

Fatalities and suspected serious injuries crashes represent the most severe injury types in the State of Hawai'i Motor Vehicle Accident Reports (MVAR).

Over the 5-year period, there has been a reduction in the total number of crashes involving pedestrians. However, the severity of the pedestrian crashes has been increasing on average. Pedestrian fatalities have increased by 35% and serious injury crashes have increased by 20% on an average annual basis.

Statewide Total Pedestrian Fatalities and Serious Injuries Crashes

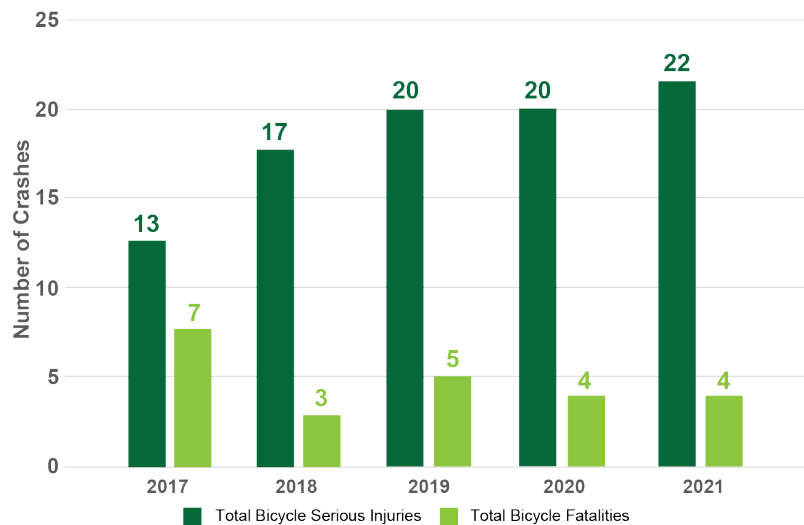


Source: HDOT 2017 - 2021 Crash Data

2.2 Bicyclist Crashes

During the same 5-year period from 2017 to 2021, crashes involving bicyclists accounted for 3.3% of all crashes statewide. Of those crashes, 23 resulted in a fatality and 92 resulted in a serious injury. Like the pedestrian crashes, there has been a decrease in the total number of bicycle crashes, however the severity of the crashes has been increasing. Bicyclist serious injury crashes increased by 15% on an average annual basis. Within the 5-year period, the highest number of bicyclist fatalities occurred in 2017 with 7 fatalities.

Statewide Total Bicycle Fatalities and Serious Injury Crashes



Source: HDOT 2017 - 2021 Crash Data

While the number of fatalities decreased in 2018 to 3 bicyclist fatalities, the number of fatalities have increased from 2019 to 2021.

² U.S. Department of Transportation, National Highway Traffic Safety Administration. "The National Definition for Serious Injuries, MMUCC 4th Edition".

2.3 Progress Towards Safety Performance Targets for Non-Motorized Modes

Based on the US-DOT FHWA’s State Highway Safety Report, Hawai’i has met the performance target for non-motorized fatalities and serious injuries for 2021 and 2022, which are based on 5-year averages. Performance targets are determined using a linear trend line based on 5-year averages from 2012 to 2021 data, and an analysis of external factors, including the recently updated Hawai’i Strategic Highway Safety Plan (HSHSP), Vision Zero Plans, planned roadway infrastructure safety improvement projects, and safety impacts of proposed grants.³

Table 2: Number of Non-Motorized Fatalities and Serious Injuries

| | 2021 | 2022 |
|-------------------------|-------|-------|
| 5-Year Average | 135.2 | 124.0 |
| Target (5-Year Average) | 136.8 | 134.1 |
| Target Achieved | Yes | Yes |

The Maui Metropolitan Planning Organization (MPO) and O’ahu MPO are also required to establish safety targets for non-motorized fatalities and serious injuries. The Maui MPO adopted the same targets as the State of Hawai’i Department of Transportation (HDOT), which has met the targets. The O’ahu MPO has chosen to set their own target. The table below provides the actual numbers for the years 2017 to 2021 and targets for 2022 and 2023. Updates to the O’ahu MPO’s Highway Safety Performance Targets can be found on their website at the following link: <https://oahumpo.org/performance-management/>.

Table 3: O’ahu MPO Safety Targets

| Safety Measure | Actual | | | | | Targets | |
|-----------------------------------------------|--------|------|------|------|------|---------|------|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| Non-motorized fatalities and serious injuries | 78 | 80 | 127 | 105 | 110 | 90 | 86 |

³ U.S. Department of Transportation, Federal Highway Administration. “State Highway Safety Report (2021) – Hawai’i.”

Pedestrian and Bicycle Improvements

Pedestrian Improvements Completed

In 2013, HDOT completed the Statewide Pedestrian Master Plan (PMP) which focuses on improving pedestrian safety on the State Highways System and evaluating ways to enhance pedestrian mobility and accessibility. The plan identified a priority list of projects and programs to address the needs of the Statewide pedestrian system. A list of the priority projects completed since the publication of the PMP is listed in Appendix A.

Bicycle Improvements Completed

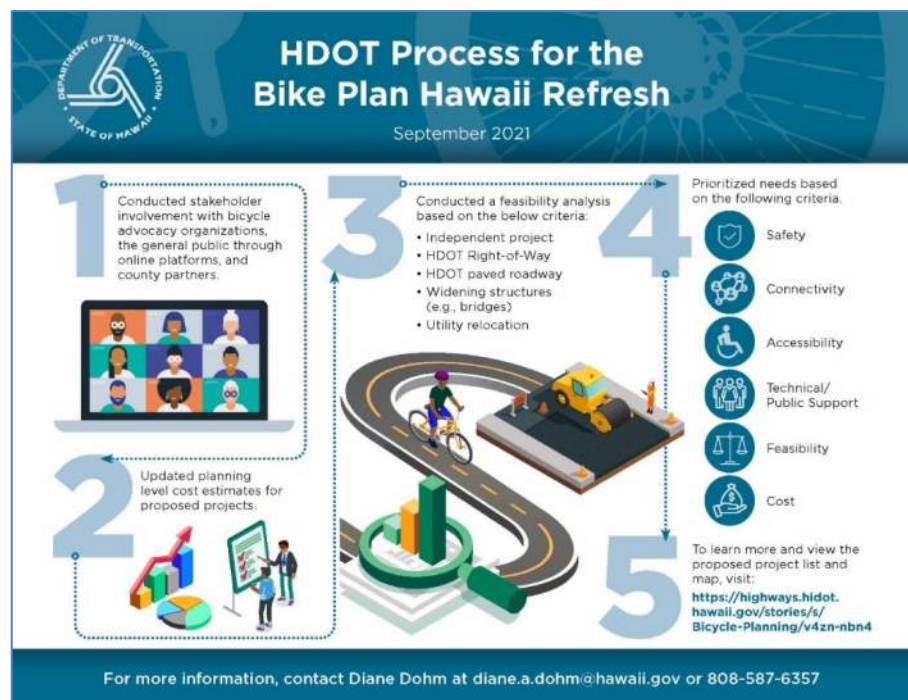
In 2003, HDOT published Bike Plan Hawai'i (BPH), which was the State's master plan that identified existing and proposed bicycle facilities, policies, and programs. A list of the Priority 1 projects completed since the publication of the plan is included in Appendix A.

Ongoing/Proposed Improvements

In accordance with Act 125 (Session Laws of Hawai'i, 2021), the HDOT maintains a priority list of proposed statewide pedestrian improvements using the projects identified in the Statewide Pedestrian Master Plan as a basis. Additional pedestrian improvements have also been identified through public input and safety and planning analyses, and have been vetted through the same criteria used in the Statewide Pedestrian Master Plan. A list of the proposed projects is included in Appendix A.

HDOT completed the Bike Plan Hawai'i Refresh, Priorities & Implementation Plan 2022 to update the existing inventory of facilities, update project lists and maps, reanalyze the bicycle network, and reevaluate proposed projects from the 2003 BPH to establish priorities and assess feasibility for implementation. The BPH Refresh includes an updated list of prioritized near-term and mid-term implementation projects identified for each island.

In 2022, HDOT reported over 290 active projects with pedestrian and/or bicycle improvements. An active project is a project that has been programmed and funded to start the environmental review and design process. The 290 active projects are likely in different phases of implementation: environmental, design,

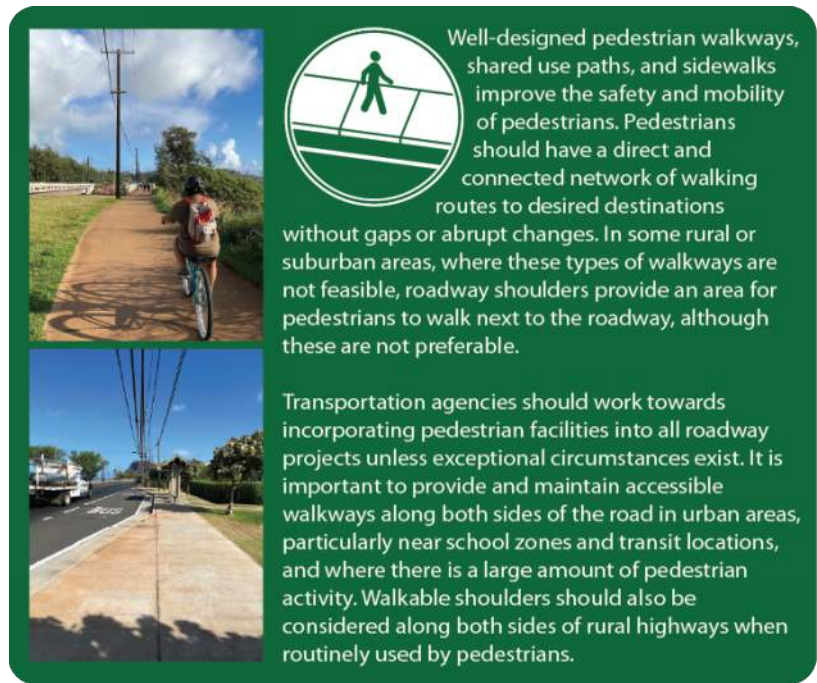


or construction. In the same year, 41 projects to improve existing facilities (e.g., repaving shoulders and roadways and restriping shoulders and crosswalks) and 14 projects to build new facilities (e.g., sidewalks, curb ramps, raised crosswalks, shared use paths, bridges, etc.) were completed. The new facilities built amounted to an additional 5.1 miles of sidewalks and shared use paths.

In HDOT’s most recent Capital Improvement Program (CIP), there were more than \$37 million in funds requested for pedestrian and bicycle improvement projects, which are projected to start within the next three years. These improvements are stand-alone projects funded in the pedestrian program or bicycle program only and are not part of larger transportation projects.⁴ As part of the HDOT’s Complete Streets policy, pedestrian and bicycle needs and facilities are considered on all of their projects. The \$37 million does not include pedestrian and bicycle improvement projects that have been incorporated into other CIP projects.

At the County level, the City and County of Honolulu has a dedicated bikeway fund line item in the CIP for bikeway improvement projects, and a sidewalk improvements bulk fund for pedestrian improvements. In the most recent adopted CIP for the City and County of Honolulu for FY 2024, \$1,059,000 was obligated to the bikeway fund line item. While the County of Hawai’i (COH) does not have dedicated CIP funding for pedestrian and

bikeway improvements, the addition of pedestrian and bicycle facilities are carried out through the COH Department of Public Works (DPW) and can be incorporated in roadway improvement projects. The COH DPW’s has two upcoming planned projects for pedestrian and bicycle facility improvements. One project is to improve the shoulders along Kawili Street and will include adding bicycle lanes and concrete sidewalks from the University of Hawai’i at Hilo’s main entrance to the end of Kanoelehua Avenue. Another upcoming project will improve the sidewalks along Kilauea Avenue. Similar to the COH, the County of Maui incorporates pedestrian and bicycle facilities into their CIP projects, such as the Waiale Road Extension Project (new shared-use path, sidewalks, and shoulder bikeways) and the Liloa Street Extension, Phase 1 (new shared-used path).



Well-designed pedestrian walkways, shared use paths, and sidewalks improve the safety and mobility of pedestrians. Pedestrians should have a direct and connected network of walking routes to desired destinations without gaps or abrupt changes. In some rural or suburban areas, where these types of walkways are not feasible, roadway shoulders provide an area for pedestrians to walk next to the roadway, although these are not preferable.

Transportation agencies should work towards incorporating pedestrian facilities into all roadway projects unless exceptional circumstances exist. It is important to provide and maintain accessible walkways along both sides of the road in urban areas, particularly near school zones and transit locations, and where there is a large amount of pedestrian activity. Walkable shoulders should also be considered along both sides of rural highways when routinely used by pedestrians.

⁴ State of Hawai’i, Department of Transportation. Act 100 Report, “Multi-Modal Integration”. 2022.

2.4 VRU Safety Special Rule

In addition to the requirement to prepare a VRUSA, the IIJA established a new VRU Safety Special Rule under the HSIP codified under 23 U.S.C. Section 148(g)(3) that states “If the total annual fatalities of vulnerable road users in a State represents not less than 15 percent of the total annual crash fatalities in the State, that State shall be required to obligate not less than 15 percent of the amounts apportioned to the State under section 104(b)(3) for the following fiscal year for highway safety improvement projects to address the safety of vulnerable road users.” Per FHWA policy and guidance, the annual total number of fatalities and VRU fatalities will come from the US-DOT National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS). Highway safety improvement projects implemented under the VRU Safety Special Rule must be on a public road consistent with the State’s SHSP and correct or improve a hazardous road location or feature or address a highway safety problem.⁵

As provided in the memorandum, the following table shows the year of available fatality data that will be used in the determination of the applicability of the VRU Safety Special Rule, and the fiscal year for which the rule would apply.

Table 4: Timeline of VRU Safety Special Rule Determination

| Annual Data | FHWA Notifies State DOT if VRU Safety Special Rule Applies | Fiscal Year that VRU Safety Special Rule Would Apply |
|-------------|------------------------------------------------------------|------------------------------------------------------|
| 2020 | By March 2022 | FY 2023 Oct. 1, 2022 to Sept. 30, 2023 |
| 2021 | By March 2023 | FY 2024 Oct. 1, 2023 to Sept. 30, 2024 |
| 2022 | By March 2024 | FY 2025 Oct. 1, 2024 to Sept. 30, 2025 |
| 2023 | By March 2025 | FY 2026 Oct. 1, 2025 to Sept. 30, 2026 |

The FHWA notified the HDOT that the 2021 State safety performance target assessment and the FY 2024 HSIP Special Rules determinations were conducted and the VRU Safety Special Rule will apply for FY 2024, as the percent of VRU fatalities per total fatalities was 31% for 2021. Per the VRU Safety Special Rule, the HDOT is required to obligate not less than 15% of the amount apportioned under the HSIP for highway safety improvement projects to address the safety of VRUs for FY 2024.

⁵ 23 U.S.C. Section 148(a)(4)(A) and FHWA Memorandum on 23 U.S.C. 148(g) Highway Safety Improvement Program Special Rules Guidance



SECTION THREE
SUMMARY OF
QUANTITATIVE ANALYSIS

3 Summary of Quantitative Analysis

This section summarizes the quantitative analysis conducted on vulnerable road user crashes during the 5-year period between 2017 to 2021 for the State of Hawai'i. The analysis included the collection of data such as crash data, traffic volumes, transit service routes and stops, existing and proposed pedestrian facilities and bikeways, land uses, demographics and environmental justice data, and data on natural and climate hazards. High-crash areas and corridors were identified from the vulnerable road user crash data from 2017 to 2021, and these areas were used to inform trends and characteristics for high-risk areas. A list of the locations of the high-risk areas are provided in Appendix D, along with maps showing the locations of the pedestrian clusters, bicycle crashes, and high-crash corridors.

3.1 Data Collected

Crash Data

This assessment analyzed crash data recorded on MVARs for the 5-year period between 2017 to 2021. A MVAR is a summation of information recorded at the scene of a crash that is provided by County police departments. A copy of a MVAR is provided in Appendix B. The bicyclist and pedestrian fatality and serious injury crashes were excerpted from the crash data and mapped in ArcGIS. For the purposes of this assessment, it is assumed that other non-motorized modes (i.e., skateboards, scooters, etc.) are recorded under the bicyclist and pedestrian fields in the MVAR as the form does not include specific fields for these modes.

Other data under categories such as traffic volume, transit service routes and stops, pedestrian facilities, bikeways, land uses, natural and climate-related hazards, and demographics and environmental justice were also collected and is described below. This data was used to inform the high-crash area and corridor characteristics and trends, which is further described in Section 3.3.

Traffic Volume and Transit Service Routes and Stops

Traffic volume data including average annual daily traffic (AADT) for 2017 to 2021 was sourced from the Hawai'i Statewide Geographic Information System (GIS) Program Database. Feature layers depicting the location of bus stops on Maui and bus routes for O'ahu, Kaua'i, and the Big Island were also sourced from the Hawai'i Statewide GIS Program Database.

Pedestrian Facilities and Bikeways

The Hawai'i Statewide GIS Program Database was accessed to collect feature layers for existing and proposed pedestrian facilities and bikeways. The available layers include existing facilities such as State sidewalks and paths, State crosswalks, raised crosswalks, and State bikeways. Available layers for proposed or planned facilities include raised crosswalks, City and County of Honolulu bike facilities, and Maui County bikeways.

Existing pedestrian facilities and bikeways were also verified using Google Earth.

Land Uses

Feature layers for infrastructure and land uses, including hotels, hospitals, preschools and early childcare centers, public and private schools, postsecondary institutions, assisted living facilities, adult day care centers, adult day health centers, hospice facilities, skilled nursing facilities, State and County parks, and State libraries were collected from the Hawai'i Statewide GIS Program Database. Shopping centers, retail and commercial land uses, activity centers, and attractions surrounding crash sites were identified using Google Earth.

Natural and Climate-Related Hazards

The Hawai'i Statewide ArcGIS REST Services was accessed to collect feature layers depicting natural and climate-related hazard zones, including flood hazard zones, tsunami evacuation zones, lava flow hazard zones, fire risk areas, and sea-level rise exposure areas using a 3.2 ft. scenario.

Demographics and Environmental Justice

Demographic and environmental justice data was sourced from the US-DOT's Equitable Transportation Community (ETC) Explorer interactive web application. The US-DOT's ETC Explorer was created in support of the Justice 40 initiative created through Executive Order 14008 Tackling the Climate Crises at Home and Abroad to confront and address decades of underinvestment in disadvantaged communities. The ETC Explorer uses 2020 Census data at the Census Tract level to assess the cumulative burden communities experience as a result of underinvestment in transportation.

The table below shows the data used from the ETC Explorer to measure the social vulnerability of a community. The tool analyzes social vulnerability using indicators of socioeconomic status such as unemployment, educational attainment, poverty, housing tenure, access to the internet, insurance coverage, Gini index, housing cost burden, and household characteristics such as age, disability status, and English proficiency, all of which are sourced from the American Community Survey (ACS) 5-Year Estimates dataset from 2016 to 2020.

Table 5: Social Vulnerability Indicators

| Subcomponent | Indicator Description |
|----------------------|----------------------------------------------------------------|
| Socioeconomic Status | Percent of population with income below 200% of poverty level |
| | Percent of people age 25+ with less than a high school diploma |
| | Percent of people age 16+ unemployed |
| | Percent of total housing units that are renter-occupied |

| Subcomponent | Indicator Description |
|---------------------------|----------------------------------------------------------------------------------------------------------|
| | Percent of occupied houses that spend 30% or more of their income on housing with less than \$75k income |
| | Percent of population uninsured |
| | Percent of households with no internet subscription |
| | GINI Index |
| Household Characteristics | Percent of population 65 years or older |
| | Percent of population 17 years or younger |
| | Percent of population with a disability |
| | Percent of population (age 5+) with limited English proficiency |
| | Percent of total housing units that are mobile homes |

In addition to the Social Vulnerability Indicators from the US-DOT’s ETC Explorer, the “households with no vehicle available” data was also analyzed using the ACS 5-Year Estimates dataset from 2016 to 2020, Table S0802.

3.2 Data Limitations and Insufficiencies

Throughout the analysis, there have been limitations identified when analyzing pedestrian and bicyclist crash data that have led to insufficient or inconsistent data reporting. Examples of the data limitations and insufficiencies are provided below.

- Unknown and “Blank” Data:** Various fields of data have been left blank by the reporting officer on the MVAR forms. In addition, certain fields include an “Unknown” option when the information is not available or provided to the officer at the time of the crash. This VRUSA used the 2017 to 2021 crash data that was provided to the HDOT from the County police departments. Police officers fill out the MVAR at the scene of a crash, and often times more information is not provided or available until a later time.
- VRU Identification:** The MVAR form does not include separate fields to identify other types of VRU (e.g., rollers) except for pedestrians and bicyclists. Other VRUs are reported under the pedestrian and bicyclist fields, but cannot be represented or identified when analyzing crash trends and characteristics due to the insufficient reporting of these other users.
- Frequency of Crashes:** Crashes involving bicyclists and pedestrians occur less often than motor vehicle crashes. Typical safety analyses would include identifying hot spots with high frequencies of crashes and statistically significant trends. This assessment identified

high-crash areas but with a smaller dataset (only serious injury and fatal VRU crashes) compared to those used for safety plans analyzing crashes with motor vehicles or all modes of transportation. Thus, the high-crash areas and the high-crash characteristics and trends identified in this assessment may differ from those identified in other safety plans.

- **Inconsistent Data:** Although protocols are implemented and training is conducted for officers filling out crash reports, there may still be inconsistencies or errors in the reporting. Some fields on the MVAR are also based on the information provided by those involved in the crash (notably Field 106 “Human Factors” and Field 108 “Other Factors”), which may not be reported accurately.
- **Demographics of VRUs:** While the MVAR includes fields to note the home address of those involved in the crashes, it does not include a separate field to report whether a houseless person was involved in a crash. Additional follow-up with police departments is needed to understand the houseless population’s involvement in VRU crashes. In addition, the MVAR’s Field 106 “Human Factors” and Field 108 “Other Factors” do not include options to note whether mental illness was a contributing factor to the crash. Reporting of the houseless and mentally ill populations involved in VRU crashes may lead to different results and more targeted strategies to reduce the risk to these vulnerable populations.

3.3 Pedestrian and Bicycle Crash Characteristics from the Crash Reports

From the 2017 to 2021 crash data, there were a total of 473 crashes involving pedestrians that resulted in a fatality or serious injury, and 115 crashes involving bicyclists resulting in a fatality or serious injury. The pedestrian and bicycle crashes were analyzed to identify crash characteristics and potential risk factors. The numbers represented in the following graphs are reflective of the data recorded in the MVARs. As such, the numbers and totals may not be consistent across all of the graphs as not all crash records include data for each of the fields listed in Table 6 below, and the number of pedestrians, bicyclists, and drivers involved vary across the different crash reports.

Table 6: MVAR Fields Analyzed for Crash Trends

| Field Number | Field Name | Report Level |
|--------------|-------------|--------------|
| 2 | County | Crash Level |
| 19 | Lighting | Crash Level |
| 25 | City/Town | Crash Level |
| 117B | Speed Limit | Crash Level |

| Field Number | Field Name | Report Level |
|--------------|------------------------------------------------------------------|--------------|
| 2 | County | Crash Level |
| 119 | Intersection Type | Crash Level |
| 34 | Unit Class | Unit Level |
| 35 | Race | Unit Level |
| 97 | Vehicle Maneuver (of both bicycles + vehicles) | Unit Level |
| 99 | Traffic Controls | Unit Level |
| 103 | Bike Facility | Unit Level |
| 106 | Human Factors (of vehicle drivers and pedestrians/bicyclists) | Unit Level |
| 108 | Other Factors (of vehicle drivers and pedestrians/bicyclists) | Unit Level |
| 45 | City | Person Level |
| 120c | Age (of pedestrian/bicyclists) | Person Level |
| 120d | Sex (of pedestrian/bicyclists) | Person Level |

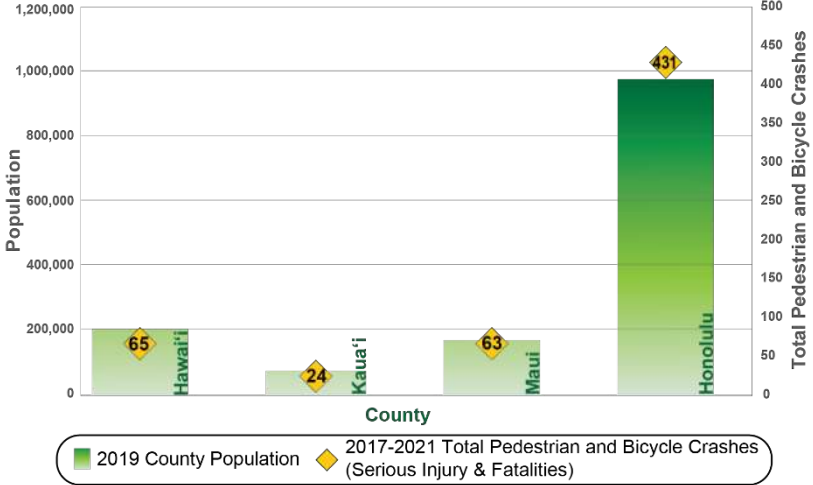
Distribution by County

The distribution of the fatal and serious injury pedestrian and bicycle crashes by County is shown in Figure 1. The number of crashes were found to be fairly proportional to the population distribution.

Age of VRUs

The age group of the pedestrians that were involved in the greatest number of crashes were within the 60 to 69-year-old age group, followed by the 70 to 79-year-old age

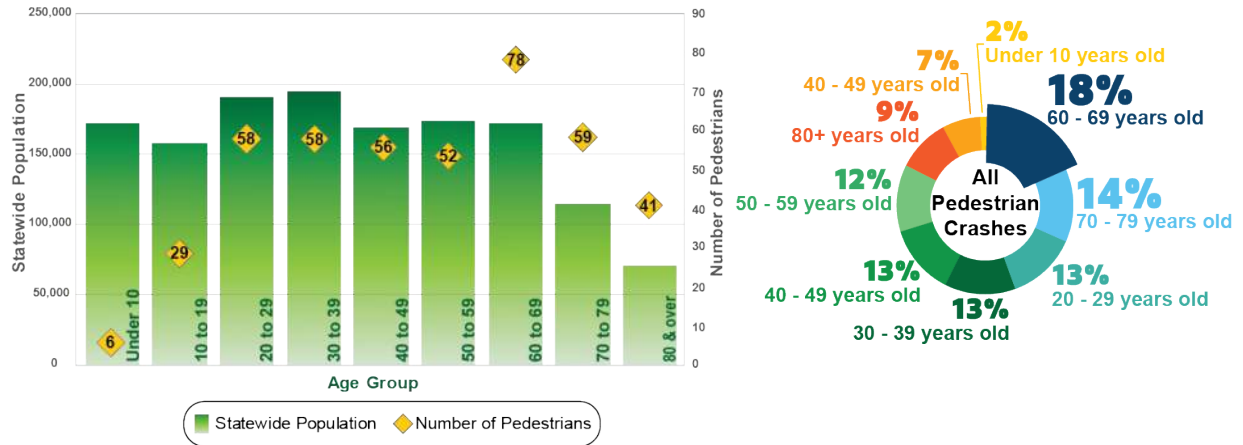
Figure 1: Total Pedestrian and Bicycle Crashes and 2019 Population



group. Figure 2 shows the number of crashes in age group categories as well as 2019 statewide population.

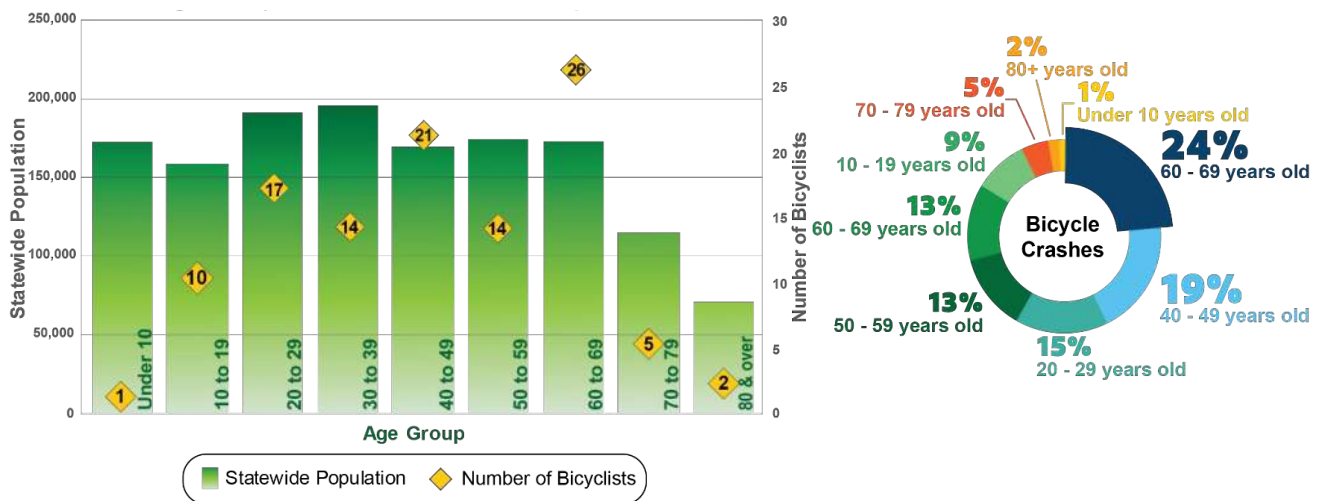
This aligns with statistics at the national level where the highest percentage of pedestrian traffic fatalities in 2021 were the 60 to 64 and 65 to 69-year-old age groups, with each group accounting for 23% of the fatalities.

Figure 2: Age of Pedestrians and 2019 Population



The age group of bicyclists involved in the most crashes is the 60 to 69-year-old age group, which is also the most overrepresented age group in proportion to the 2019 statewide population. A portion of this age group, those ages 60 to 64, is also represented in national statistics as the group with the largest number of bicyclist fatalities in 2021. The 40- to 49-year-old age group is the second most common age for bicyclists involved in the VRUSA crashes.

Figure 3: Age of Bicyclists and 2019 Population



Gender of VRUs

Figures 4 and 5 show the number of pedestrians and bicyclists that were seriously or fatally injured by sex in comparison to the 2019 statewide population. The 2019 statewide population shows a nearly equal amount of males and females, however there were slightly more pedestrians involved in crashes that were male.

Figure 4: Gender of Pedestrians and 2019 Population

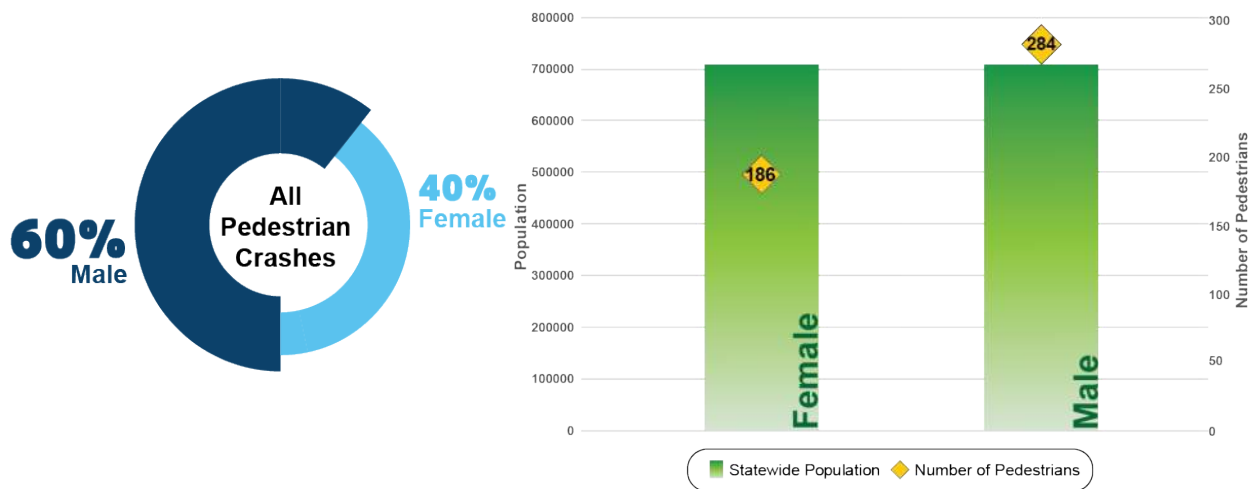
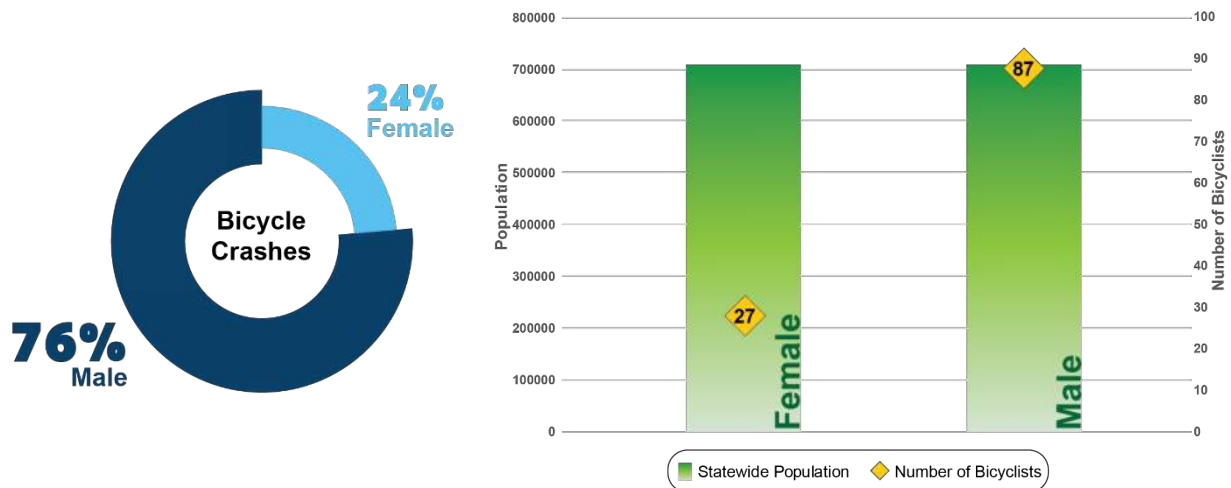


Figure 5: Gender of Bicyclists and 2019 Population



The number of male bicyclists involved in crashes were much higher than the number of females. Both trends are in line with national statistics, which show that for 2021, males made up the majority of pedestrians killed (70%) and also had the highest injury rate per population at 21 compared to females at 15 per 100,000 people.⁶ Males also made up the majority of

⁶ U.S. Department of Transportation, National Highway Traffic Safety Administration. "Traffic Safety Facts 2021 Data". June 2023.

bicyclists killed (86%), and also had an injury rate 4 times higher than females (21 compared to 5 for females per 100,000 people).

Race of VRUs

For pedestrian crashes, the most commonly indicated field under race was “Unknown” or “Other”. It has not been determined what the “Other” category represents in the crash reports, but in regards to the 2019 statewide population the “Other” category represents races that have relatively small populations in Hawai‘i, such as Pacific Islanders, American Indian/Alaskan Native, and other Asian races. The second most commonly indicated race for pedestrians was “White”, followed by Hawaiian.

For bicycle crashes, the most common race of the bicyclists involved was White, followed by Hawaiians. White, Hawaiian, and Samoan are disproportionately represented in relation to the statewide population for bicyclist crashes.

Figure 6: Race of Pedestrians and 2016 - 2020 Population

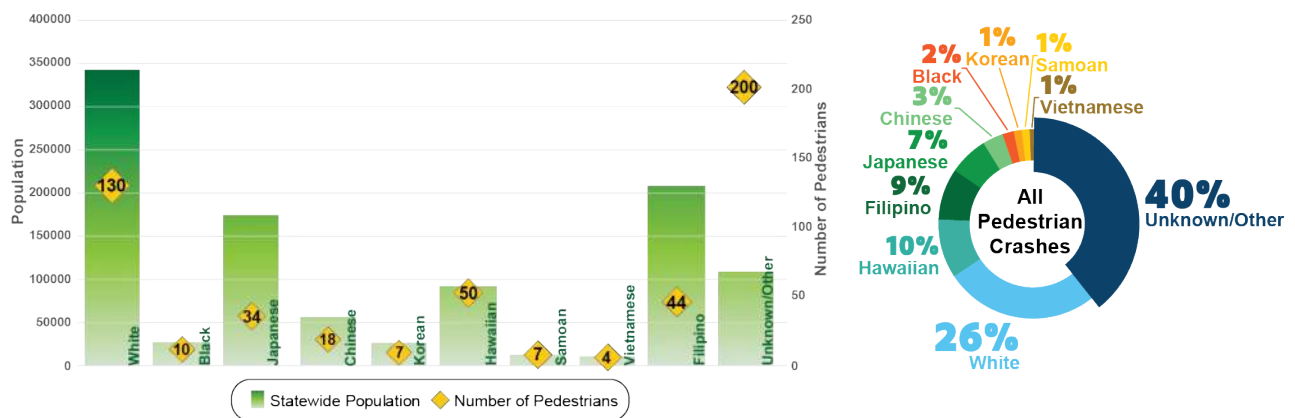
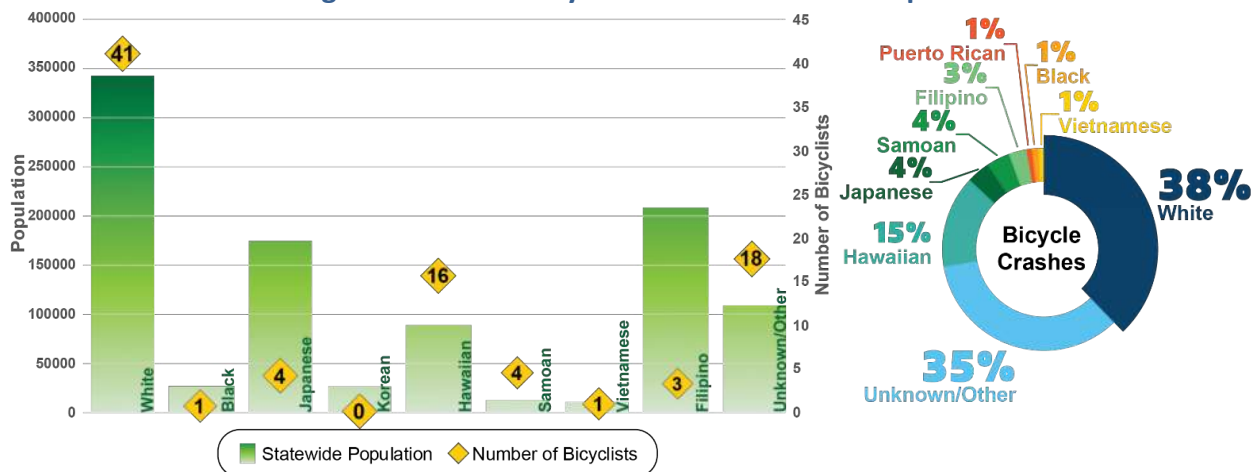


Figure 7: Race of Bicyclists and 2016 - 2020 Population

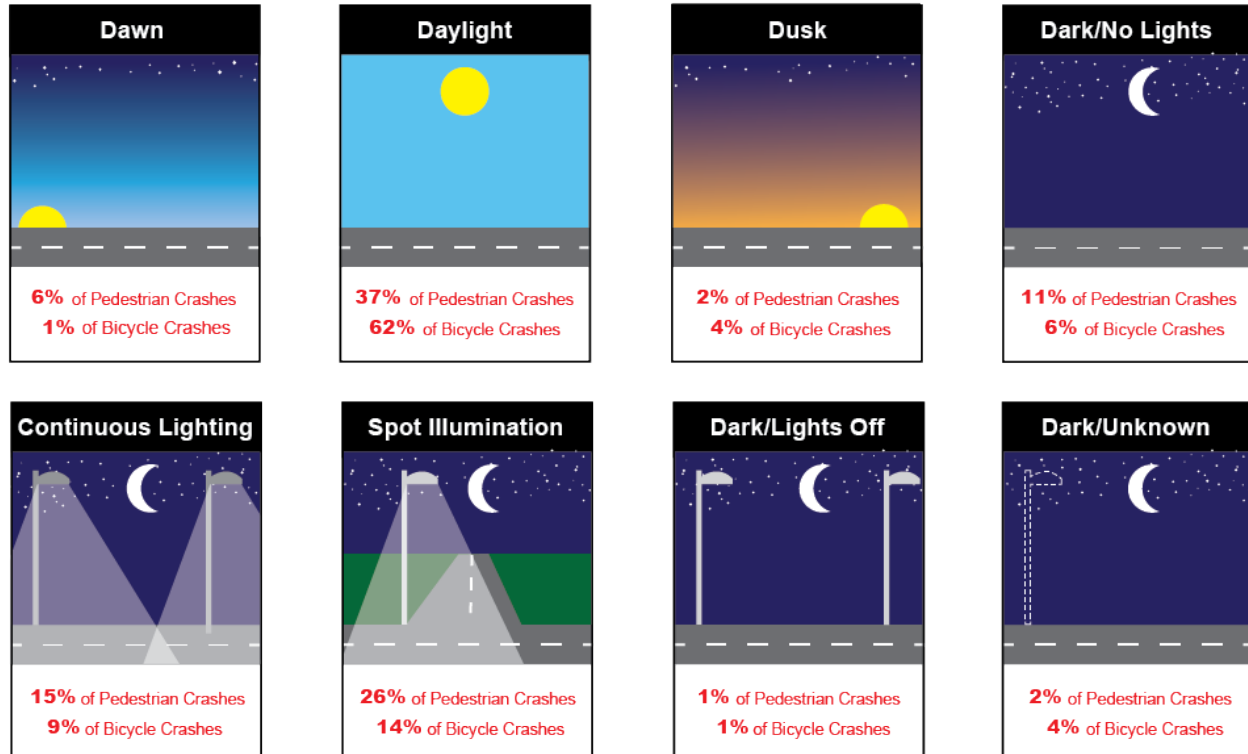


Lighting Conditions

A majority of pedestrian and bicycle crashes occurred during daylight conditions. The second most common lighting condition for pedestrian and bicycle crashes was spot illumination.

In comparison to national statistics for 2021, a majority of fatalities (77% for pedestrians and 52% for bicyclists) occurred in the dark.

Figure 8: Lighting of Pedestrian and Bicyclist Crashes

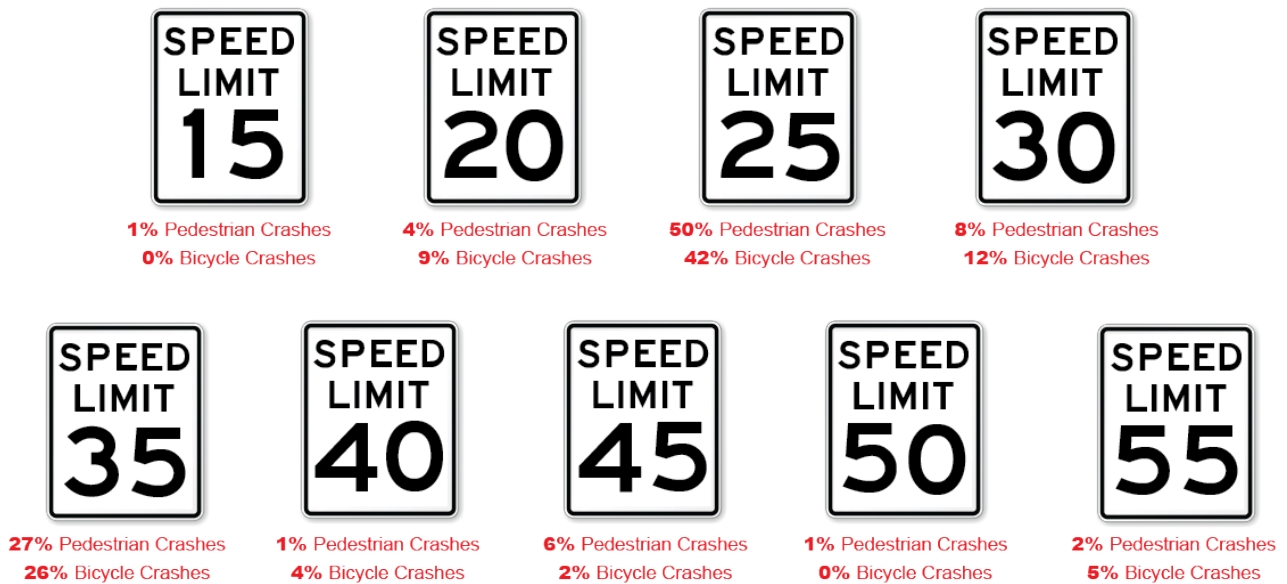


Speed Characteristics

A majority of both the pedestrian and bicycle crashes occurred on roadways where the posted speed limit was 25 miles per hour (mph). Roadways with a posted speed limit of 35 mph were the second most common location for pedestrian and bicycle crashes to occur.

Though excessive speeding was not identified as a contributing factor in the VRU crash reports, review of actual travel speeds along the crash corridors with posted 25 mph and 35 mph speed limits was conducted. The crash corridors are discussed in Section 3.5, and listed in Appendix D. Data provided by Google for a one-week period in April 2023 showed that out of the 14 corridors reviewed, 4 were characterized by a mean 85th percentile speed within 5 mph higher than posted speed, 3 within 10 mph of the posted speed and 1 over 10 mph of the posted speed. It should be noted that the Google speed data identifies speeds for only a portion of the traffic along a corridor. This should only be used as a high-level tool to identify potential speeding issues.

Figure 9: Posted Speed Limit of Pedestrian and Bicyclist Crashes

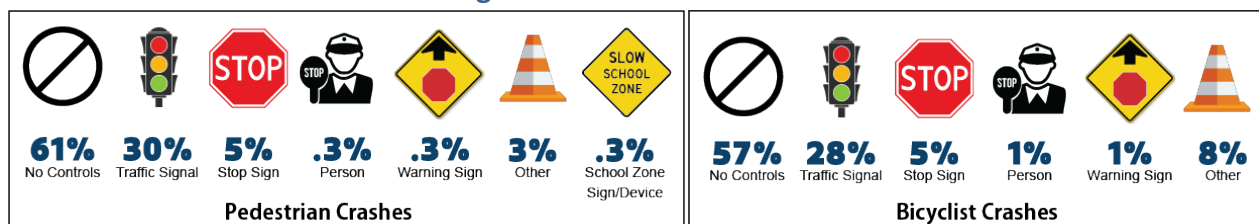


Traffic Controls

More than half of the pedestrian and bicycle crashes occurred at locations where there were no existing traffic controls, followed by locations where a traffic signal was present.

74% of the total bike crashes occurred in areas where there were no existing bike facilities, followed by locations where there was a separated path or bike lane.

Figure 10: Traffic Controls



Intersection Type

A majority of pedestrian crashes (43%) did not occur at an intersection. 4-way intersections were the second most common type of intersection where pedestrian crashes occurred. This is in line with national results on pedestrian fatalities, which indicates that 75% of pedestrian fatalities did not occur at an intersection.

Bicycle crashes mostly occurred at locations that were not at an intersection. The second most common location where bicycle crashes occurred was at 4-way intersections. This aligns with national statistics for bicyclist fatalities, which indicates that 62% of fatalities did not occur at an intersection.

Vehicle Maneuver

Driving straight was the most common maneuver for vehicle drivers involved in pedestrian and bicycle crashes. It was also the most common maneuver indicated for bicycle riders involved in the crashes. The second most common maneuver for vehicles involved in pedestrian crashes was turning left. For bicycle crashes, vehicles turning left and overtaking/passing were tied for the second most common maneuver contributing to crashes.

Figure 11: Intersection Type Where Pedestrian and Bicycle Crashes Occurred

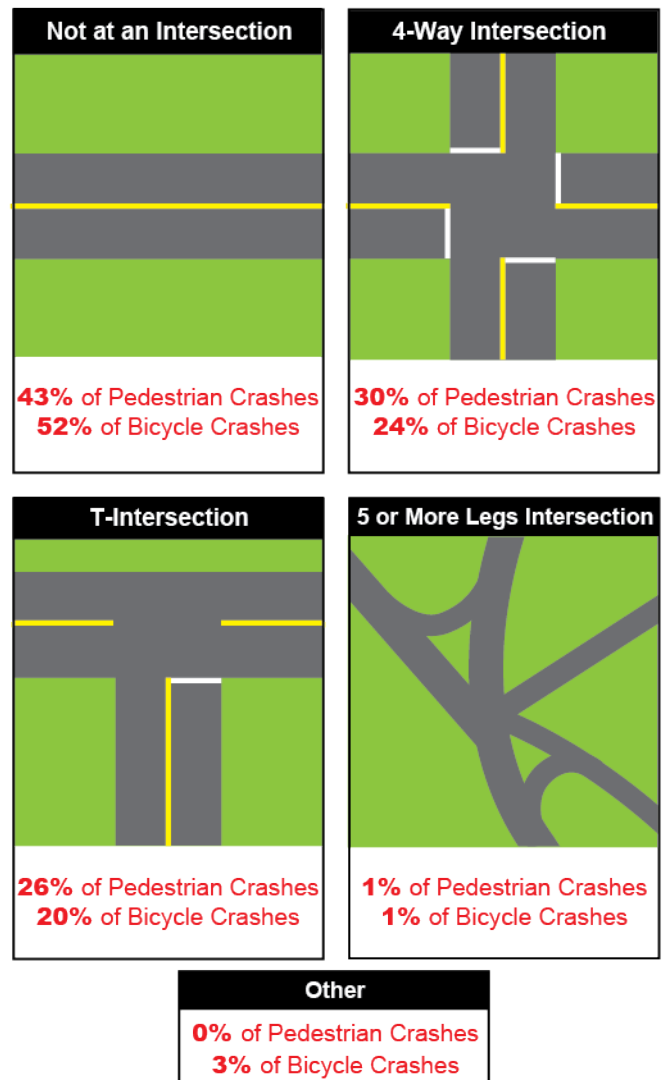
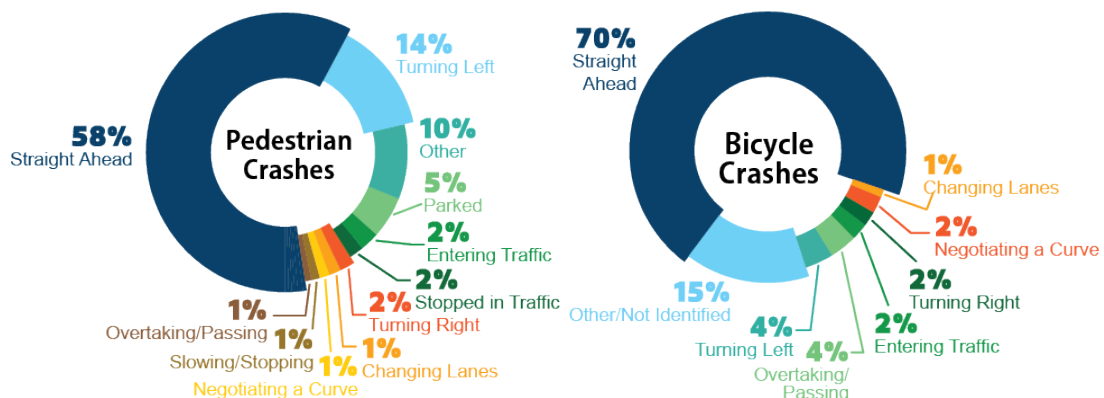


Figure 12: Vehicle Maneuver

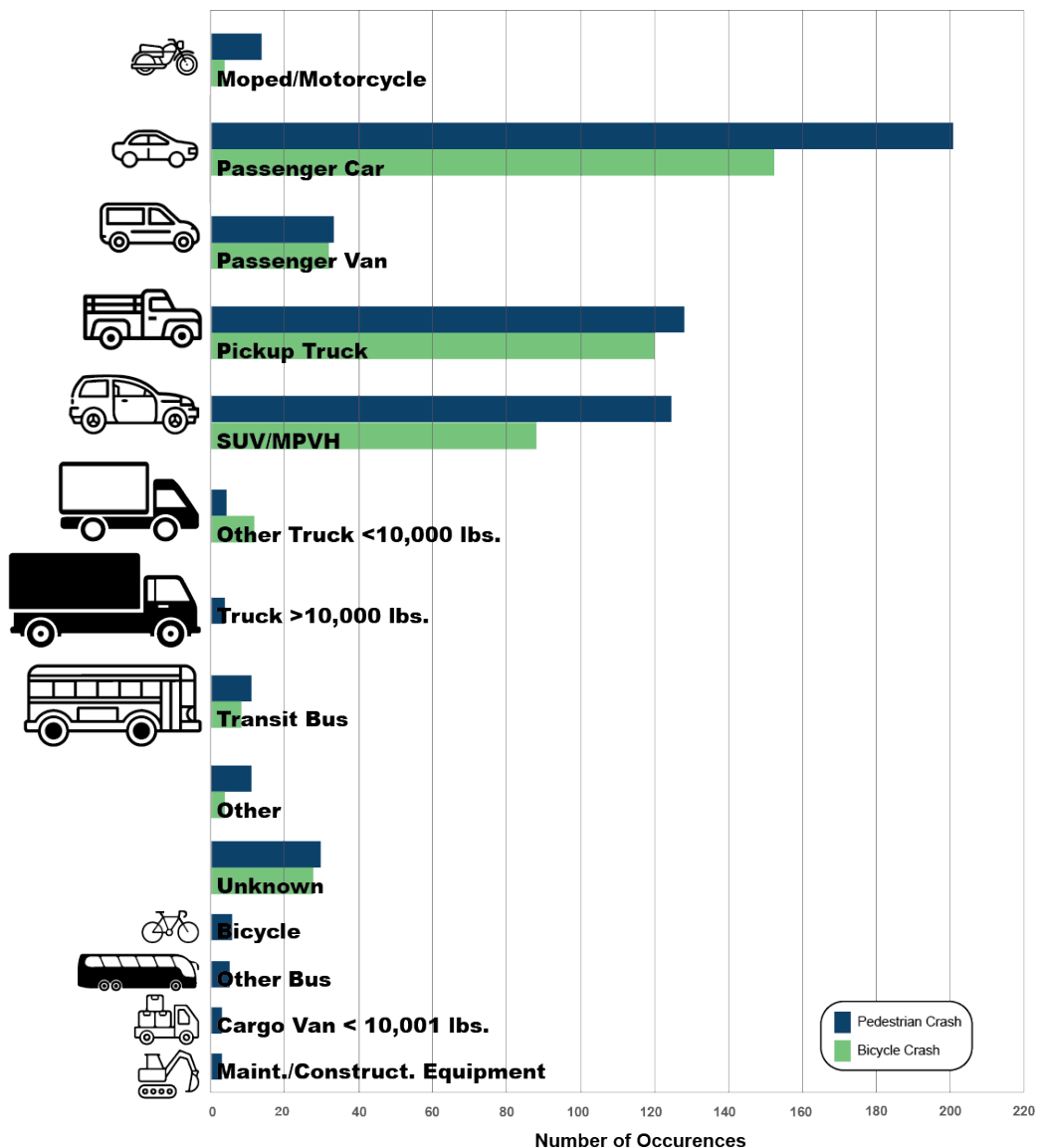


Vehicle Type

Passenger cars were the most common vehicle type involved in pedestrian crashes, followed closely by pickup trucks. This is similar to national statistics on pedestrian fatalities in 2021, which show that passenger cars were involved in 35% of pedestrian fatalities. However, national statistics show that sports utility vehicles (SUVs) were the second most common vehicle type involved in pedestrian crashes accounting for 24% of pedestrian fatalities.

For bike crashes, passenger cars were the most common vehicle type involved in crashes, followed closely by pickup trucks. According to national statistics, passenger cars were involved in 35% of bicycle fatalities and SUVs were involved in 22% of fatalities, followed closely by pickup trucks which accounted for 20% of fatalities in 2021.

Figure 13: Vehicle Types Involved in Fatalities and Serious Injury Pedestrian and Bicycle Crashes



Human Factors (for Vehicle Drivers)

The most common human factor indicated for vehicle drivers involved in both pedestrian and bicycle crashes was “none”, followed by inattention and misjudgment.

The US-DOT’s NHTSA Traffic Safety Facts for 2021 Data reports on alcohol involvement for drivers, pedestrians, and bicyclists. Based on national statistics, a majority of pedestrian fatalities did not involve the consumption of alcohol by either the driver or pedestrian (51% of crashes). These results are similar to those for bicyclists, where a majority of bicyclist fatalities involved no alcohol in the driver or bicyclist (64%).

Figure 14: Human Factors for Vehicle Drivers Involved in Pedestrian Crashes

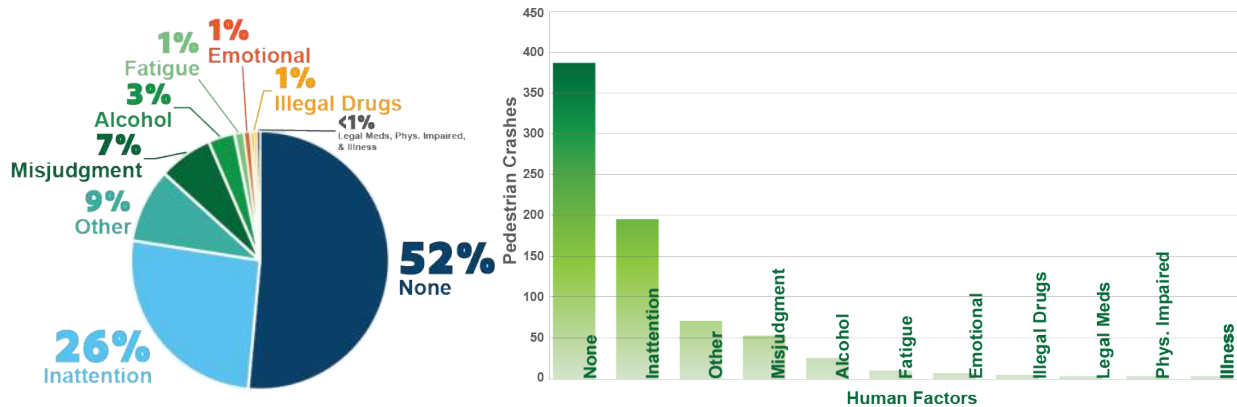
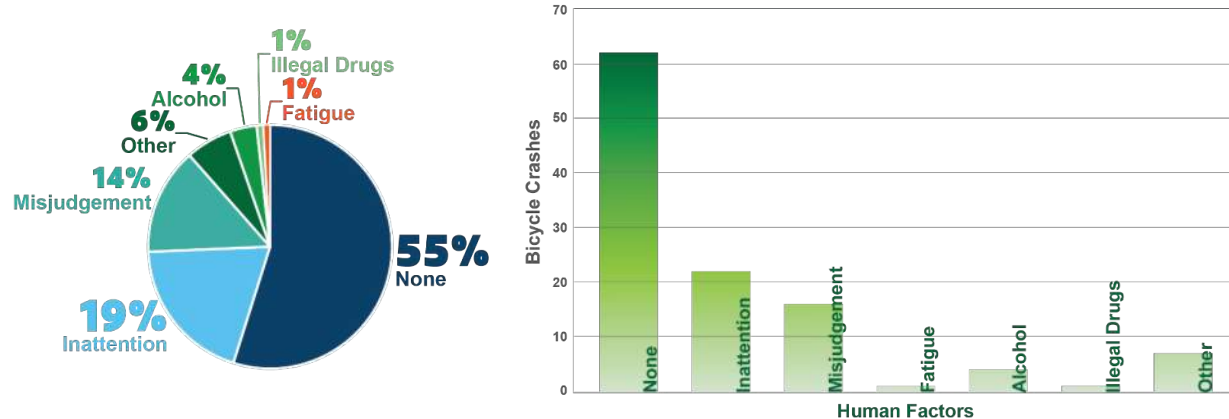


Figure 15: Human Factors for Vehicle Drivers Involved in Bicycle Crashes



Human Factors (for Pedestrians and Bicyclists)

The most common human factor indicated for pedestrians and bicyclists involved in the crashes was “none”, followed by inattention.

Based on national statistics for 2021, pedestrian fatalities where the driver had “no alcohol” (a blood alcohol concentration (BAC) of .00 grams per deciliter (g/dL)) and the pedestrian had a BAC of .08 g/dL or greater accounted for 22% of crashes (1,636 crashes), which is the second most common occurrence after fatalities where no alcohol was present in both drivers and pedestrians. Bicyclist fatalities where the driver had no alcohol and the bicyclist had a BAC of .08 g/dL or greater was the second most common occurrence (14%, 132 crashes), followed closely by fatalities where the driver had a BAC of .08 g/dL and the bicyclist had no alcohol (12%, 118 crashes). The most common occurrence for bicyclist fatalities involved no alcohol present in both the drivers and bicyclist.

Figure 16: Human Factors for Pedestrians

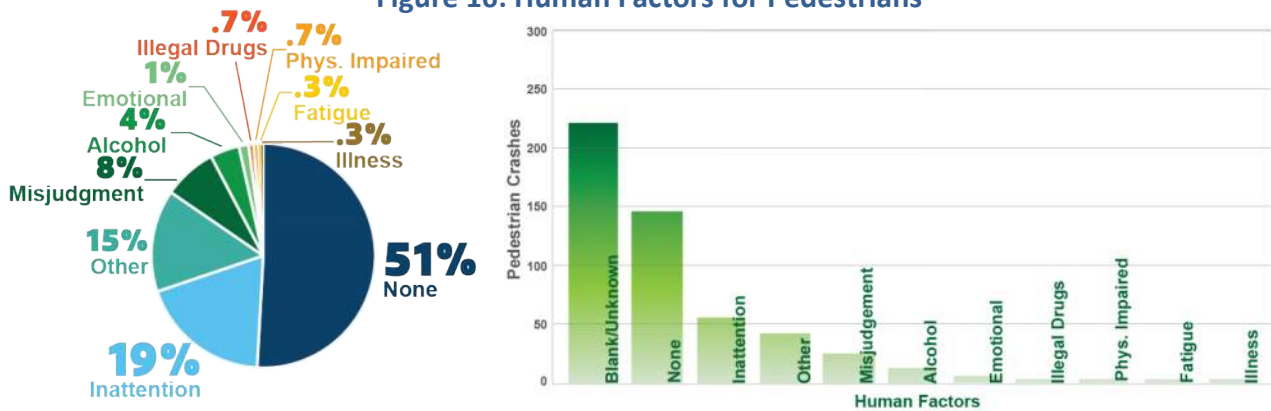
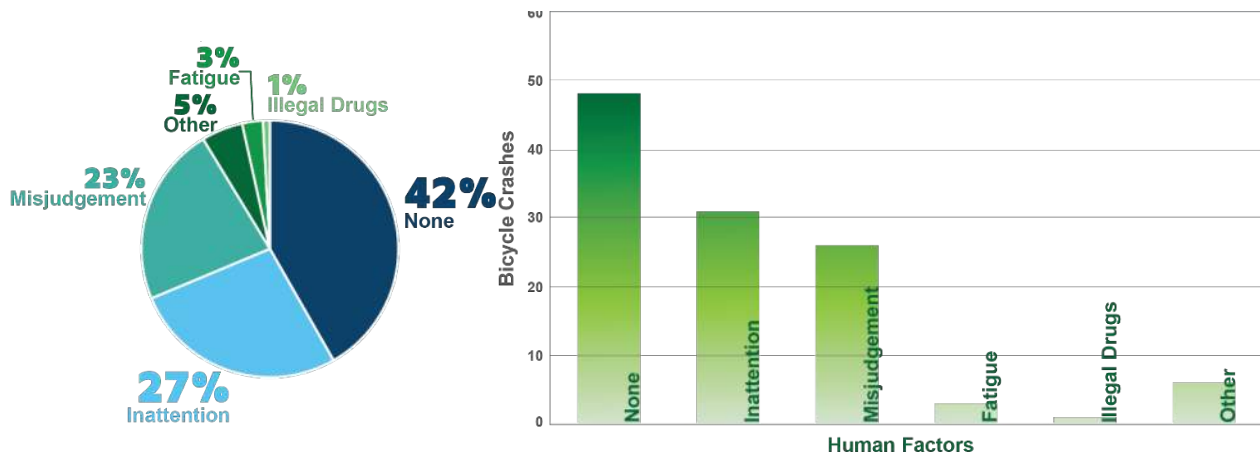


Figure 17: Human Factors for Bicyclists



Other Factors (for Vehicle Drivers)

For both pedestrian crashes, the most common factor under the “Other Factors” Field 108 of the MVAR indicated for the vehicle drivers involved in the crashes was “No Improper Action” followed by “Pedestrian Violation” and “Failure to Yield”. For bicycle crashes, the most common factor for the vehicle drivers involved in the crashes was “No Improper Action”, followed by “Unknown/None Provided” and “Failure to Yield”.

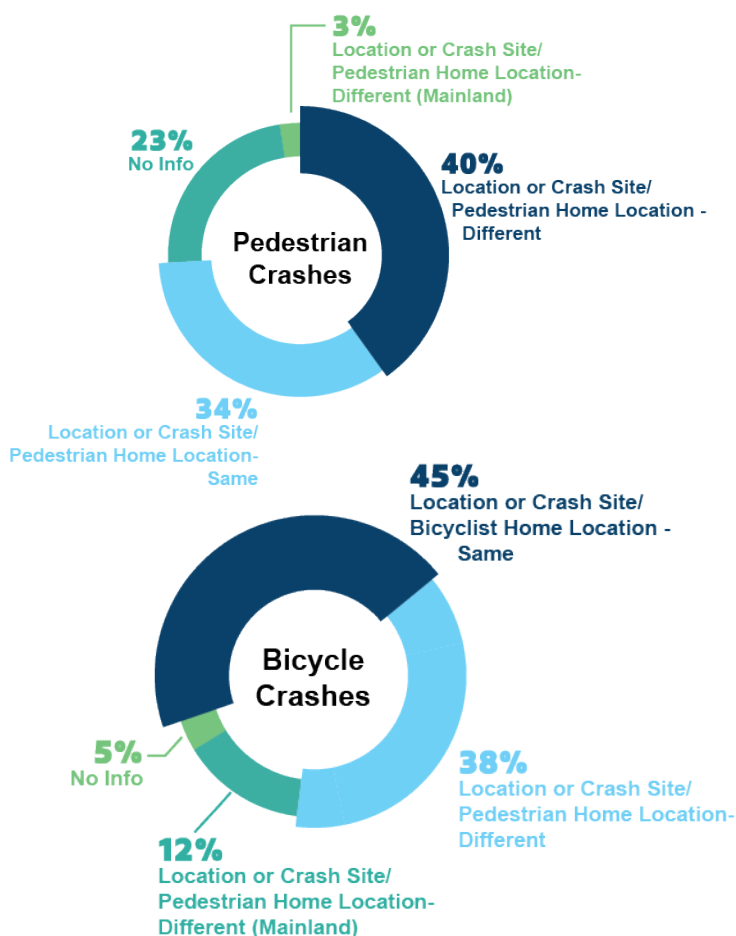
Other Factors (for Pedestrians and Bicyclists)

“No Improper Action” was the most indicated factor under the “Other Factors” Field 108 for pedestrian and bicycle crashes. The second most common factor involved in both pedestrian and bicycle crashes were pedestrian and bicycle violations. Although further details on the pedestrian and bicycle violations are not provided in the crash data, the additional “Other Factors” and “Human Factors” fields for these crashes show that improper crossing, inattention, alcohol, and illegal drugs were involved.

Location Where Crash Occurred vs. Pedestrian/Bicyclist Home Location

Although the crash data did not include the zip codes of the residences of the pedestrians and bicyclists, the home city was provided and used to assess whether the crashes were occurring generally in the same city or area where the pedestrians and bicyclists live. When comparing the location of where the pedestrian is from versus where the crash occurred, less than half of the crashes occurred in a different city from where the pedestrian is from, while 34% of crashes were in cities or locations that were the same as the pedestrian’s home city/location. For bike crashes, a little less than half of the crashes occurred in the same city where the biker was from, while 38% occurred in a different city/location from where the biker was from. Approximately 12% of crashes involved bikers who were from the mainland. The data suggests that pedestrians and bicyclists involved in these crashes are mostly traveling to, from, or near their residences. This aligns with the trend identified for bicyclists in the previous subsection that shows bicycle crashes were most commonly occurring in residential areas.

Figure 18: Location Where Crash Occurred vs. Pedestrian/Bicyclist Home Location



3.4 High-Crash Area Methodology

The following subsections summarize the methodology used to identify high-crash areas from the 473 total pedestrian crashes and 115 total bicycle crashes during the study period from 2017 to 2021.

High-crash areas were used to further examine characteristics and trends through the Systemic Approach, allowing for identification of the Program of Strategies that may be proactively implemented. High-crash areas were also used to inform the high-risk locations that were further evaluated in the development of the Program of Projects. The Program of Strategies and Projects are discussed in Section 5.

Identification of High-Crash Areas for Pedestrian Crashes

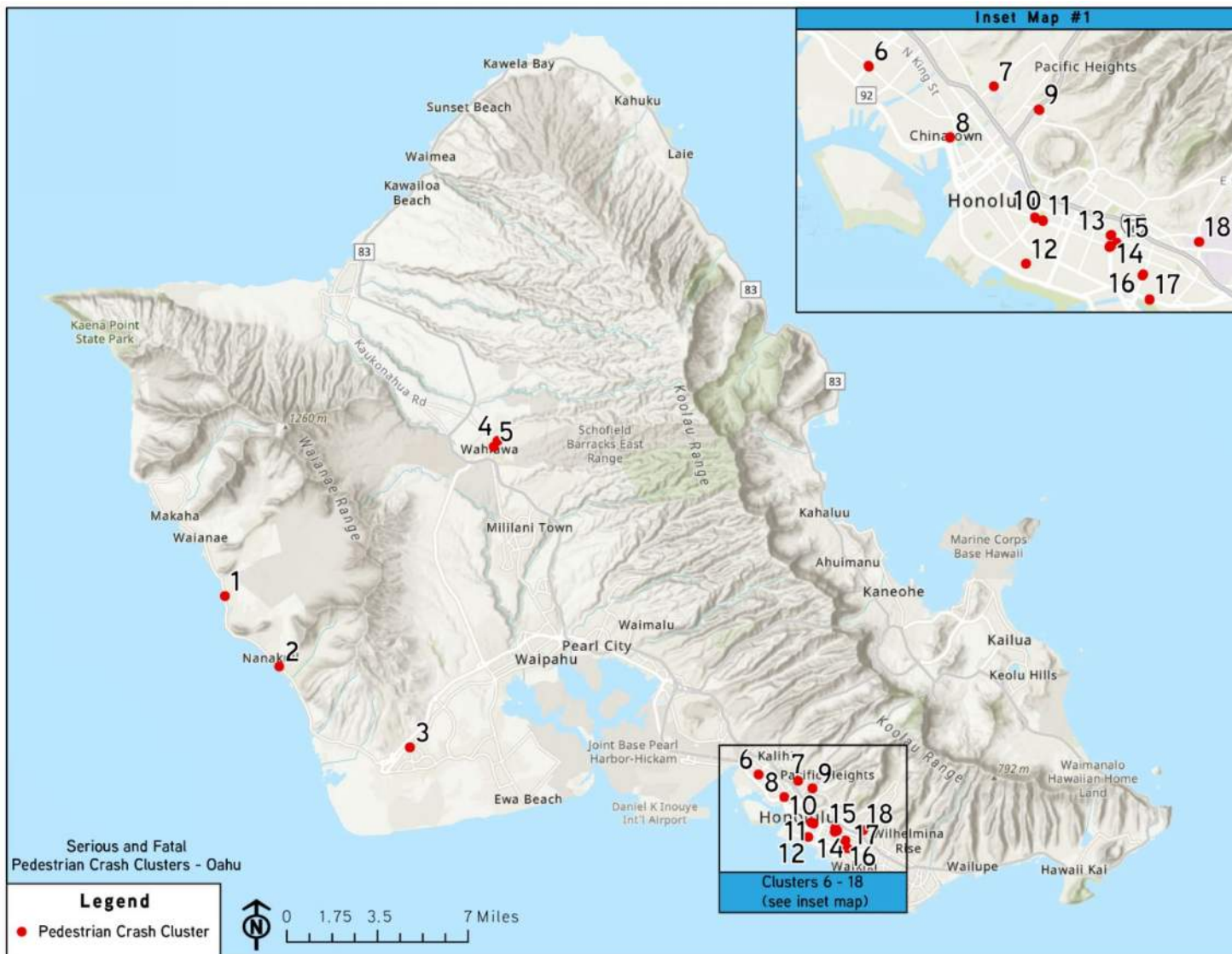
An ArcGIS geoprocessing tool called the “cluster tool” was utilized to identify high-crash areas from the 473 total pedestrian crashes used in this assessment. The cluster tool analyzes point features to identify a “cluster” of where points occur according to proximity and number of occurrences. Clusters were created using distances of 100-, 500-, and 1,000-ft. where a minimum of two crashes were required to be located within the defined distances to form a cluster. Based on the results, the 100-ft. cluster distance was used to narrow down the assessment of high-crash areas on O’ahu due to the high number and density of crashes on the island. The 1,000-ft. cluster distance was used on the islands of Maui, Kaua’i, and Hawai’i Island due to the fewer number of crashes and densely populated areas on the islands.

Using the 100-ft. cluster distance for O’ahu resulted in the identification of a total of 18 crash clusters that contained 37 crashes. The 1,000-ft. cluster distance resulted in the identification of 4 clusters on Hawai’i Island that contained 9 crashes, 5 clusters on Maui that contained 10 crashes, and 3 clusters on Kaua’i that contained 6 crashes. The islands of Lāna’i and Moloka’i did not have any fatality or serious injury pedestrian crashes from 2017 to 2021. Out of all the clusters across the State, only one cluster located on O’ahu contained three or more crashes. This cluster site is located at the intersection of South King Street and Kalakaua Avenue, where a total of three crashes occurred: one crash in 2018 and two crashes in 2021. The cluster locations are listed in Appendix D and shown in Figures 29 to 32.

Table 7: Total Pedestrian High-Crash Areas/Clusters by Island

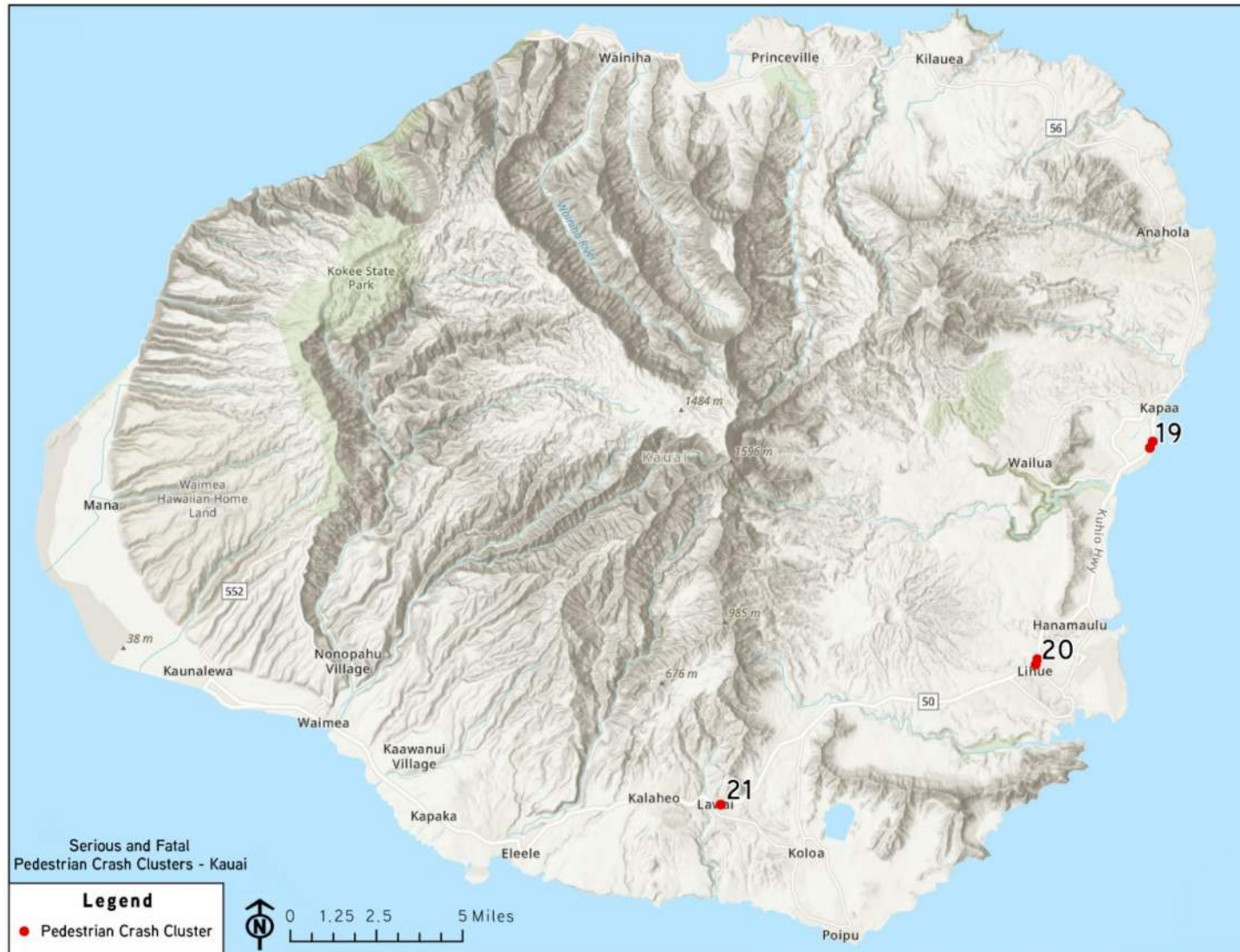
| Island | Pedestrian High-Crash Areas/Clusters | Total Number of Pedestrian Crashes in Clusters |
|----------------|--------------------------------------|------------------------------------------------|
| O’ahu | 18 | 37 |
| Hawai’i Island | 4 | 9 |
| Maui | 5 | 10 |
| Kaua’i | 3 | 6 |
| Total | 30 | 62 |

Figure 19: O'ahu Pedestrian Crash Clusters



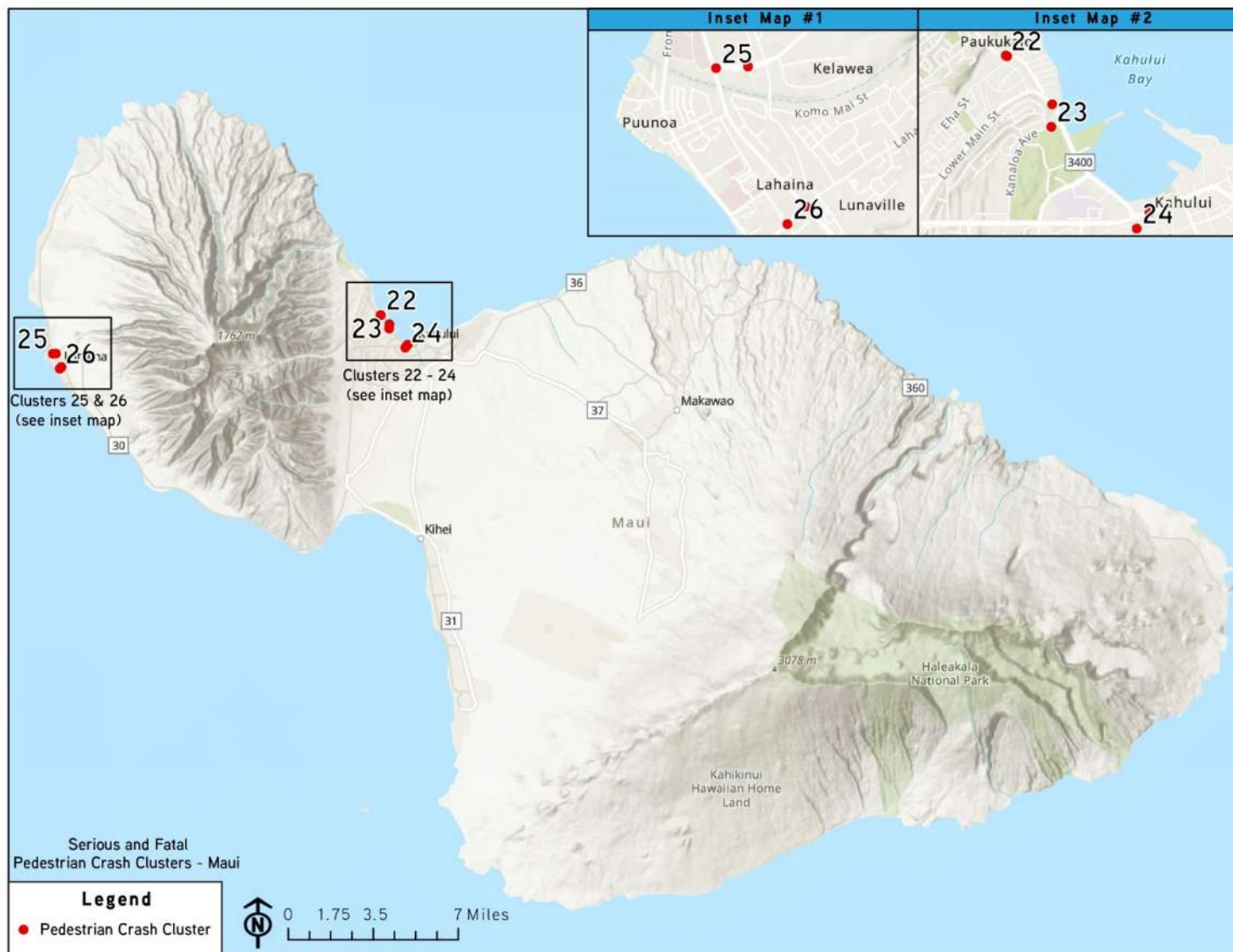
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Figure 20: Kaua'i Pedestrian Crash Clusters



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Figure 21: Maui Pedestrian Crash Clusters



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Figure 22: Hawai'i Island Pedestrian Crash Clusters



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Crash Characteristics for Pedestrian High-Crash Areas

Crash characteristics from the MVAR report were also analyzed for pedestrian high-crash areas. This subsection provides a summary of the crash characteristics and trends for pedestrian high-crash areas that differed from the results of the trends for all the pedestrian crashes presented in Section 3.3.

The age group involved in the most pedestrian crashes were those in the 60 to 69-year-old age group, followed by the 70 to 79-year-old age group. Both groups represented a disproportionately high number of pedestrian deaths compared to the 2019 population. In comparison, the crashes in the pedestrian clusters represent a disproportionately high number of pedestrian deaths for young adults in the 20 to 29-year-old age group, older adults in the 50 to 59-year-old age group, and elderly adults 70 years and older.

Figure 24: Age of Pedestrians in Crash Clusters and 2019 Population

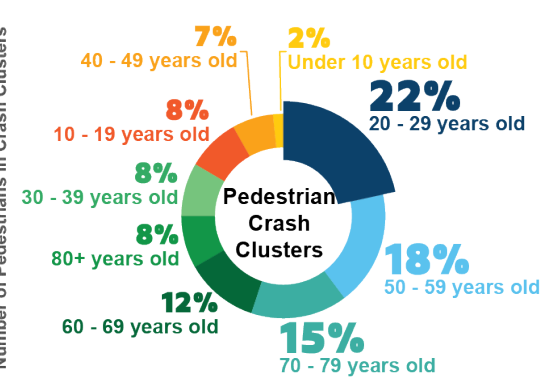
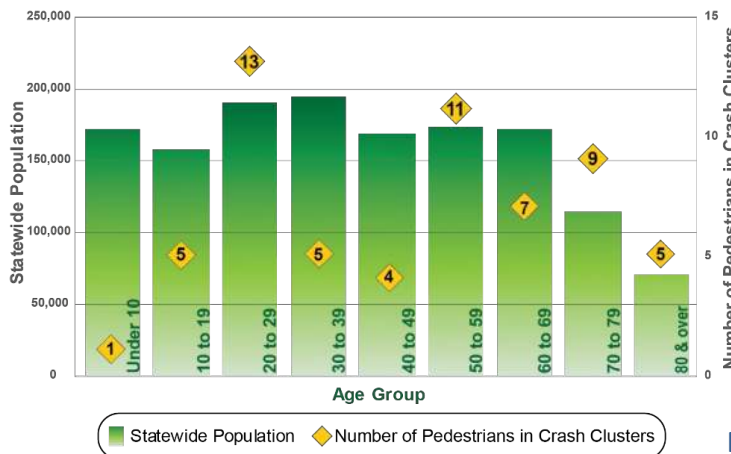
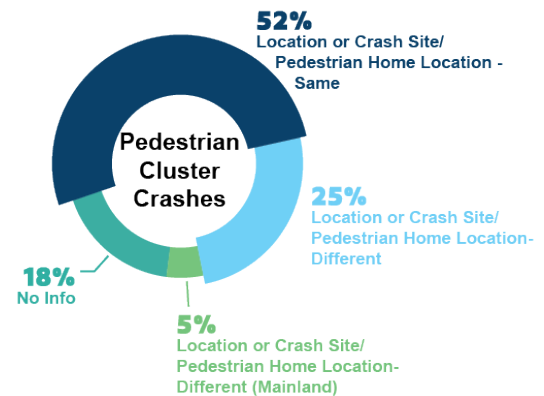


Figure 23: Location Where Crash Occurred vs. Pedestrian Home Location (Crash Clusters)



Approximately 40% of all the pedestrian crash locations occurred in a different city from where the pedestrian was from. This differs from the pedestrian crash cluster locations, which show that a majority of the crashes occurred in the same city from where the pedestrian was from.

Most of the pedestrian crashes occurred at locations where there were no traffic controls present, followed by locations where a traffic signal was present. For the pedestrian crash clusters, most crashes occurred where a traffic signal was present followed by locations where a stop sign was present.

Figure 26: Traffic Control Devices in Pedestrians Crashes and Pedestrian Crash Clusters

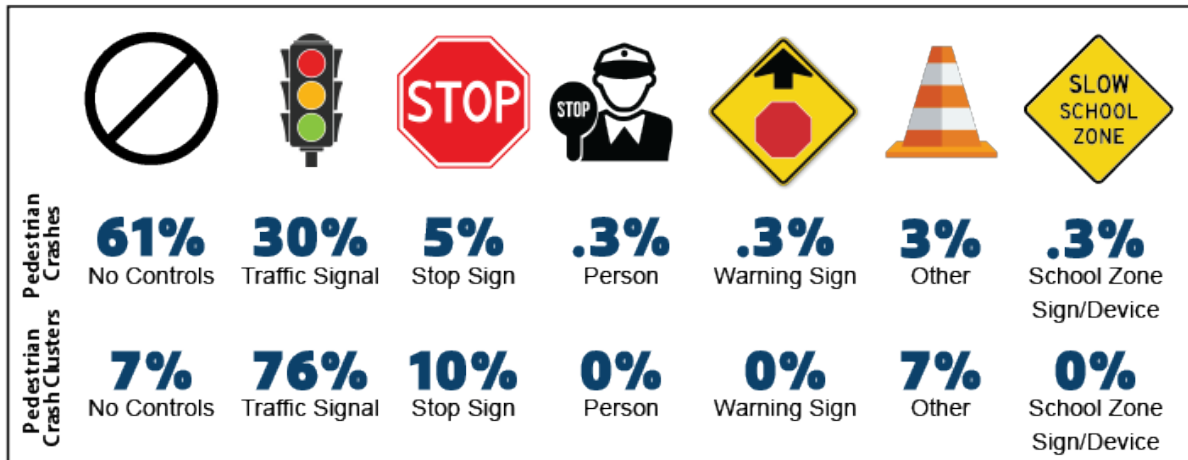
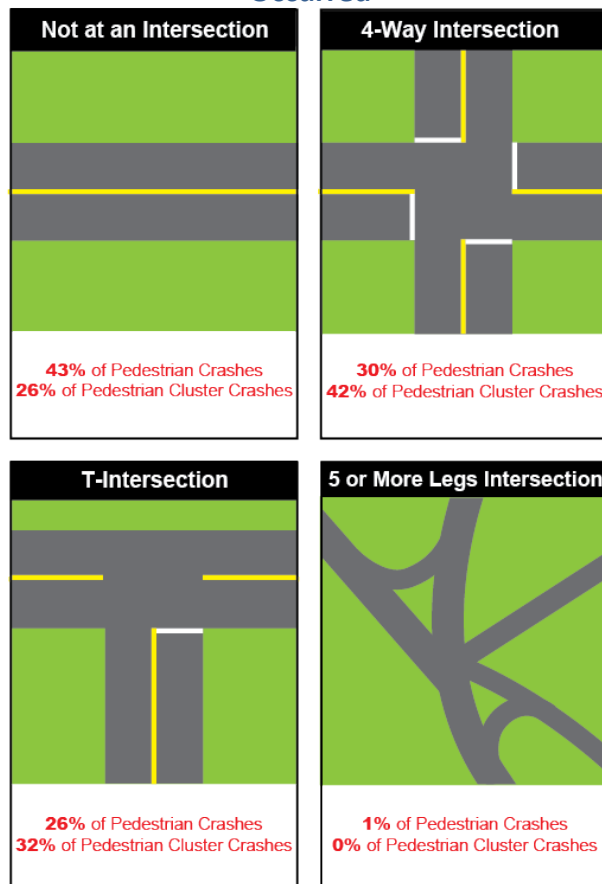


Figure 25: Intersection Type Where Pedestrian Crashes and Pedestrian Cluster Crashes Occurred



A majority of all pedestrian crashes occurred at locations that were not at an intersection, followed by 4-way intersections. This differs from the pedestrian crash clusters which show that most crashes occurred at 4-way intersections, followed by T-intersections.

Identification of High-Crash Areas for Bicycle Crashes

The bicycle crashes were analyzed using the same clustering process as the pedestrian crashes. The result of the analysis showed a lack of clusters at even the greatest defined distance of 1,000-ft.; only one cluster on Hawai'i Island and eight clusters on O'ahu were found using the 1,000-ft. distance. Due to the lack of clusters found across all of the islands, all 110 bicycle crashes were analyzed to identify potential trends or risk factors for the purposes of the assessment, which is discussed in later sections. Table 8 provides a breakdown of the total number of bicycle crashes by island, and Figures 33 to 36 show the locations of the crashes. No fatal or serious injury bicycle crashes occurred on the islands of Lāna'i and Moloka'i from 2017 to 2021.

Table 8: Total Bicycle Crashes by Island

| Island | Total Bicycle Crashes |
|----------------|-----------------------|
| O'ahu | 75 |
| Hawai'i Island | 15 |
| Maui | 4 |
| Kaua'i | 16 |
| Total | 110 |

Identification of High-Crash Corridors

High-crash corridors were identified using all the pedestrian and bicycle crash locations that resulted in a serious injury or fatality. For O'ahu, high-crash corridors were identified if a minimum of three pedestrian or bicycle crashes occurred within a ½-mile distance. This resulted in the identification of 30 corridors. For the islands of Maui, Kaua'i, and Hawai'i Island, a minimum of three crashes per 1-mile were used to identify high-crash corridors. This resulted in the identification of one corridor each on Kaua'i and Hawai'i Island and two corridors on Maui.

Table 9 provides a breakdown of the total high-risk corridors and total number of crashes in the corridors for each island. The corridor locations are listed in Appendix D and shown in Figures 37 to 40.

Table 9: Total High-Crash Areas and Corridors by Island

| Island | High-Crash Corridors (All Pedestrian and Bike Crashes) | Total Number of Crashes in Corridors |
|----------------|-----------------------------------------------------------|-----------------------------------------|
| O'ahu | 30 | 119 |
| Hawai'i Island | 1 | 3 |
| Maui | 2 | 10 |
| Kaua'i | 1 | 3 |
| Total | 34 | 135 |

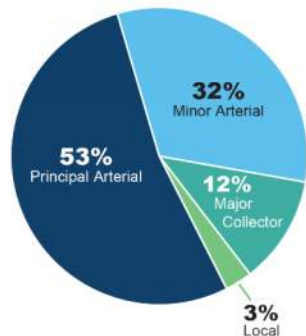
High-Crash Corridor Characteristics/Trends

To identify trends for the high-risk corridors, physical factors of the corridors were analyzed, such as number of through lanes, sidewalks, and type of bikeways. The functional classification of the high-risk corridors was also evaluated.

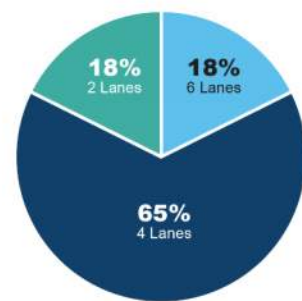
As shown in the following graphs, most of the high-risk corridors were along roadways with four lanes and sidewalks on both sides, and along roads where no bikeway was present. Most of the high-risk corridors were also along roads classified as principal arterials.

Figure 27: High-Crash Corridor Trends

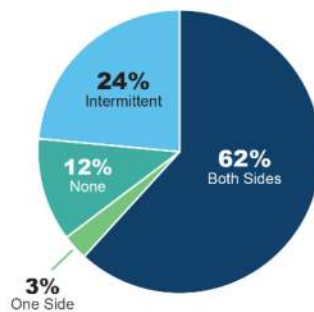
Functional Classification of High-Risk Corridors



Number of Through Lanes Along High-Risk Corridors



Existing Sidewalks Along High-Risk Corridors



Existing Bikeways Along High-Risk Corridors

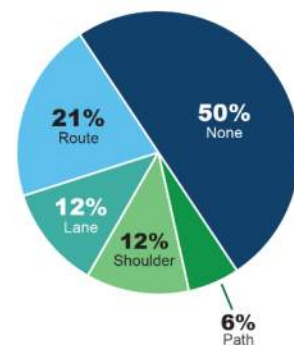
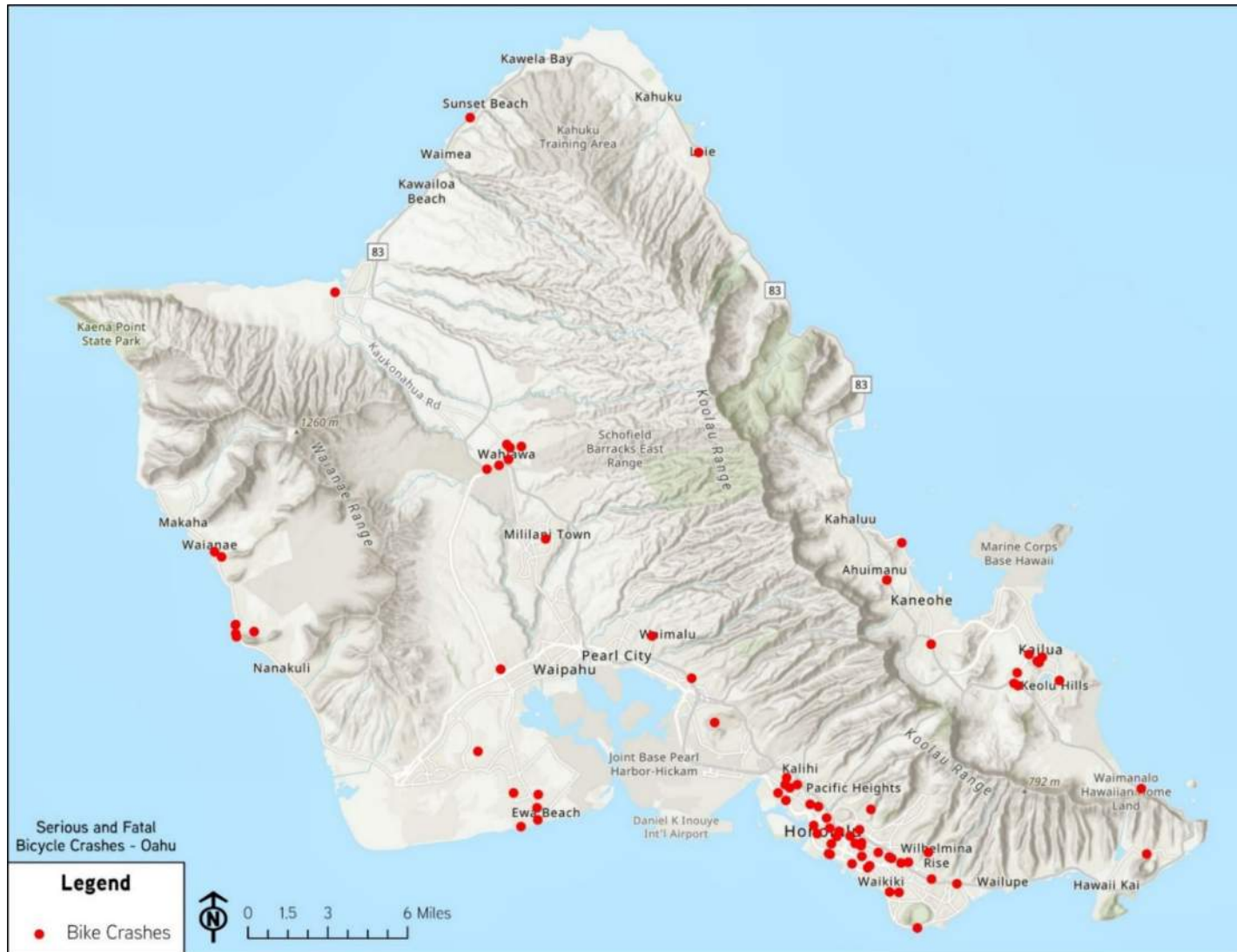
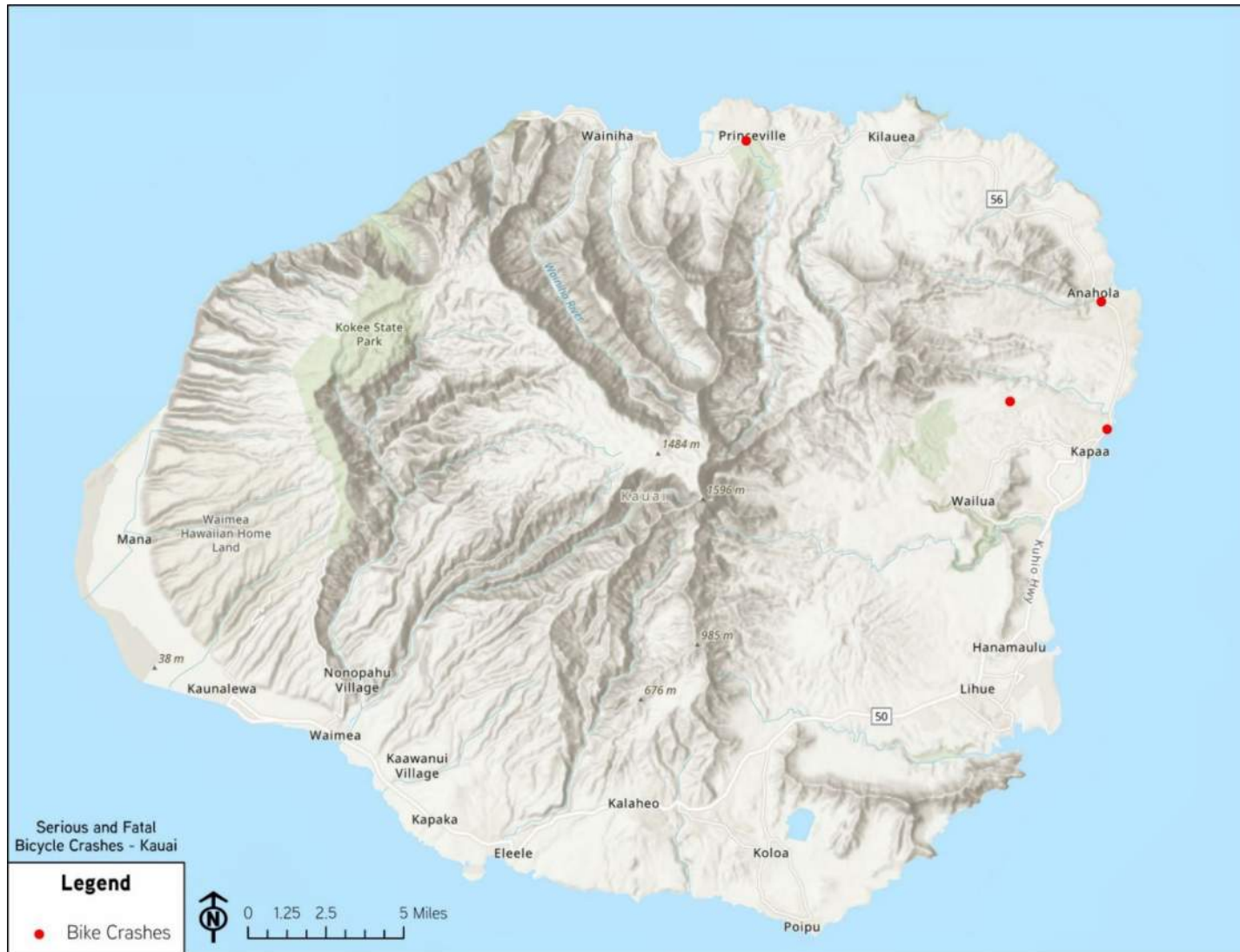


Figure 28: O'ahu Bicycle Crash Locations



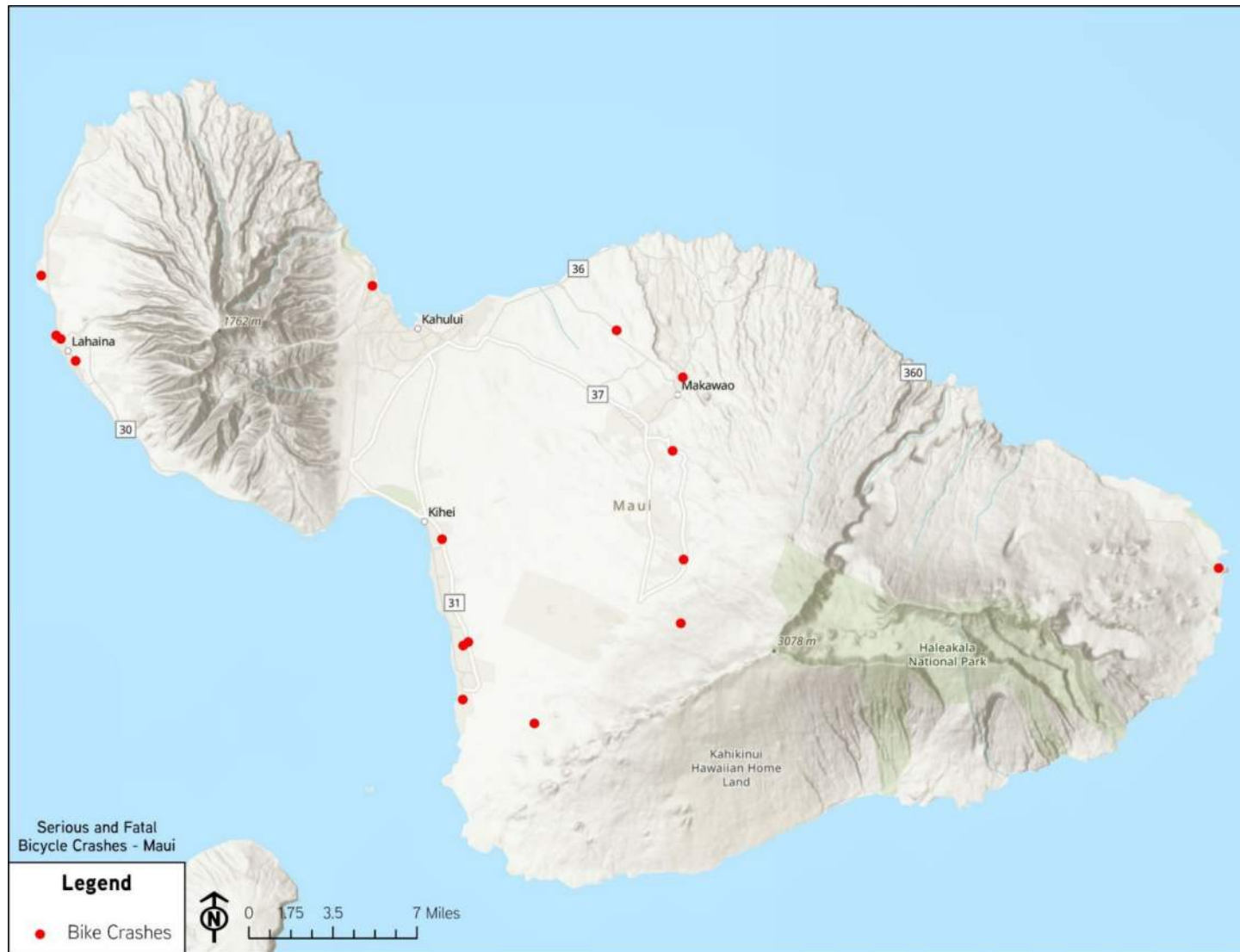
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Figure 29: Kaua'i Bicycle Crash Locations



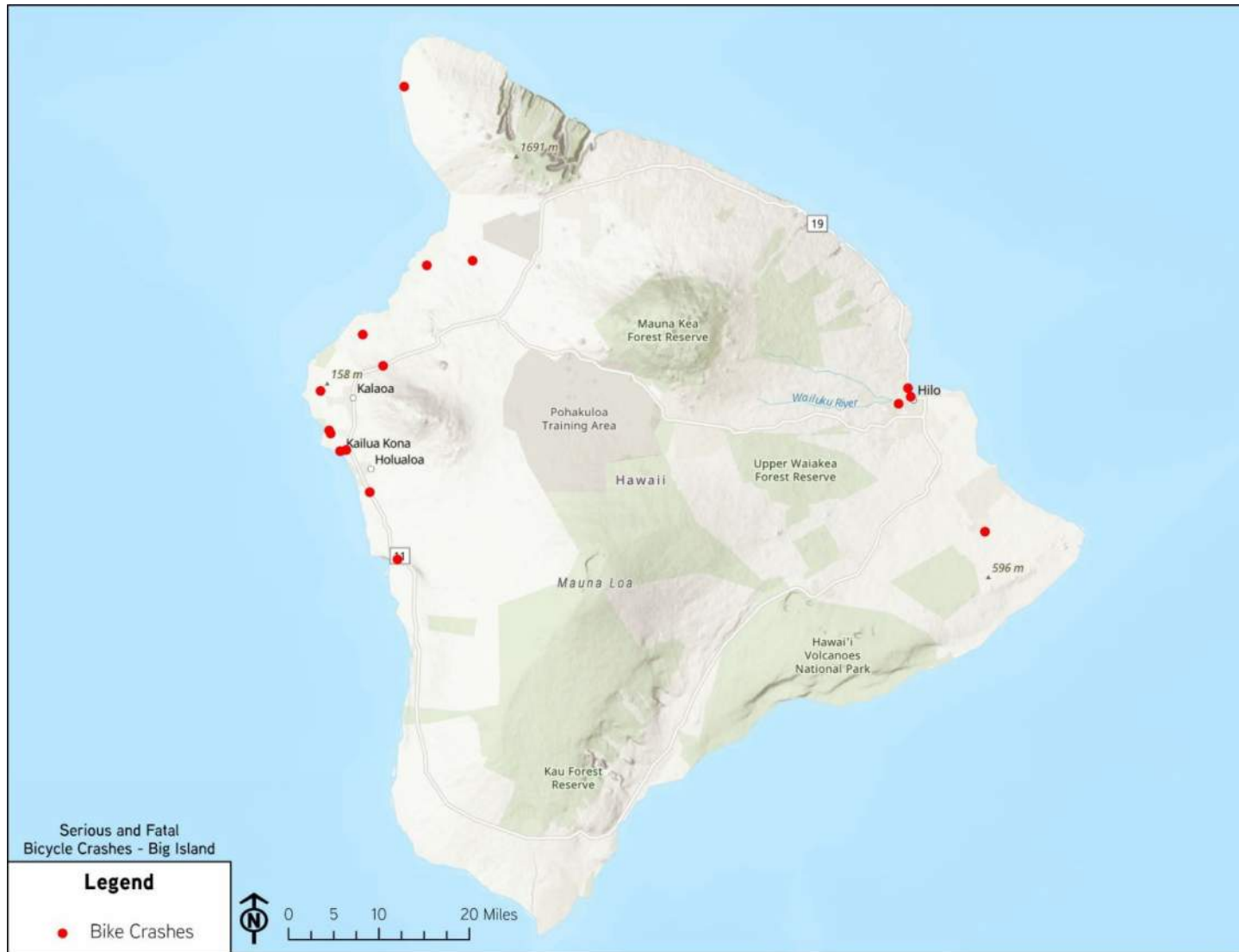
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Figure 30: Maui Bicycle Crash Locations



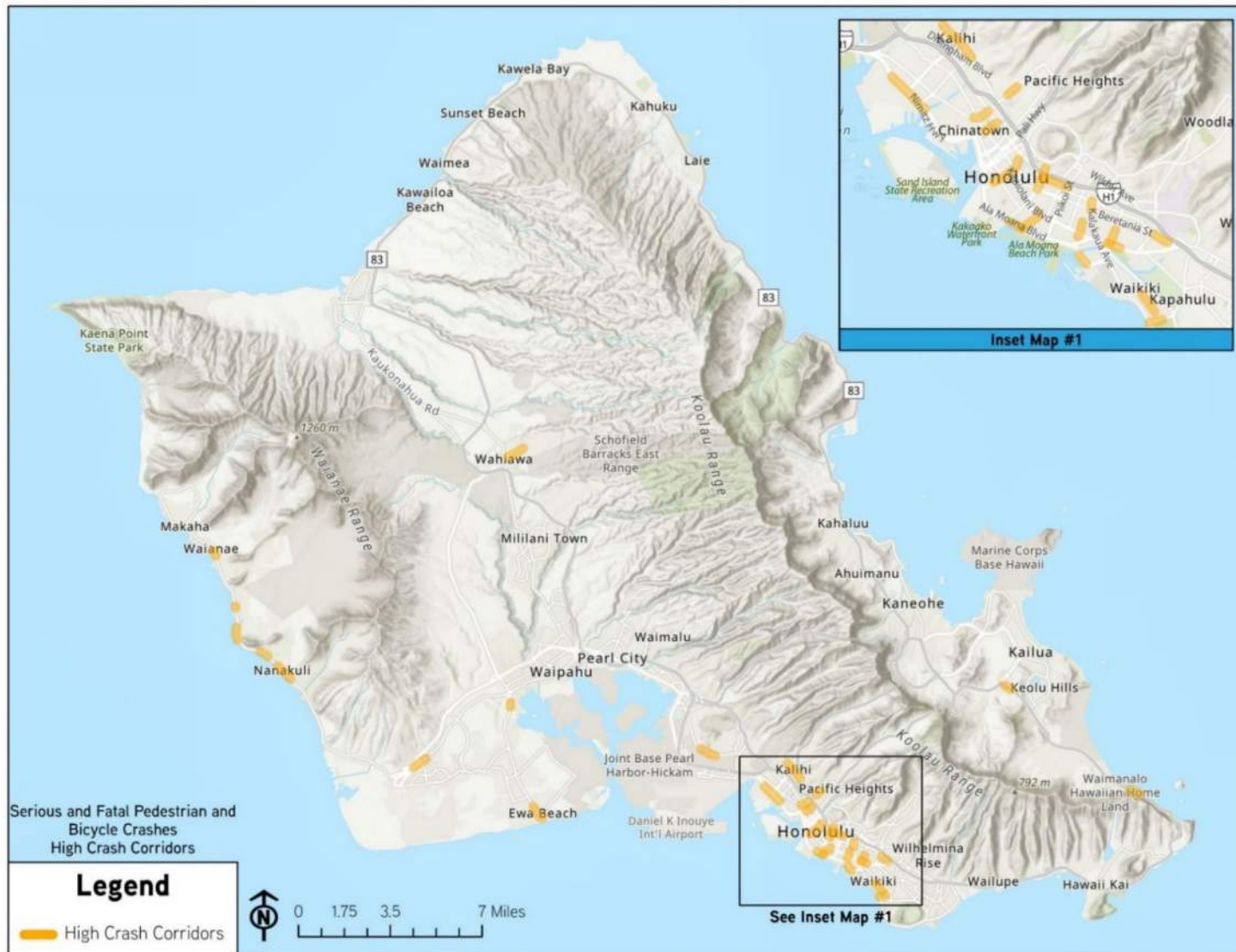
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Figure 31: Hawai'i Island Bicycle Crash Locations



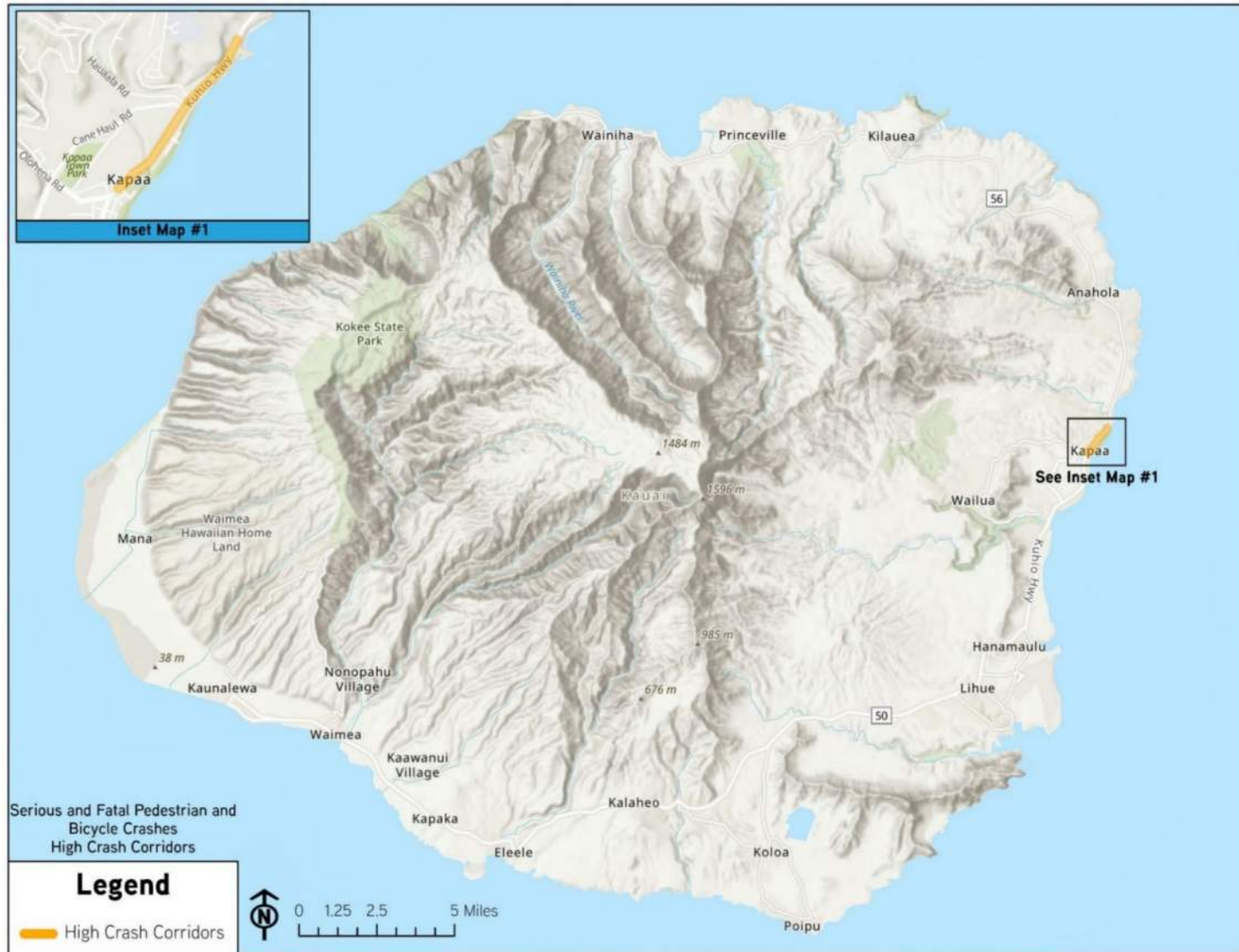
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Figure 32: O'ahu High Crash Corridors



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Figure 33: Kaua'i High Crash Corridors



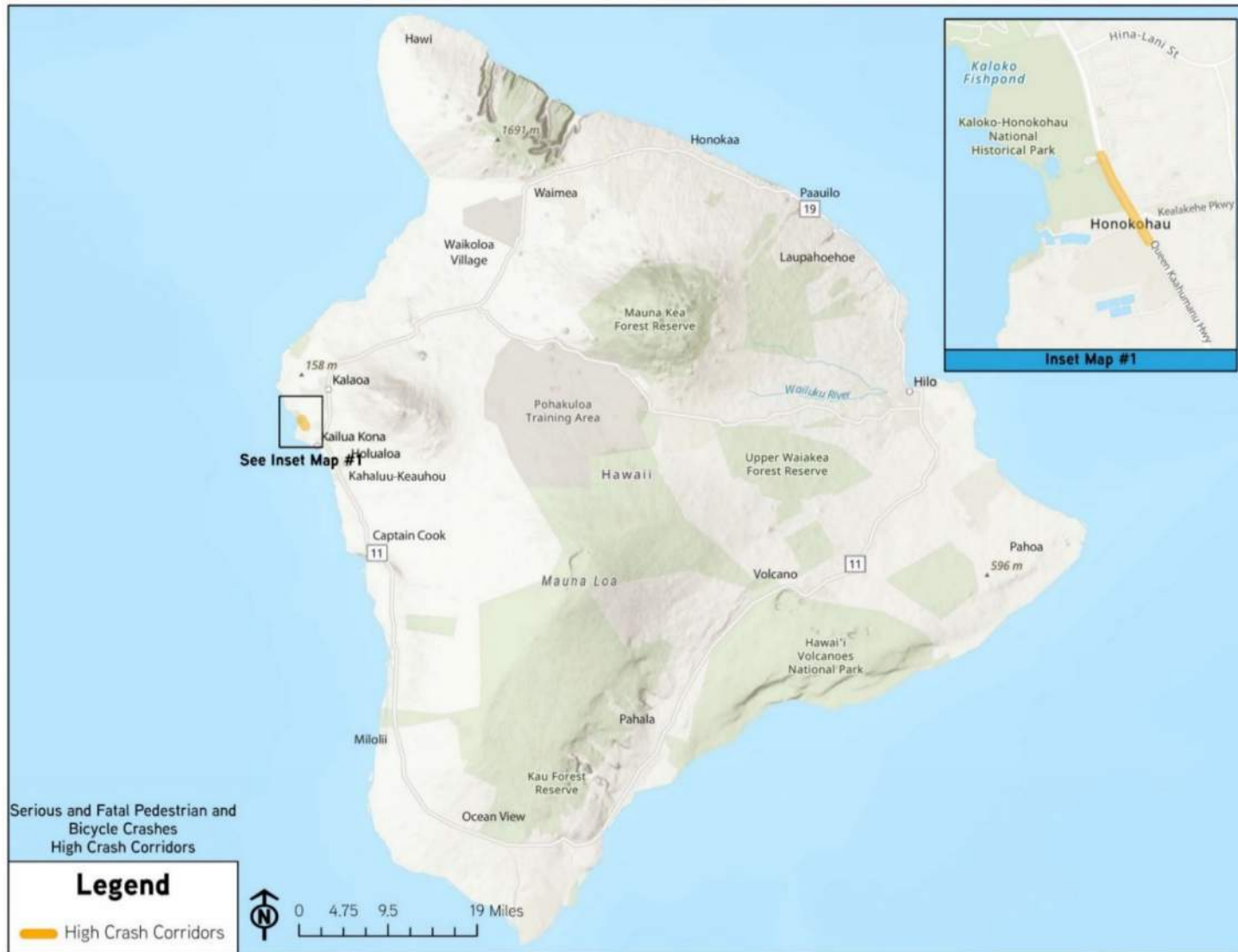
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Figure 34: Maui High Crash Corridors



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Figure 35: Hawai'i Island High Crash Corridors



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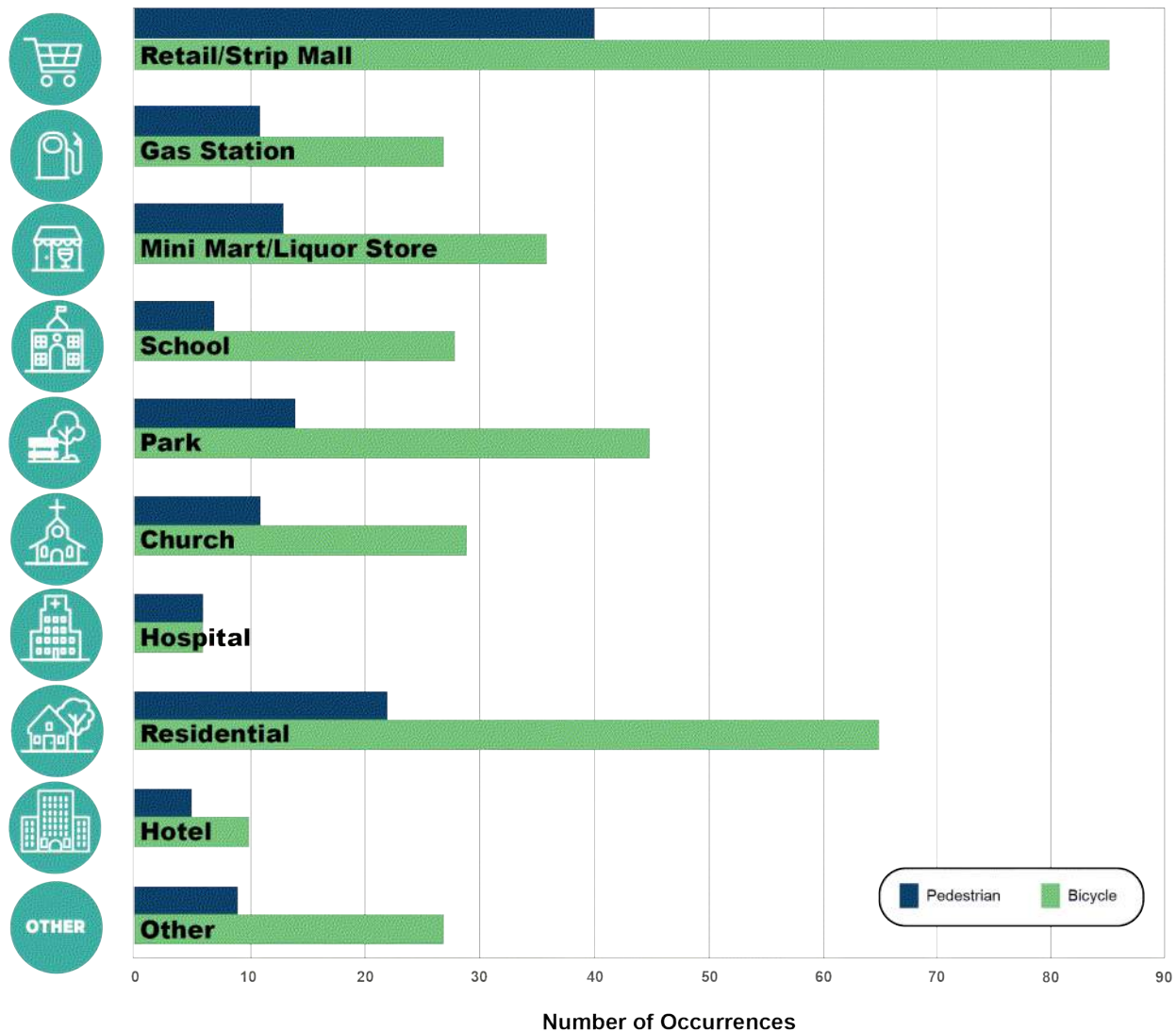
3.5 Other Crash Characteristics Analyzed for Pedestrian Clusters and Bicycle Crashes

Surrounding Land Uses

When reviewing the land uses surrounding the pedestrian cluster crashes and bicycle crashes, a majority of crashes occurred near retail uses. The second most common land use type near both pedestrian and bicycle crashes were residential land uses. The “Other” category presented in these graphs includes land uses such as libraries, golf courses, government buildings, and other uses that weren’t commonly found near the crash sites.

The US-DOT’s NHTSA’s Traffic Safety Facts for 2021 Data does not include the same breakdown of land use categories for pedestrian and bicyclist fatalities, but instead provides statistics on

Figure 36: Land Uses Surrounding Fatal and Serious Injury Pedestrian Clusters and Bicycle Crashes



whether fatalities occurred in urban or rural areas. A majority of pedestrian (84%) and bicyclist fatalities (85%) occurred within urban areas.

Social Vulnerability

The US-DOT’s ETC Explorer sums up the Social Vulnerability Indicators listed in Table 5 to create a composite score. The tool then uses percentile ranking to measure each Census Tracts’ component score against all other Census Tracts nationwide. The ETC Explorer considers a Census Tract to be experiencing a disadvantage if it is ranked in the 65% or higher range. The 65% mark was chosen to be consistent with the Climate & Economic Justice Screening Tool (CEJST), which prioritizes tracts at the 65th percentile or above for CEJST’s low-income indicator.

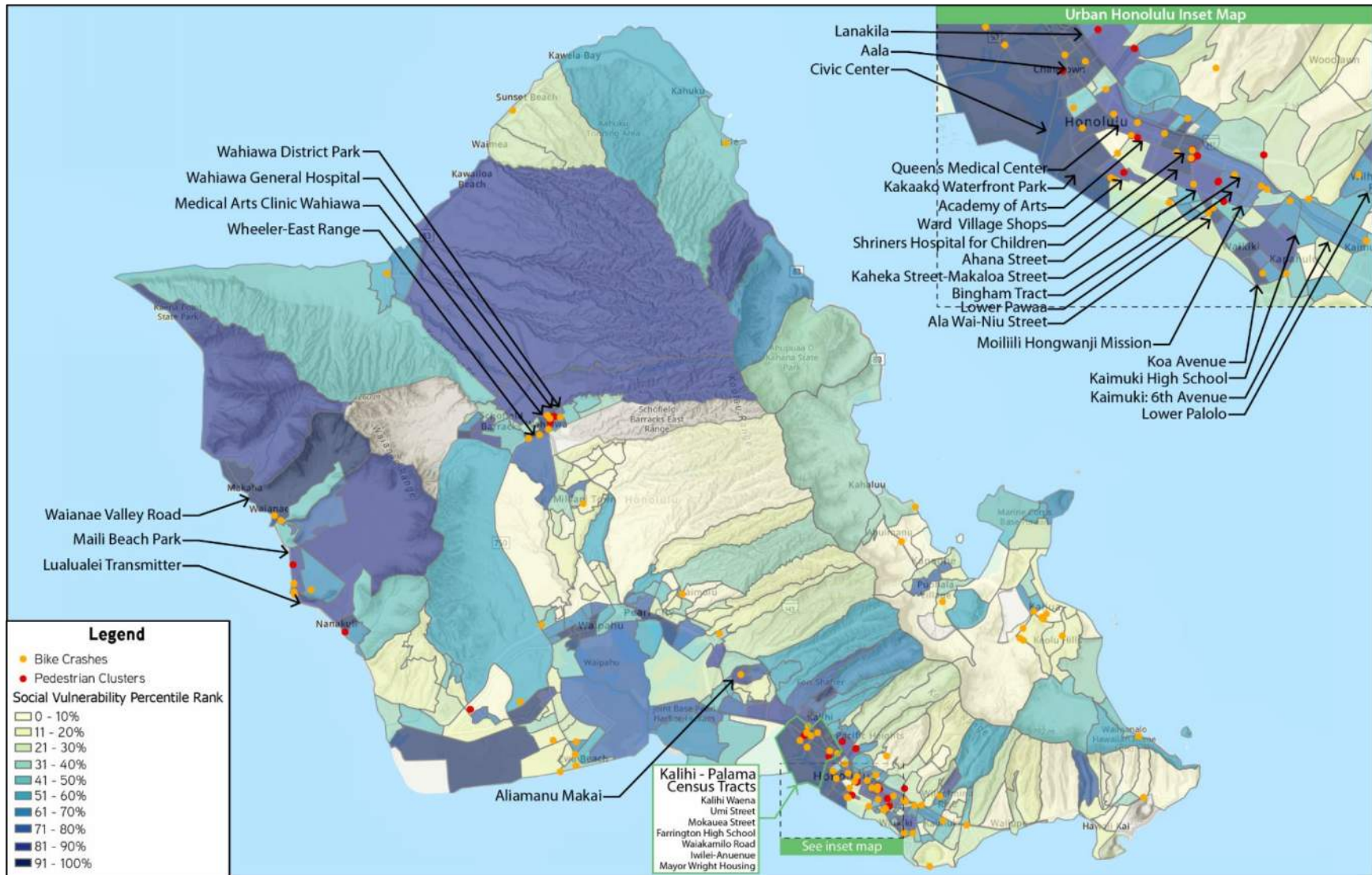
Census Tracts where a pedestrian cluster or bicycle crash occurred were reviewed to determine if they are experiencing a disadvantage based on the Social Vulnerability Indicators listed in Table 5. Table 10 shows a list of the Census Tracts by island that are considered disadvantaged and where a pedestrian cluster or bicycle crash occurred. Figures 25 to 28 show the maps labeled with the disadvantaged Census Tracts where a pedestrian cluster or bicycle crash occurred.

Table 10: Disadvantaged Census Tracts Based on Social Vulnerability Indicators

| Island | Disadvantaged Census Tracts |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| O’ahu | Waianae Valley Maili Beach Park Lualualei Transmitter Wahiawa District Park Wahiawa General Hospital Medical Arts Clinic Wahiawa Wheeler-East Range Aliamanu Makai Kalihi Waena Umi Street Mokauea Street Farrington High School Waiakamilo Road Iwilei/Anuenue Mayor Wright Housing Lanakila Aala Civic Center Queen’s Medical Center Kakaako Waterfront Park Academy of Arts Ward Village Shops |

| Island | Disadvantaged Census Tracts |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Shriners Hospital for Children Ahana Street Kaheka Street-Makaloa Street Bingham Tract Lower Pawaa Ala Wai-Niu Street Moilili Hongwanji-Mission Koa Avenue Kaimuki High School Kaimuki: 6th Avenue Lower Palolo |
| Maui | Honokowai Lahainaluna Lahaina Liholiho St. (Wailuku) Spreckelsville Hana |
| Kaua'i | Haena-Hanalei Omao-Kukuiula |
| Hawai'i Island | Waikoloa-South Kohala Kealakehe Hilo: Pueo – Downtown Hilo: Villa Franca – Kaikoo Kilauea-Pahoa |

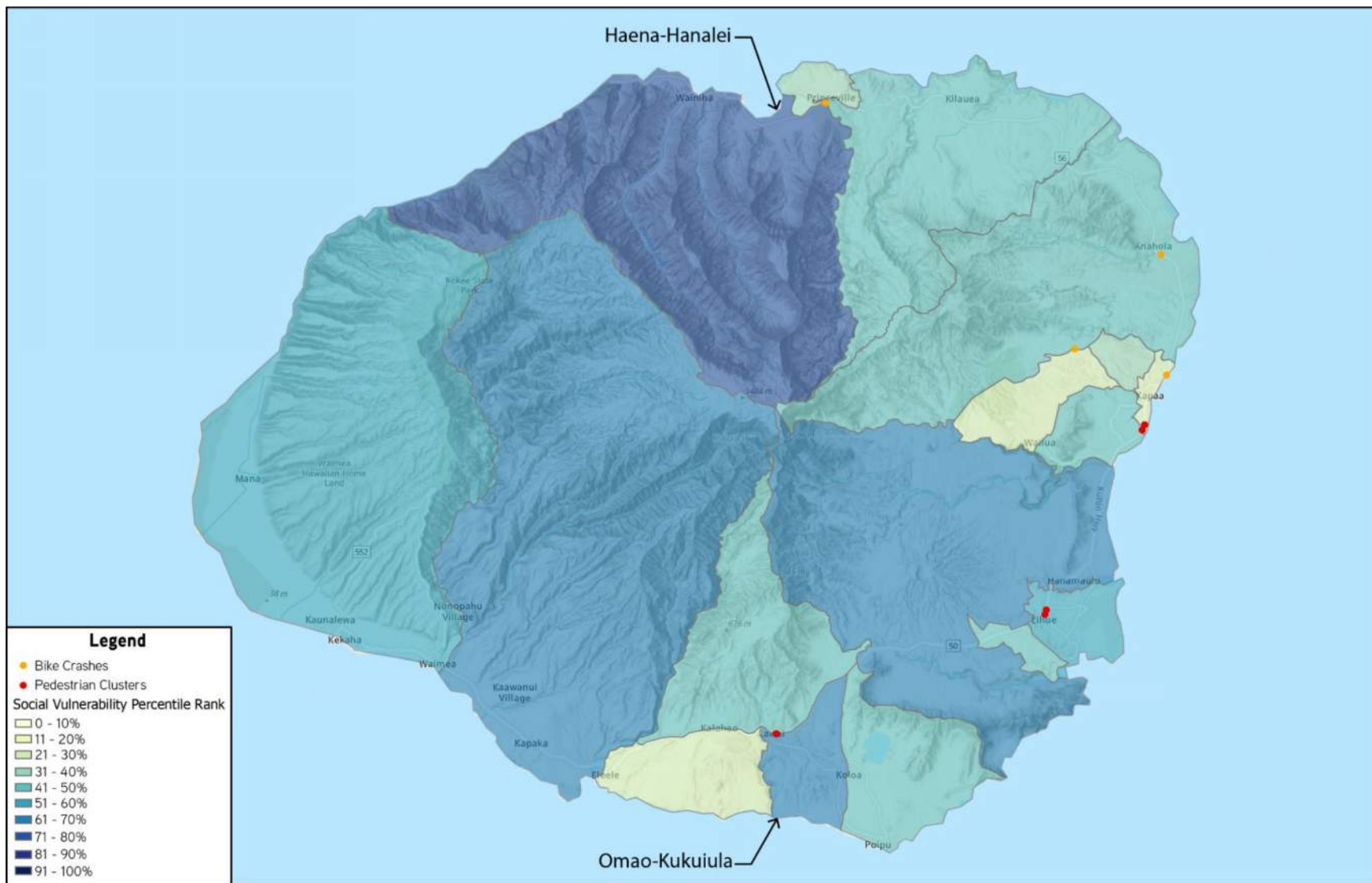
Figure 37: O'ahu Disadvantaged Census Tracts



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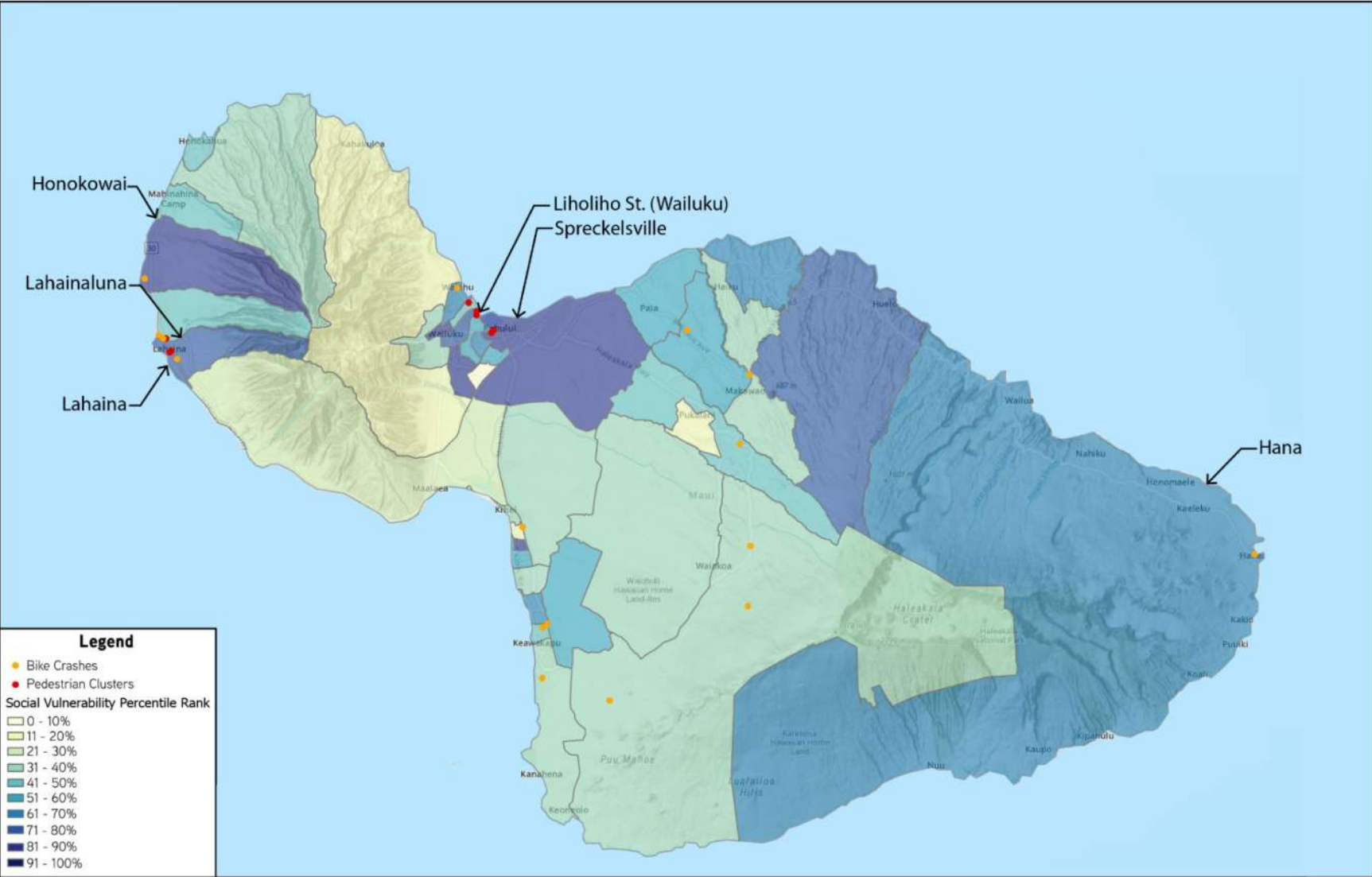
Figure 38: Kaua'i Disadvantaged Census



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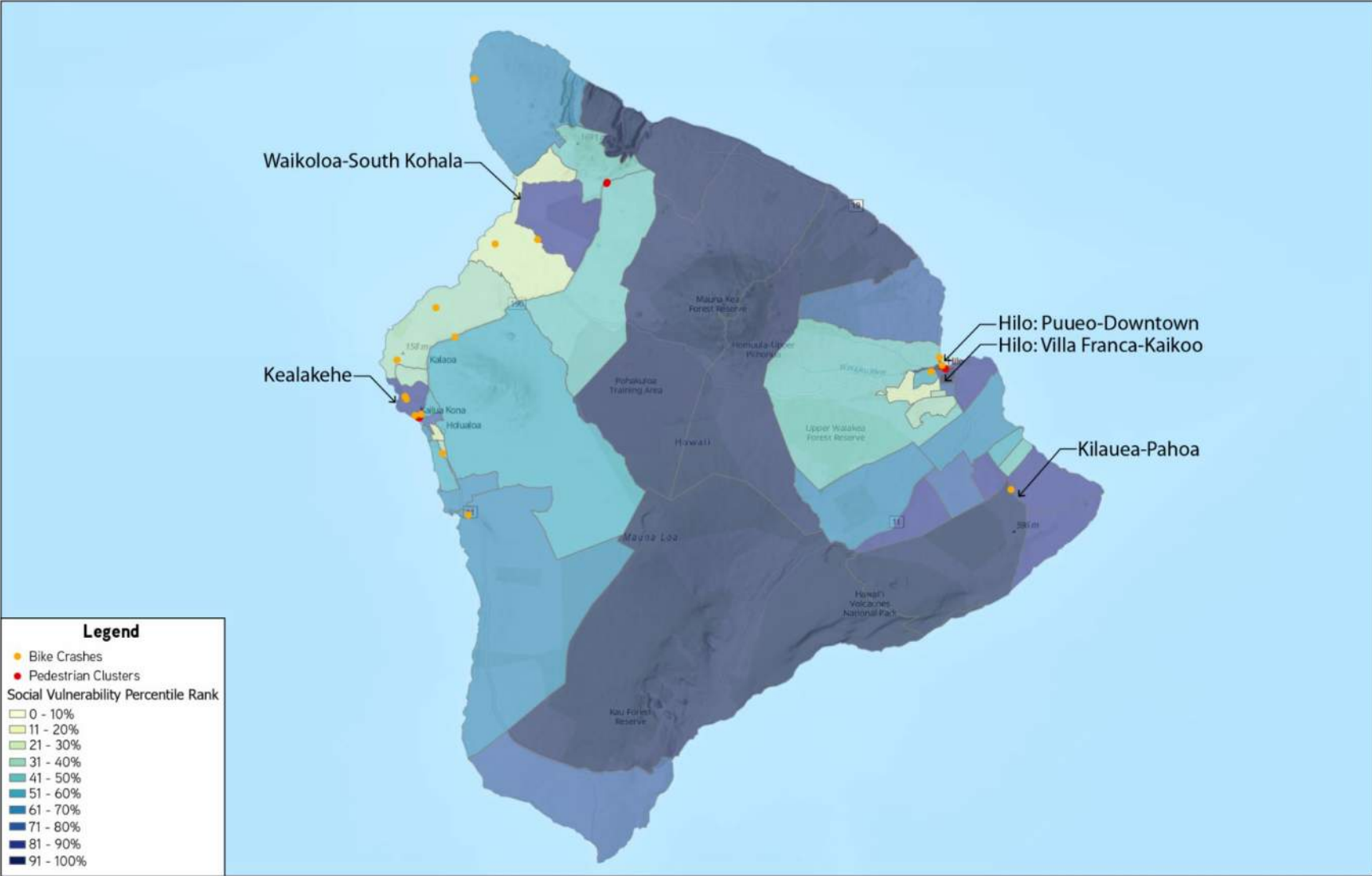
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Figure 39: Maui Disadvantaged Census Tracts



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Figure 40: Hawai'i Island Disadvantaged Census Tracts



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In addition, the Census Tracts where a pedestrian cluster or a bicycle crash occurred were analyzed against the “households with no vehicle available” data from the ACS 5-Year Estimates dataset from 2016 to 2020 to analyze whether vehicle availability correlates to an increase in pedestrian or bicycle crashes due to the reliance on other means of transportation. For the islands of Kaua’i, Maui, and Hawai’i, the number of households without a vehicle available were relatively low compared to the numbers on O’ahu. The highest number of households without a vehicle on the neighbor islands ranged from four to seven, while Census Tracts on O’ahu in areas such as Waianae, Wahiawa, and Urban Honolulu ranged from 15 to 41.7 households. A pedestrian crash cluster or high crash corridor were identified within these Census Tracts.

Maps labeled with the Census Tracts indicating a high number of households without a vehicle available and where a pedestrian cluster or bicycle crash occurred are included in Appendix C.

Although the houseless population’s involvement in VRU crashes was not available for the 5-year period of this assessment, HDOT provided pedestrian and bicyclist fatalities that involved the houseless population for 2022, as shown in Table 11.

Table 11: 2022 Houseless Pedestrian and Bicyclist Fatalities

| | Total Pedestrian Fatalities | Houseless Pedestrian Fatalities | Houseless % of Total Pedestrian Fatalities | Total Bicyclist Fatalities | Houseless Bicyclist Fatalities | Houseless % of Total Bicyclist Fatalities |
|------------------|-----------------------------|---------------------------------|--------------------------------------------|----------------------------|--------------------------------|-------------------------------------------|
| Statewide | 28 | 12 | 43% | 7 | 5 | 71% |
| Honolulu | 16 | 8 | 50% | 4 | 3 | 75% |

Houseless population numbers are recorded by the Statewide Office on Homelessness and Housing Solutions (OHHS) using the Point in Time Count (PIT Count), which is a federally mandated census count from the Department of Housing and Urban Development. The PIT Count provides a snapshot of the houseless population on the street and in shelters on a single night. The information provided in Table 12 is provided from the PIT Count.

Table 12: Houseless Population from PIT Counts

| Year | Houseless Population (Sheltered and Unsheltered) | | | |
|------|--------------------------------------------------|----------------|--------|------|
| | O'ahu | Hawai'i Island | Kaua'i | Maui |
| 2017 | 4,959 | 953 | 412 | 896 |
| 2018 | 4,495 | 869 | 293 | 873 |
| 2019 | 4,453 | 690 | 443 | 862 |
| 2020 | 4,448 | 797 | 424 | 789 |

Source: Ka Mana O Na Helu and Partners in Care

Note: PIT Counts were not conducted in 2021 due to the COVID-19 pandemic.

3.6 High-Risk Areas

The outcome of the analysis of the pedestrian cluster crashes and bicycle crashes resulted in the identification of high-risk areas based on the characteristics and trends, as well as input received through stakeholder consultation. A high-risk area is a location that has characteristics that are similar to the results of the systemic approach (described in Section 5) or an opportunity identified through stakeholder consultation. The high-risk locations including the pedestrian cluster crashes, bicycle crashes, and high-risk corridors are shown in Figures 19 to 22 and 28 to 35. A full list of high-risk area locations identified through stakeholder consultation is included in Appendix D. Section 5 will discuss the methodology on how these high-risk areas will be screened to develop a prioritized list of projects.



SECTION FOUR
SUMMARY OF
CONSULTATION

4 Summary of Consultation

As part of the assessment, two stakeholder groups were convened to solicit feedback throughout the entire process: the Technical Advisory Committee (TAC) and the Stakeholder Advisory Committee (SAC). Consultation was also held with the County police departments and first responder agencies. This section provides a summary of the meetings conducted, key findings from the input received from the stakeholders, and recommendations made to be integrated into the VRUSA.

4.1 Technical Advisory Committee (TAC)

The Technical Advisory Committee (TAC) consisted of Federal, State, and County transportation, transit, planning, and public works agencies that were used to provide technical advice and recommendations on the assessment process. A total of five TAC meetings were held throughout the VRUSA process. The following agencies were invited to participate in the TAC:

- Federal Highways Administration (FHWA)
- HDOT Highways
 - District Engineers for O’ahu, Kaua’i, Maui, and Hawai’i Island
 - Traffic Branch
 - Planning Branch
 - Motor Vehicle Safety Office
 - Bicycle and Pedestrian Coordinator
- State of Hawai’i, Department of Health
- City and County of Honolulu
 - Department of Transportation Services – Complete Streets
 - Department of Transportation Services – Public Transit
 - Department of Transportation Services – Transportation Planning
 - Department of Transportation Services – Transportation Engineering
 - Department of Planning and Permitting
- County of Kaua’i
 - Department of Public Works
 - Transportation Agency
 - Planning Department
- County of Maui
 - Department of Public Works
 - Department of Transportation
 - Planning Department
- County of Hawai’i
 - Department of Public Works
 - Mass Transit Agency
 - Planning Department
- O’ahu MPO
- Maui MPO

The roles and responsibilities of the TAC included the following:

- Advise HDOT on safety-related priorities, issues, projects, and funding needs.
- Serve as a forum for discussion regarding HDOT decisions affecting vulnerable users and road safety.
- Communicate and coordinate priorities with stakeholder organizations.
- Promote the sharing of information between the private and public sectors on vulnerable road users.
- Provide advice regarding the development of the VRUSA.
- Serve as a conduit to their constituents and peers by disseminating information regarding the VRUSA and obtaining input that can be shared with the HDOT.

A total of five TAC meetings were held throughout the VRUSA process. Table 13 below provides a brief overview of each meeting.

Table 13: Technical Advisory Meetings and Purpose

| Meeting No. | Date and Time | Meeting Purpose |
|-------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | July 12, 2023 1:30 pm | <ul style="list-style-type: none"> • Provide an introduction to VRUSA • Review of the high-risk area methodology • Review of initial crash trends • Get feedback on high-risk locations |
| 2 | August 10, 2023 1:30 pm | <ul style="list-style-type: none"> • Share updated crash trends based on feedback from the TAC • Provide a recap on the SAC Meeting #1 • Share updates on the high-risk characteristics • Get feedback on program of strategies • Share prioritization methodologies |
| 3 | August 30, 2023 1:30 pm | <ul style="list-style-type: none"> • Review of systemic approach strategy identification • Review of screening criteria and project selection • Provide the draft VRUSA report outline • Provide the Safe System Approach overview |
| 4 | September 26, 2023 1:30 pm | <ul style="list-style-type: none"> • Share the results of the initial screening and evaluation • Overview of the draft VRUSA report |
| 5 | November 1, 2023 1:30 pm | <ul style="list-style-type: none"> • Share the comments received on the draft VRUSA report • Share the final VRUSA report • Go over recommendations |

4.2 Stakeholder Advisory Committee (SAC)

The Stakeholder Advisory Committee (SAC) consisted of human services agencies and organizations that support programs for walking, bicycling, and healthy/active lifestyles that were used to solicit feedback from industry stakeholders and the community. The following agencies and organizations were invited to participate in the SAC:

- AlohaCare
- Get Fit Kaua'i
- Institute for Human Services, Inc.
- Kaua'i Path, Inc.
- City and County of Honolulu, Department of Transportation Services, Safe Routes to School Program Coordinators
- County of Maui, Safe Routes to School
- County of Kaua'i, Safe Routes to School
- PATH Hawai'i
- Ulupono Initiative
- Walk Wise Hawai'i
- Hawai'i Bicycle League
- Maui Bicycle League
- HDOT Homeless Coordinator
- HDOT VRUSA Vista
- AARP
- Hawai'i Energy Office
- Department Of Hawaiian Homelands
- Kaua'i Skate 'Ohana
- Hawai'i Public Health Institute
- Transportation Equity Hui (Na Makawai)
- Papa Ola Lokahi
- Pacific Gateway Center
- K-VIBE
- Guide Dogs of Hawai'i
- Ho'opono Services for the Blind

The roles and responsibilities of the SAC included the following:

- Representing and communicating the interests of SAC members' agencies or jurisdictions.
- Providing technical support, information, insight, and reviews.
- Communicating project progress to directors, elected or appointed officials, and to agency or jurisdictional colleagues as needed.
- Reviewing recommendations from HDOT, TAC members, industry stakeholders, and the public.

- Reviewing project materials.
- Providing informed and comprehensive recommendations.
- Attend and participate in SAC and/or other stakeholder meetings.

A total of three SAC meetings were held throughout the VRUSA process. Table 14 below provides a brief overview of each meeting.

Table 14: Stakeholder Advisory Meetings and Purpose

| Meeting No. | Date and Time | Meeting Purpose |
|-------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | August 9, 2023 1:30 pm | <ul style="list-style-type: none"> • Provide an introduction to VRUSA • Review of the high-risk area methodology • Review of initial crash trends • Get feedback on high-risk locations |
| 2 | September 5, 2023 1:30 pm | <ul style="list-style-type: none"> • Share updated crash trends based on feedback from the TAC • Share updates on the High-Risk Characteristics • Get feedback on program of strategies • Share prioritization methodologies |
| 3 | September 28, 2023 1:30 pm | <ul style="list-style-type: none"> • Share the results of the initial screening and evaluation • Give an overview of the draft VRUSA report |

4.3 Key Findings

Questions, comments, and suggestions were recorded throughout the consultation process including input received during the TAC and SAC meetings and follow-up emails from committee members. These consultations help to provide local knowledge and perspectives throughout the development of this VRUSA. This section provides a summary our key findings from the consultations. In addition, as mentioned in Section 1.2, the extensive consultations from the relevant State and County pedestrian, bicycle, and transportation safety plans, studies, and other documents related to vulnerable road users allowed our team to build upon the work and community outreach that has already been done.

Crash Data

The methodology to identify high-risk areas in this VRUSA uses the most recent 5-year period of crash data available. This is in compliance with FHWA’s guidance as provided under 23 U.S.C 148 (l)(3). Stakeholders shared concerns with trying to identify high-risk areas when crash locations are random. It was shared that this effort would look for common trends or characteristics that occur at crash locations rather than the specific locations themselves. For

pedestrian crashes, both crashes from high-risk locations and all crashes were reviewed for trends. No high-risk locations were identified for bicyclists, so all crashes were reviewed.

Crash Characteristics and Data Analyzed

Stakeholders assumed that speeding was a key cause of the fatalities and serious injuries. However, the results from the data recorded under the “Human Factors” and “Other Factors” fields in the MVAR did not show that excessive speeding was a factor involved in a majority of the crashes analyzed in this assessment. In addition, the speed data provided by Google was also reviewed for a one-week period in April 2023, which showed that out of 14 corridors reviewed, only 3 corridors reflected speed within 10 mph of the posted speed and 1 over 10 mph of the posted speed.

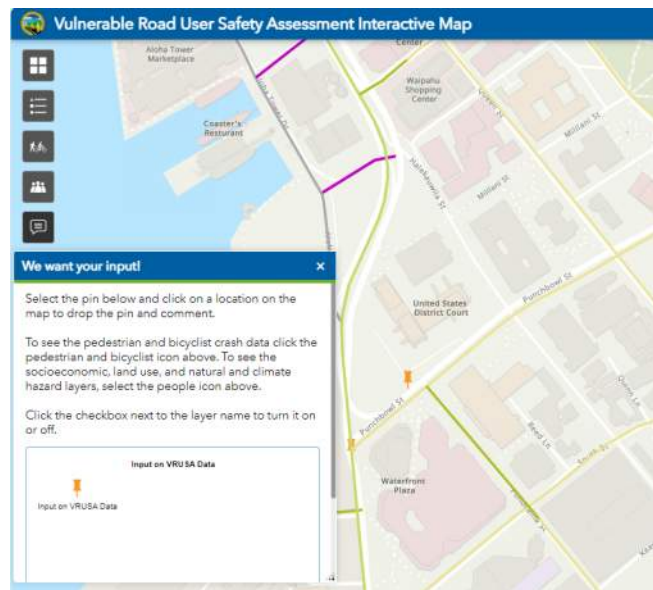
Recommended Strategies and Areas of Concern

During consultation meetings, stakeholders provided feedback on recommended strategies -

- *Presentations and campaigns on the dangers of speeding and increasing awareness of VRUs.*
- *There should be more enforcement on drivers failing to yield to pedestrians and speeding.*
- *There should be more questions and education on pedestrian and bicyclists’ right of way on the driver’s permit and licensing tests.*
- *Rumble strips should incorporate bicycle-friendly designs.*

The TAC and SAC committees were also provided a link to an [ArcGIS online web map tool](#) to provide their feedback on locations or areas of concern. Using an interactive map, stakeholders were able to turn on different layers of data (i.e., VRU crash locations, socioeconomic data, climate hazards, etc.) and place pins in locations where they thought an area of concern existed. The tool also shows the locations of the pedestrian crash clusters and bicycle crashes, as well as other layers of data identified in Section 3.1.

The locations that were provided by the TAC and SAC were included in a comprehensive list of locations and opportunities to be further reviewed and assessed.



Data Collection

Lastly, the TAC and SAC provided recommendations for better data collection. Section 3.3 of the report identifies the data limitations and insufficiencies identified during this assessment.

Section 5 of the report provides recommendations for better data collection for future VRUSA efforts.

4.4 Focus Group/Consultation Meetings

Police Departments

The County police departments were consulted during a Safe Transportation for Every Pedestrian (STEP) meeting held on September 13, 2023. A brief presentation of the VRUSA was provided to inform the police departments of the purpose of the assessment, methodology used to identify high-risk areas, analysis of crash data trends and characteristics, and the identification of strategies to reduce safety risks. Feedback on the education, enforcement, and encouragement strategies were solicited from the police departments to gather additional recommendations and suggestions.

The feedback received during the STEP meeting suggested that educational strategies should continue to be a focus for bicyclists as not all riders are aware of the bicycle laws, especially those regarding rules of the road and required equipment. This is particularly an issue for police officers running enforcement operations for bicyclists where they come across juvenile riders who are biking without a helmet. Education on bicycle laws should be increased and implemented through various strategies to ensure bicyclists are aware of the traffic and equipment laws to reduce safety risks and violations.



"No person under sixteen years of age shall operate a bicycle upon a street, bikeway, or any other public property unless that person is wearing a properly fitted and fastened bicycle helmet that has been tested by a nationally recognized agency such as the National Highway Traffic Safety Administration, the National Safety Council, or the Children's Safety Network, and is designed to fit the user and protect against head trauma. This requirement also applies to a person who rides upon a bicycle while in a restraining seat that is attached to the bicycle or who rides in a trailer towed by the bicycle."

Hawai'i Revised Statutes, Chapter 291C, Section 150, "Bicycle helmets."



SECTION FIVE

PROGRAM OF PROJECTS
AND STRATEGIES

5 Program of Projects and Strategies

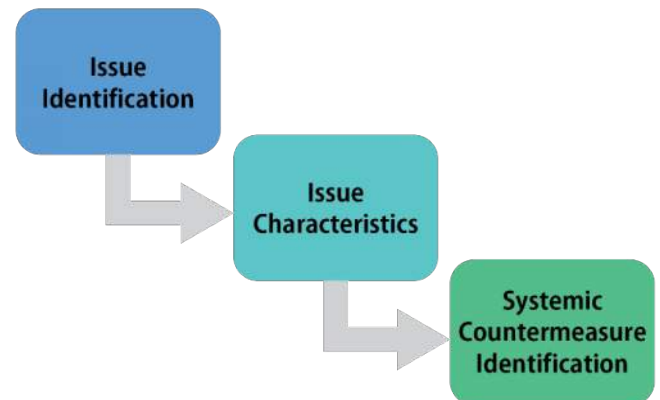
Based on the quantitative analysis and the input received from stakeholders, a program of strategies and projects has been created to reduce the safety risks for vulnerable road users in high-risk areas. This section discusses the methodologies used to identify the programs of projects and strategies, the recommended strategies and prioritized list of projects to address safety risks, and the application of the Safe System Approach to this assessment. It should be noted that the VRUSA is a planning level document, and additional efforts are necessary to further develop the projects and strategies identified in this section as part of HDOT's and County agencies' transportation planning processes.

5.1 Systemic Approach to Strategy Identification

The systemic approach to safety involves identifying low-cost engineering strategies that may be widely implemented based on high-risk characteristics correlated with specific severe crash types. The approach provides a more comprehensive method for safety planning and implementation that supplements and complements site analysis.

The Systemic Approach applied to this VRUSA included:

- Identification of an issue based on systemwide data.
- Identification of characteristics (e.g., geometry, volume, or location) frequently present in severe and fatal crashes. These characteristics, also known as risk factors, can be used to identify and prioritize locations with few or no crashes that could be potential candidates for safety investments.
- Identification of one or more low-cost countermeasures to address the underlying circumstances contributing to crashes on a majority of roads.



Systemic Approach to Bicycle Strategies

The issue or focus crash type for bicyclists included those where the vehicle was driving straight ahead and also those where the vehicle was overtaking the bicyclist. Based off the review of the data trends, these accounted for 75% of all the fatal and serious injury bicycle crashes during the study period.

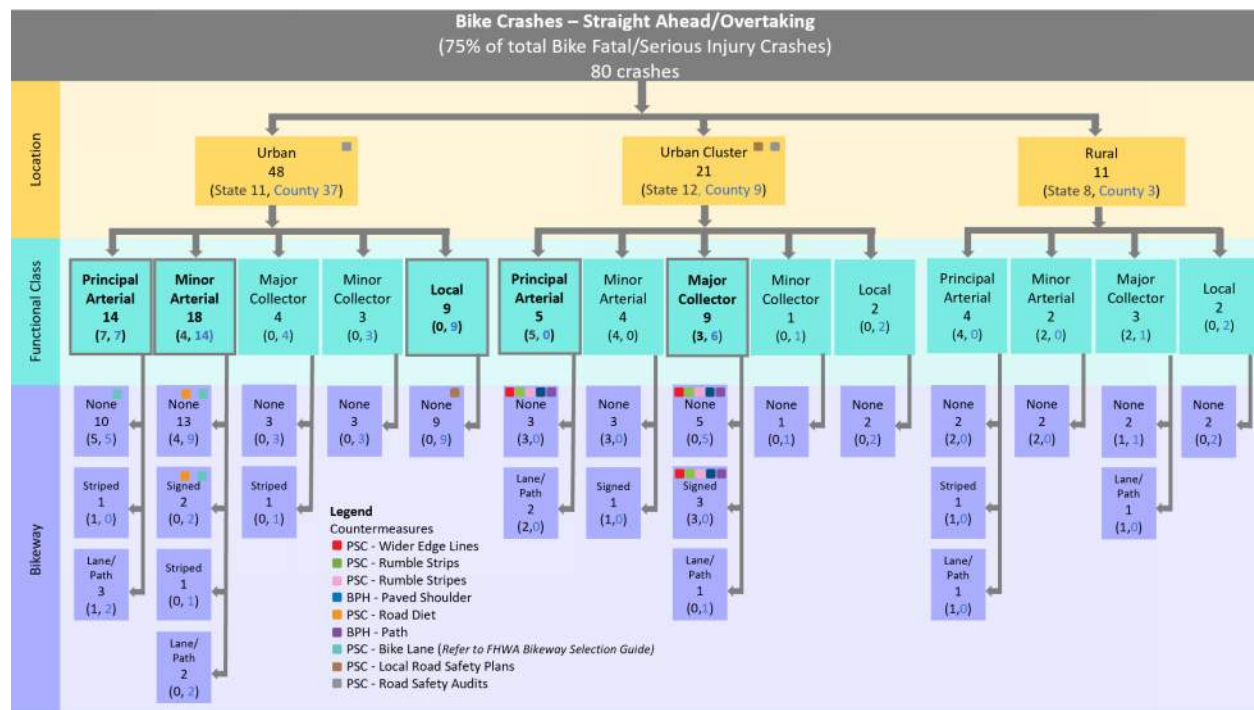
The characteristics that were considered to further systemically characterize the crashes include roadway jurisdiction, area type (based off of the Hawai'i Statewide GIS Program),

functional classification and type of bikeway facility. These are illustrated in a tree diagram in Figure 41.

The outlined boxes indicated the ‘heavier’ branches of the tree – or higher risk areas based on the higher number of crashes. The heavier branches within urban areas include both principal and minor arterials as well as local roads. Urban cluster branches include principal arterials and major collectors.

For these branches, countermeasure options are identified. Multiple countermeasure options are provided based upon the facility characteristics. These are the basis of the identification of the Program of Strategies. For the noted areas and facilities, agencies should consider these countermeasure strategies for safety projects and/or integration within other programmed projects. It should be noted that not all countermeasure strategies are appropriate in all situations, rather this approach allows proactive attention to be made to high-risk characteristics.

Figure 41: Systemic Approach to Bicycle Strategies



Countermeasures were identified from the FHWA’s Proven Safety Countermeasures as well as recommended facilities from the 2003 Bike Plan Hawai’i. The countermeasure strategies included:

- Wider Edge Lines (6 inches) – Enhances visibility of the travel lane boundaries and decreases lane departures.
- Rumble Strips/Stripes (designed to be compatible with bikes) - Milled or raised edge or centerline strips/stripes alerts drivers from roadway departures and drifting. Stripes may also provide better striping visibility.

- Paved Shoulders (from Bike Plan Hawai'i) – Adding and/or improving paved shoulders is often the best way to accommodate bicyclists in rural areas.
- Road Diet – Converting a four-lane undivided roadway to a three-lane with a two-way left turn lane. The road diet provides an opportunity to reduce vehicle crashes, and add bike lanes, pedestrian crossing refuge areas, and traffic calming.
- Path (from Bike Plan Hawai'i) – Shared use path may be acceptable where space is limited and land use contexts where both walking and/or bicycling volumes are relatively low (since there is no separation of bicyclists and pedestrians).
- Bike Lane – Dedicated facilities for bicyclists. Configurations may vary – refer to FHWA Bikeway Selection Guide – and may include striping, offsets with or without buffers, etc.
- Local Road Safety Plans (LRSP) – Provides a framework for identifying, analyzing, and prioritizing roadway safety improvements for local roads, issues, and/or needs. FHWA guidance available for creating and implementing an LRSP (<https://safety.fhwa.dot.gov/LRSPDIY/>)
- Road Safety Audits – Performed by a multidisciplinary team independent of a project. Considers all road users, human factors, and user capabilities.

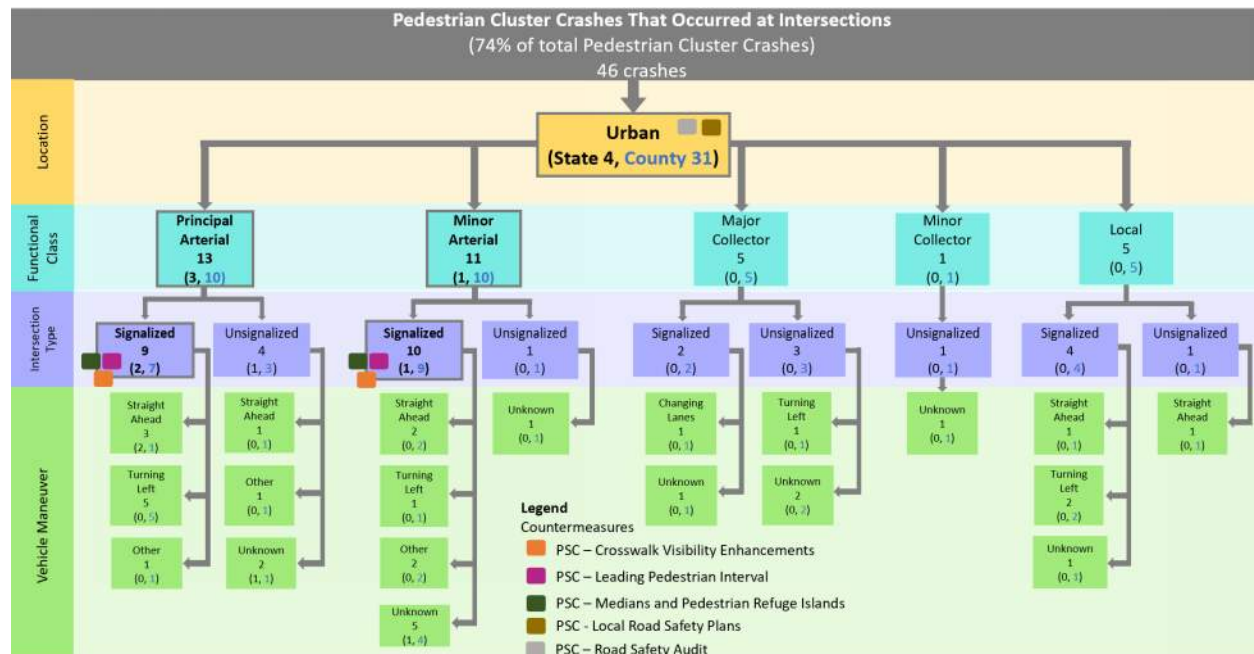
Systemic Approach to Pedestrian Strategies

The cluster analysis identified the high-crash locations associated with pedestrians. From the cluster data, the issue or focus crash type for pedestrians related to crashes that occurred at intersections. Based off the review of the high-risk data trends, these accounted for 74% of all the fatal and serious injury pedestrian cluster crashes during the study period.

The characteristics that were considered to further systemically characterize the crashes include roadway jurisdiction, area type, functional classification, intersection type and vehicle maneuver. These are illustrated in a tree diagram in Figure 42.

Figure 42 summarizes the Urban crashes. The heavier branches within urban areas include both principal and minor arterials and show more frequency of crashes at signalized intersections. Within urban cluster areas, there were 11 crashes that were spread out among roadway functional classifications. No systemic areas were identified in this area type. Rural areas did not have crashes associated with this review as there were no pedestrian cluster crashes that occurred in rural areas.

Figure 42: Systemic Approach to Pedestrian Strategies



Countermeasures were identified from the FHWA’s Proven Safety Countermeasures. The countermeasure strategies included:

- Crosswalk Visibility Enhancements – High-visibility crosswalks (striping materials/patterns), improved lighting and/or enhanced signing, and pavement markings.
- Leading Pedestrian Interval – Allows pedestrians to begin crossing before vehicle green phase starts – typically 3 to 7 seconds. This provides the opportunity to establish presence prior to allowed vehicle/turning movements (may be paired with restricting right turns on red).
- Medians and Pedestrian Refuge Islands – May include pavement markings, areas, or islands. May allow pedestrians to cross one direction of traffic at a time (especially along urban/suburban

Raised crosswalks are ramped speed tables spanning the entire width of a roadway that act as a traffic-calming measure to reduce vehicle speeds and enhance the pedestrian crossing environment.

Raised crosswalks can reduce pedestrian crashes by 45%

Source: Source: FHWA Safe Transportation for Every Pedestrian Countermeasure Tech Sheet https://safety.fhwa.dot.gov/ped_bike/step/docs/techSheet_RaisedCW2018.pdf

multilane facilities with a mixture of pedestrian/vehicle use).

- Local Road Safety Plans – Provides a framework for identifying, analyzing, and prioritizing roadway safety improvements for local roads, issues, and/or needs. FHWA guidance available for creating and implementing an LRSP (<https://safety.fhwa.dot.gov/LRSPDIY/>)
- Road Safety Audits – Performed by a multidisciplinary team independent of a project. Considers all road users, human factors, and user capabilities

Recommendation

The strategies for high-risk areas and characteristics identified by the Systemic Approach should be considered by the agencies having jurisdiction as widely implemented countermeasure options for safety projects and/or integration within other programmed projects along the noted facility types. Not all countermeasure strategies are appropriate in all situations, but this approach allows proactive attention to be made to high-risk vulnerable road user crash and facility characteristics.

5.2 Program of Projects

The identification of the program of projects is a critical step in prioritizing locations where there may be an area of concern or to allow for proactive attention for locations that have the high-risk vulnerable road user crash and facility characteristics. The VRUSA process resulted in three groups of projects or locations that form the program of projects:

1. Systemic Approach for Bicycles
2. Systemic Approach for Pedestrians
3. Evaluation Criteria for all the other locations and/or projects

Bicycle Systemic Approach Results

As reflected in the bicycle systemic approach, the majority of crashes involved vehicles that were driving straight ahead and also those where vehicles were overtaking the bicyclist. The facilities that these crashes were occurring were typically on principal arterials, minor arterials and local roads within urban areas. Within urban cluster areas, the crashes were on principal arterials and major collectors. Table 15 lists the roadway facilities that matched the noted high-risk characteristics. Design solutions should provide a balance of protecting the safety of bicyclists, improving accessibility and mobility, considering area and land use context, and meeting the needs of all transportation modes.

Implementing the PSCs identified in Section 5.1 may potentially reduce future fatalities and serious injury crashes for bicyclists. Additionally, implementation of the bicycle master plans will help to create a comprehensive and connected network of facilities. In all cases, an engineering analysis should be conducted for each location on a case-by-case basis. In addition to the PSCs, typical recommendations for improvements to address the bicycle the following:

- Visibility Enhancements – Install high-visibility markings (striping materials/patterns), improved lighting and/or enhanced signing, and pavement markings.
- Maintenance Program – Along bikeway facilities, maintain markings, clear surface debris and plant overgrowth, and maintain smooth riding pavement.
- Education/Encouragement – Education and outreach programs can be a powerful tool for changing behavior and improving safety skills. Education for all road users may be appropriate especially when located near bicycle routes and bicycle intensive land use.
- Enforcement – Enforcement programs can be used to help change the behavior of all road users. It is best when used in combination with education and other tools. Coordinated efforts between law enforcement, traffic engineers and public health/safety organizations can focus the limited resources available on areas with the greatest impacts.

Table 15: Bicycle Systemic Approach Results

| Island | Jurisdiction | Road | Vicinity Reference | Area Type & Functional Classification | Bikeway Type (from MVAR) |
|--------|--------------|-------------------|--------------------|---------------------------------------|--------------------------|
| O'ahu | State | Kamehameha Hwy | Luluku Rd | Urban Principal Arterial | None |
| O'ahu | State | Vineyard Blvd | Aala St | Urban Principal Arterial | None |
| O'ahu | State | Ala Moana Blvd | Kalakaua Ave | Urban Principal Arterial | None |
| O'ahu | State | Farrington Hwy | Guard St | Urban Principal Arterial | None |
| O'ahu | State | Kalaniana'ole Hwy | Bell St | Urban Principal Arterial | None |
| O'ahu | State | Kalaniana'ole Hwy | Ulupuni St | Urban Principal Arterial | Striped |
| O'ahu | State | Farrington Hwy | Kaukama Rd | Urban Principal Arterial | Lane/Path ¹ |
| O'ahu | County | Ward Ave | Waimanu St | Urban Principal Arterial | None |
| O'ahu | County | S King St | University Ave | Urban Principal Arterial | None |
| O'ahu | County | S King St | Kalakaua Ave | Urban Principal Arterial | None |
| O'ahu | County | Bishop Street | Queen St | Urban Principal Arterial | None |
| O'ahu | County | Kapiolani Blvd | S King St | Urban Principal Arterial | None |
| O'ahu | County | Ward Ave | S King St | Urban Principal Arterial | Lane/Path |
| O'ahu | County | King St | Poha Ln | Urban Principal Arterial | Lane/Path |

| Island | Jurisdiction | Road | Vicinity Reference | Area Type & Functional Classification | Bikeway Type (from MVAR) |
|---------|--------------|---------------------|--------------------|---------------------------------------|---------------------------|
| O'ahu | County | King St | Poha Ln | Urban Principal Arterial | Lane/Path |
| O'ahu | State | Liliha St | N King St | Urban Minor Arterial | None |
| Maui | State | Waiehu Beach Rd | Wailupe Dr | Urban Minor Arterial | None ¹ |
| O'ahu | State | Kunia Rd | Wilikina Dr | Urban Minor Arterial | None |
| O'ahu | State | Kalihi St | Nimitz Hwy | Urban Minor Arterial | None |
| O'ahu | County | Ala Wai Blvd | Niu St | Urban Minor Arterial | None ¹ |
| O'ahu | County | Kalihi St | Ahuula St | Urban Minor Arterial | None |
| O'ahu | County | Diamond Head Rd | Poka St | Urban Minor Arterial | Signed Route ¹ |
| O'ahu | County | Hawai'i Kai Dr | Maunanani St | Urban Minor Arterial | None ¹ |
| O'ahu | County | Waialae Ave | Kilauea Ave | Urban Minor Arterial | None |
| O'ahu | County | Punchbowl St | Halekauwila St | Urban Minor Arterial | None |
| O'ahu | County | Kalakaua Ave | Fern St | Urban Minor Arterial | Signed Route |
| O'ahu | County | St Louis Dr | Waialae Ave | Urban Minor Arterial | None ¹ |
| O'ahu | County | Waiakamilo Rd | N King St | Urban Minor Arterial | None ¹ |
| O'ahu | County | N King St | Kalihi St | Urban Minor Arterial | None |
| O'ahu | County | Piikoi St | Kinau St | Urban Minor Arterial | None |
| O'ahu | County | Keeaumoku St | S King St | Urban Minor Arterial | Lane/Path ¹ |
| O'ahu | County | Hamakua Dr | Hahani St | Urban Minor Arterial | Lane |
| O'ahu | County | Hamakua Dr | Aoloa St | Urban Minor Arterial | Lane |
| O'ahu | County | Kaiwiula St | McNeill St | Urban Local | None |
| O'ahu | County | Lauhala St | Beretania St | Urban Local | None ¹ |
| O'ahu | County | Kaahumanu St | Komo Mai Dr | Urban Local | None |
| O'ahu | County | Pohakupuna Rd | Ihipehu St | Urban Local | None |
| O'ahu | County | Kainehe St | Kihapai St | Urban Local | None |
| O'ahu | County | Tantalus Dr | Aaliamanu Pl | Urban Local | None |
| O'ahu | County | Kewalo St | Wilder Ave | Urban Local | None |
| O'ahu | County | Keahumoa Pkwy | Maweke St | Urban Local | None |
| Hawai'i | State | Kuakini Hwy | Viewpoint Entrance | Urban Cluster Principal Arterial | None ¹ |
| Maui | State | Piilani Hwy | Manao Kala St | Urban Cluster Principal Arterial | None ¹ |
| Hawai'i | State | Queen Kaahumanu Ext | Henry St | Urban Cluster Principal Arterial | None ¹ |
| Maui | State | Piilani Hwy | Alanui Ke Alii Dr | Urban Cluster Principal Arterial | Lane/Path |
| O'ahu | State | Kamehameha Hwy | Sunset Elementary | Urban Cluster Principal Arterial | Lane/Path |
| Maui | State | Kekaulike Ave | Hapapa Rd | Urban Cluster Major Collector | Signed Route |

| Island | Jurisdiction | Road | Vicinity Reference | Area Type & Functional Classification | Bikeway Type (from MVAR) |
|---------|--------------|-------------|--------------------|---------------------------------------|--------------------------|
| Hawai'i | County | Paniolo Ave | Lua Kula St | Urban Cluster Major Collector | None |
| Hawai'i | County | Napoopoo Rd | Aka Ala St | Urban Cluster Major Collector | None |
| Maui | County | Front St | Kapunakea St | Urban Cluster Major Collector | None |
| O'ahu | County | Goodale Ave | Waialua Beach Rd | Urban Cluster Major Collector | None |
| Hawai'i | County | Kaumana Dr | Wiliwili St | Urban Cluster Major Collector | None |
| Maui | County | Makawao Ave | Kee Rd | Urban Cluster Major Collector | Lane/Path ¹ |


¹ Current conditions have changed bikeway types from the MVAR noted facility

Pedestrian Systemic Approach Results

As reflected in the pedestrian systemic approach, the heavier branches were aligned with principal and minor arterials, within urban areas, and with more frequency of crashes at signalized intersections. Table 16 lists the locations of the high-risk clusters that fell within this category. Intersection design requires consideration of all roadway users, especially pedestrians, who are the most vulnerable while crossing. Design solutions should provide a balance of protecting the safety of pedestrians, improving pedestrian accessibility and mobility, and meeting the needs of bicyclists and motorists. Sometimes the best design solution for pedestrians does not work well for bicycles, and vice versa. The needs of all intersection users must be considered.

Intersections can be made more pedestrian-friendly by implementing designs that improve the crossing conditions and visibility, reduce crossing distances, and minimize the conflicts between pedestrians, bicyclists, and motor vehicles. In all cases, an engineering analysis should be conducted for each location on a case-by-case basis. Typical recommendations for improvements at signalized intersections include the following:

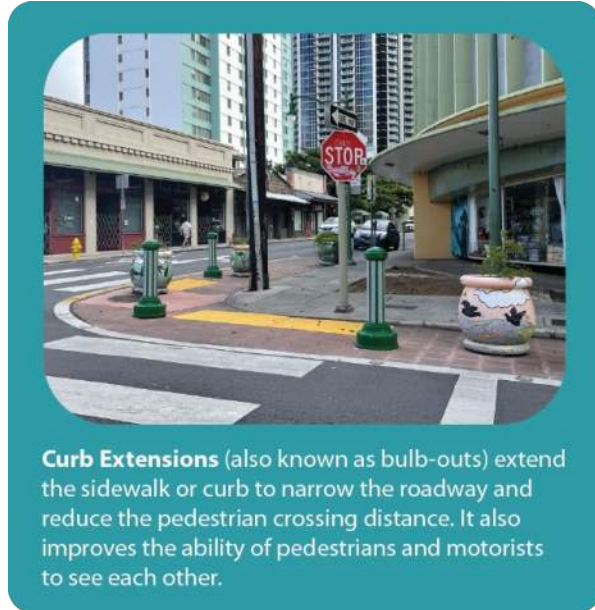
- **Crosswalk Visibility Enhancements** – High-visibility crosswalks (striping materials/patterns), improved lighting and/or enhanced signing, and pavement markings are all important safety countermeasures.
- In-lane rumble strips with raised pavement treatments can be placed in advance of crosswalks to alert the approaching driver of the upcoming crosswalk.
- **Medians and Pedestrian Refuge Islands** – May include pavement markings, raised areas, or islands. May allow pedestrians to cross one direction of traffic at a time (especially along urban/suburban multilane facilities with a mixture of pedestrian/vehicle use).
- **Curb Bulb-Outs and Extensions** – Curb bulb-outs and extensions extend the curb and sidewalk into the street area and shorten the crossing distance, reducing the crossing time, and makes the pedestrian more visible.
- **Leading Pedestrian Interval** – Allows pedestrians to begin crossing before vehicle green phase starts – typically 3 to 7 seconds. This provides the opportunity to establish presence prior to allowed vehicle/turning movements (may be paired with restricting right turns on red).
- **All-Pedestrian Crossing** – In locations where a lot of pedestrians are out and about due to land use, exclusive timing can be used. This is very useful where there are more than 1,200 pedestrian crossings per day and should be used in conjunction with “no right turns on red”.



Crosswalk Visibility Enhancements such as high-visibility crosswalks, lighting, and signing and pavement markings help make vulnerable road users more visible to drivers.

*Source: FHWA Proven Safety Countermeasures
<https://highways.dot.gov/safety/proven-safety-countermeasures/crosswalk-visibility-enhancements>*

- Right-Turn Slip Lanes – In general the use of right-turn slip lanes should be minimized. They should be designed to provide a low-angle right-turn to reduce vehicle speeds and improve the visibility of the pedestrian.
- Education – Education and outreach programs can be a powerful tool for changing behavior and improving safety skills. Many of the intersections listed in Table 16 have highly visible crosswalks with a protected walk signal phase. Education for all road users may be appropriate especially when located near pedestrian intensive land use.



- Enforcement – Enforcement programs can be used to help change the behavior of all road users. It is best when used in combination with education and other tools.

Table 16: Pedestrian Systemic Approach Results for High-Risk Clusters

| Cluster ID | Island | Jurisdiction | Road | Segment | Number of Pedestrian Crashes | Functional Classification |
|------------|--------|--------------|--------------------------------|------------------------------------------------------|------------------------------|---------------------------|
| 2 | O'ahu | State | Farrington Hwy | Farrington Hwy near Haleakala Ave | 2 | Urban principal arterial |
| 3 | O'ahu | State | Farrington Hwy | Farrington Hwy between Kealanani Ave and Makakilo Dr | 2 | Urban principal arterial |
| 6 | O'ahu | County | Dillingham Blvd | Kalihi St and Dillingham Blvd | 2 | Urban minor arterial |
| 7 | O'ahu | County | Kuakini St | Liliha St and N Kuakini St | 2 | Urban major collector |
| 8 | O'ahu | County | Nimitz Hwy spur near Iwilei Rd | Nimitz Hwy/Iwilei Rd | 2 | Urban minor collector |
| 9 | O'ahu | County | Pauoa Rd | Pauoa Rd/Pacific Heights Rd | 2 | Urban minor arterial |
| 10 | O'ahu | County | Ward Ave | S King St/Ward Ave | 2 | Urban principal arterial |

| Cluster ID | Island | Jurisdiction | Road | Segment | Number of Pedestrian Crashes | Functional Classification |
|------------|---------|--------------|------------------|-----------------------------------------------------------------------------------|------------------------------|---------------------------|
| 11 | O'ahu | County | King St | S King St/Victoria St | 2 | Urban principal arterial |
| 12 | O'ahu | County | Queen St | Queen St/Kamakee St | 2 | Urban minor arterial |
| 13 | O'ahu | County | Beretania St | S Beretania St/Kalakaua Ave | 2 | Urban principal arterial |
| 14 | O'ahu | County | Kalakaua Ave | S King St/Kalakaua Ave | 3 | Urban minor arterial |
| 15 | O'ahu | County | Punahou St | Punahou St/Young St | 2 | Urban principal arterial |
| 16 | O'ahu | County | McCully St | McCully St/Citron St | 2 | Urban minor arterial |
| 19 | Kaua'i | State | Kuhio Hwy | Kuhio Hwy near Kaua'i Village Shopping Center and Waipouli Beach Resort Driveways | 2 | Urban principal arterial |
| 20 | Kaua'i | State | Kuhio Hwy | Kuhio Hwy between Kali Rd and Hardy St | 2 | Urban principal arterial |
| 22 | Maui | County | Waiehu Beach Rd | Waiehu Beach Rd and Eha St/Nukuwai Pl | 2 | Urban minor arterial |
| 23 | Maui | County | Kahului Beach Rd | Kahului Beach Rd near Nisei Veterans Memorial Center Driveway and Kanaloa Ave | 2 | Urban minor arterial |
| 24 | Maui | County | Kaahumanu Ave | W Ka'ahumanu Ave near Lono Ave and S Kane St | 2 | Urban principal arterial |
| 27 | Hawai'i | County | Kilauea Ave | Kilauea Ave/Pauahi St | 2 | Urban minor arterial |
| 29 | Hawai'i | State | Mamalahoa Hwy | Mamalahoa Hwy/Pukalani Rd | 2 | Urban principal arterial |

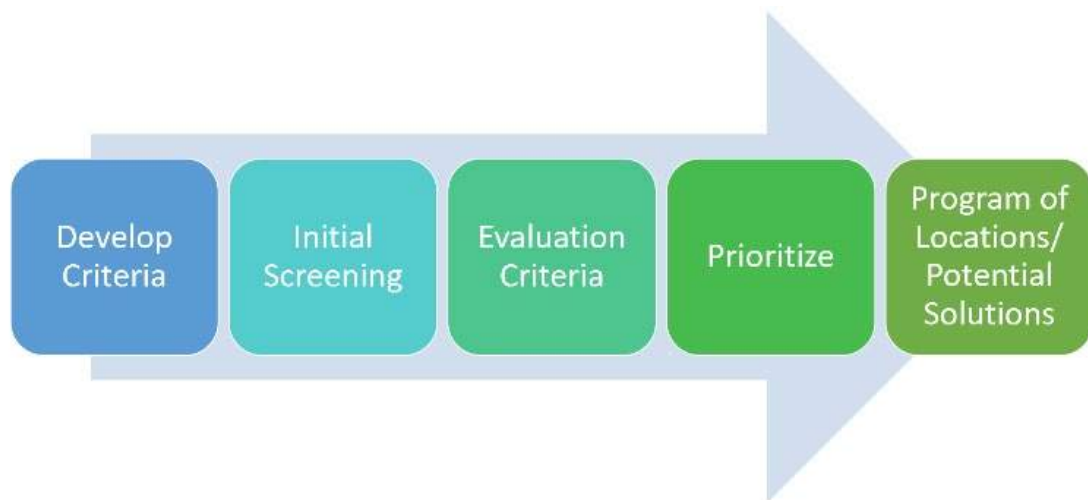
Methodology and Evaluation Criteria for Other Areas of Concern and/or Projects

Other than the systemic approach of reviewing crash trends to develop high-risk characteristics, the project team relied on input from the TAC and SAC to identify locations and other areas of concern that they may be aware of. Feedback was provided in meetings, through email, and through the online GIS tool. In addition, the recommendations and output from the review of plans and walk audits were also compiled and added to the area of concern list. Some locations were identified as opportunities, while others were identified as areas of concern.

Methodology

With a growing list of opportunities and areas of concern, the project team developed a process to screen and evaluate the locations. A stepped process was created, so as not to bias the outcome and to be as transparent as possible. Criteria was developed to be consistent with the Safe System Approach through the review of crash trends and the FHWA's requirements for the VRUSA. Figure 43 illustrates the overall development process for this Program of Projects and the refinement of the prioritized areas of concern list.

Figure 43: Program of Projects Development Process



To identify the need for VRU improvements, factors were defined at the beginning of the areas of concern development process. They were based on technical knowledge of best practices and reflect current important criteria for this vulnerable road users' assessment. An initial screening of the locations was conducted to validate all the data and input collected. Table 17 shows the criteria that were used for the initial screening. The criteria were selected based on consistency with the VRUSA objectives.

Table 17: Initial Screening Criteria

| Fatality/Serious Injury Trends | |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Crash Locations | Is the location in the vicinity of a VRUSA crash cluster or corridor? |
| Crash Trends | Does the project meet the crash trend characteristics? |
| Equity | |
| Social Vulnerability | Is the location within an area identified with high social vulnerability index? (refer to Table 5 for social vulnerability indicators) |
| Access to Transportation | Is the project within an area identified with no access to vehicles? |
| Land Use/Vulnerable User Generators | |
| Land Use | Is the location near the top identified land uses (residential, parks, strip mall, shopping centers) surrounding crashes? |
| Climate Change | |
| Climate Hazard | Is the location outside of an identified natural or climate hazard zone? |

The locations of the high-risk clusters, locations identified by the TAC and SAC, plan review priority locations, and high-risk corridors were all compiled. Each location was assessed on the initial screening criteria in Table 17. A point was given for each screening criteria that was met. Out of 81 compiled, a total of 55 areas of concern or opportunities passed through the initial screening process. Locations that received a score of 5 or higher passed through the screening.

In the next step, the areas of concern or opportunities were evaluated based on the criteria in Table 18, which continues an assessment of vulnerable road users' needs.

Table 18: Evaluation Criteria

| Complete Streets/Sustainability | |
|----------------------------------------|----------------------------------------------------------------------------------------------|
| Non-motorized modes | Does the location or potential solution encourage non-motorized modes? |
| Complete Streets | Does the location or potential solution consider Complete Street principles? |
| Environment | Does the location or potential solution avoid environmentally or culturally sensitive areas? |
| Equity | |
| Access to Transit | Does the location or potential solution improve access to transit? |

| | |
|-----------------------------------|---------------------------------------------------------------------------------------------|
| Accessibility | Does the location or potential solution improve ADA accessibility? |
| Safe System Considerations | |
| Speed | Is the existing posted speed limit inconsistent with the land use and/or multi-modal users? |
| Proven Safety Countermeasure | Does the potential solution utilize a proven safety countermeasure? |
| Feasibility | |
| Project Incorporation | Can the location be incorporated with another planned project (within another program)? |

Each potential area of concern solution was reviewed and scored. One point was given for each criterion met. Scoring using the evaluation criteria helps prioritize or rank the outcomes by determining the areas where there is a greater need to address the safety of vulnerable road users. Areas of concern and opportunities that scored 6 or better are shown in Table 19. This prioritized list of areas or projects should be considered for further development and incorporated in other planned safety projects and/or improvements. The full list of areas of concerns scored are in Appendix D.

Table 19: Other Areas of Concern and/or Projects

| ID | Island | Jurisdiction | Road | Segment | Issue/Need | Potential Safety Improvements/Solution |
|----|--------|--------------|-----------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | O'ahu | State | Waialae Avenue | Pathway along Waialae Avenue under the H-1 viaduct and parallel to the H-1 off-ramp (Exit 26 Waialae Ave) | This pathway dead-ends near the H-1 off-ramp and directs peds/bikes onto the roadway or sidewalk. | Widen the existing sidewalk along Waialae Avenue for shared use by narrowing the travel lanes; improve asphalt/concrete pathway connection to the existing sidewalk |
| 4 | O'ahu | County | Ward Ave and Ala Moana Blvd | | Statewide Pedestrian Master Plan, 2013 | Reduce the curb radii at the southeast corner to reduce the pedestrian crossing distances and lower vehicle speeds around the right turn. |
| 13 | O'ahu | State | N Nimitz Hwy | H-1 to Kapalama Drainage Canal | High-Risk Corridor; limited bike facility; Priority Freight Route | Nimitz Highway is designated by FHWA as a Primary Freight Highway. It could be a concern to have bicycles and large trucks share space within the limited right-of-way. Look at appropriate bike networks on Dillingham Boulevard, which runs parallel to the Nimitz corridor, which is more appropriate from a Complete Street system |
| 14 | O'ahu | State | Farrington Hwy | West of canal (87-746 Farrington Hwy) to East of Kaukama Rd | High-Risk Corridor; per the Google data, cars are traveling approx. 5 mph over the posted speed limit, with higher speeding occurring at night/early morning | Build O'ahu BP 1-124: Shoulder Bikeway; Conduct a road safety audit; Farrington Study recommends (short-term): speed feedback signs, intersection improvements, and streetlight improvements |
| 15 | O'ahu | State | Farrington Hwy | West of Maliona St to Linakola St | High-Risk Corridor; per the Google data, cars are traveling approx. 5 mph over the posted speed limit, with higher speeding occurring at | Build O'ahu BP 1-124: Shoulder Bikeway; Conduct a road safety audit; Farrington Study recommends (short-term): Use speed feedback signs, intersection improvements, and streetlight improvements |

| ID | Island | Jurisdiction | Road | Segment | Issue/Need | Potential Safety Improvements/Solution |
|----|--------|--------------|-----------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| | | | | | night/early morning | |
| 16 | Kaua'i | State | Nawiliwili Rd | Nawiliwili Rd from Waapa Rd to Pikake St | Bicycle and pedestrian facilities | Build new bicycle and pedestrian facilities |
| 17 | Kaua'i | State | Kuhio Hwy | Kuhio Hwy from Wilcox Hospital to Hanamaulu Rd | Bicycle and pedestrian facilities | Build new bicycle and pedestrian facilities |
| 18 | O'ahu | County | Punchbowl St | Uncontrolled crosswalk Punchbowl St near Pohukaina St | Very active pedestrian crossing area, 4 fast lanes of traffic. | Install a raised crosswalk to improve visibility; consider rapid flashing beacons |
| 19 | O'ahu | State | Nimitz/Ala Moana Blvd | Nimitz/Ala Moana Blvd passing thru Iwilei, Downtown, and Kakaako | Nimitz/Ala Moana Blvd is a barrier between active origins and destinations; there are only limited pedestrian crossings; no protected bike infrastructure. | Two protected pedestrian overcrossings are planned 1. Kaka`ako and Fisherman's Wharf 2. Skyline Downtown Station |
| 20 | O'ahu | State | Kalaniana'ole Hwy | Ulupuni St to Olomana Fire Station | Speed humps have helped reduce speeds in spot areas, but speed remains excessive in other areas, with little protected pedestrian or bicycle infrastructure | Pave the shoulders to provide more space; Use speed feedback signs, and streetlight improvements |
| 21 | O'ahu | County | Kailua Rd | Kailua Rd/Kailua District Park driveway | This is a busy marked crosswalk but drivers generally do not yield or slow down. Raised crosswalk? Additional markings? | Install a raised crosswalk to improve visibility; Consider rapid flashing beacons |
| 27 | O'ahu | State | Ala Moana Blvd | East of Ward Ave to Kamakee St | High-Risk Corridor; no excessive speeding; Sidewalks exist | Two protected pedestrian overcrossings are planned 1. Kaka`ako and Fisherman's Wharf |

| ID | Island | Jurisdiction | Road | Segment | Issue/Need | Potential Safety Improvements/Solution |
|----|--------|--------------|-------------------------------|----------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | | 2. Skyline Downtown Station |
| 28 | O'ahu | State | Ala Moana Blvd | Holomoana St to East of Hobron Ln | High-Risk Corridor; no excessive speeding; sidewalks exist | All pedestrian crossing phase was installed at Ala Moana Blvd and Hobron Lane. Consider education (Hotels can hand out flyers to their guests) and enforcement |
| 32 | Maui | State | Waiehu Beach Rd/Lower Main St | Wailupe Dr to Go For Broke Pl | High-Risk Corridor | Consider crosswalk visibility enhancements; Address sidewalk/curb return gaps |
| 33 | O'ahu | State | Farrington Hwy | West of Auyong Homestead Rd to Haleakala Ave | High-Risk Corridor; speeding occurs at night/early morning | Address the sidewalk gaps, install crosswalk visibility enhancements, Complete the Farrington Study (short-term safety): S1 intersection improvements; S2 streetlight improvements; S3 speed feedback signs; O'ahu BP 1-124: Shoulder Bikeway |

Depending on the jurisdiction, the State, City, and Counties should prioritize the implementation of the Program of Projects. In addition, using the systemic approach, any planned project that meets the high-risk characteristic trends identified should consider taking a closer look at the surrounding land use, social vulnerability index, and vulnerable user needs in design.

5.3 Program of Strategies

The Safe System Approach is comprehensive and addresses vulnerable user safety in numerous ways. An important part of pursuing strategies and solutions is to look beyond engineering to address road safety.

- **Education**—Programs and approaches that teach motorists, bicyclists, pedestrians, and rollers about their responsibilities and traffic rules.
- **Enforcement**—Engagement of law enforcement to focus efforts in problem areas and increase community awareness of safety issues.
- **Encouragement**—Programs and approaches that develop awareness and build enthusiasm for walking, biking, and rolling.

All of these approaches need to be applied together to create the most effective transportation system for our vulnerable road users. The non-engineering strategies can help to address

specific travel and safety issues and help all road users be aware of each other's needs in the right-of-way.

Locally, these strategies are being implemented by organizations and government agencies at multiple levels – statewide, countywide, and locally.

Education

Education and outreach programs are powerful tools and are needed on an ongoing basis to support a healthy transportation system for all vulnerable road users. It can be very useful for changing behavior and improving safety skills and should be targeted and tailored for different audiences.

The 10th Edition of the US-DOT NHTSA's Countermeasures That Work: Highway Safety Countermeasure Guide for State Highway Safety Offices provides guidance to assist State Highway Safety Offices in selecting effective, science-based traffic safety countermeasures for major highway safety problems, including pedestrian and bicyclist safety.⁷ In the guide, the use of the countermeasures are summarized along with their effectiveness, cost, and implementation time. The guide includes countermeasures that have the most evidence of effectiveness based on research and individual studies and are those most regularly used by State Highway Safety Offices.

Based on the NHTSA's Countermeasures That Work guide, educational programs and strategies are shown to be the most effective in increasing pedestrian and bicyclist safety for school-aged children. As an example, one of the educational programs used nationwide is the Safe Routes to School program, which is focused on increasing the amount of bicycling and walking trips to and from school while also increasing safety for children. The program uses a comprehensive approach including education of children, school personnel, parents, and community members, as well as enforcement and engineering strategies to improve traffic safety around the school. Programs that included specific implementations focused on site-appropriate engineering changes have shown behavioral improvements for pedestrians, bicyclists, and motorists.⁸ All 50 states across the nation have initiated Safe Routes to School programs.

While adults 18 years and older represent most of the pedestrians and bicyclists involved in crashes analyzed in this VRUSA, the NHTSA's Countermeasures That Work guide does not provide sufficient information to measure the effectiveness of educational strategies for adult pedestrians and bicyclists. Educational strategies to increase pedestrian and bicyclist safety for adults could include educational material, tip sheets, and other safety and rules of the road materials that could be passed out at bike shops and bike rental establishments. The use of educational materials could provide a comprehensive approach to inform pedestrians and

⁷ U.S. Department of Transportation, National Highway Traffic Safety Administration. "Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices." 10th Edition, 2020.

⁸ NHSTA "Countermeasures That Work".

bicyclists of enforcement strategies and campaigns (see Table 21) and encouragement strategies (see Table 22). Educating adult pedestrians and bicyclists about the rules of the road and safety tips may also increase the dissemination of information to children and young adults.

To increase education of pedestrian and bicyclist safety for new drivers, the HDOT will be providing Safe Systems 101 training to the State’s lead driver’s education instructor trainers to teach instructors of what a Safe System is and how it can be applied into driver’s education courses. HDOT acknowledges that along with traffic laws and roadway design changes, it’s appropriate to also provide ongoing training to ensure new drivers receive updated information on new pedestrian and bicycle infrastructure, signage, and roadway design configurations or special designs applicable to Hawai‘i’s roads.

Table 20: Recommended Educational Strategies

| Educational Strategies | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Suggested Training Activities and Topics to be Addressed | VRU High-Risk Characteristic Addressed | Example Programs |
| DRIVERS | | |
| Training that encourages drivers to: <ul style="list-style-type: none"> • Think Safety First – Drive the speed limit and avoid aggressive maneuvers. • Be Aware – Watch for pedestrians at all times and always stop for them. • Be Patient – Use extra caution when driving near children playing along the street or older pedestrians who may not see or hear you. • Speeding Wrecks Lives: Speed Safety Awareness | Inattention as a common human factor involved in VRU crashes. Potential concerns with speeding | HDOT media campaigns |
| Additional questions related to pedestrian and bicyclist safety on driver’s license and permit tests, and more pedestrian and bicyclist safety | Inattention and misjudgment as a common human factor involved in VRU crashes. | Safe Systems 101 trainings provided by HDOT |

| Educational Strategies | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suggested Training Activities and Topics to be Addressed | VRU High-Risk Characteristic Addressed | Example Programs |
| education in driver's education classes. | | |
| ADULTS | | |
| <p>Training through community outreach:</p> <ul style="list-style-type: none"> • Pedestrian safety messages in public relations (i.e., news releases, fact sheets for local events, social media) <p>Encourage bike shops to provide "Share the Road" and other bicycle safety and rules of the road materials with bicycle owners and tourists who rent bikes.</p> | <p>Pedestrian and bicyclist violations as other factors involved in VRU crashes, inattention and misjudgment as a common human factor involved in VRU crashes, and age groups 18+ years old as the majority involved in pedestrian and bicycle crashes.</p> | <ul style="list-style-type: none"> • Hawai'i Bicycle Month – Share the Road Safely • National Pedestrian Safety Month (DTS) |
| CHILDREN | | |
| <p>Training that develops child/student awareness of:</p> <ul style="list-style-type: none"> • Pedestrian and bicyclist safety and laws. • Personal safety. • Benefits of walking and bicycling. | <p>Pedestrian and bicyclist inattention and misjudgment as a common human factor involved in VRU crashes.</p> | <ul style="list-style-type: none"> • BikeEd (program for 4th grade students, HBL) • Be Safe Be Seen Halloween (DTS) • K-VIBE • Safe Routes to School |

Enforcement

Enforcement programs can be used to help change the behavior of motorists, pedestrians, bicyclists, and all road users and to educate them about applicable traffic laws. It is best used with city, county, or state officials in combination with law enforcement officers in a public safety campaign.

Bicycle helmet laws for children and adults are rated as the most effective countermeasures to improve bicycle safety in the NHTSA's Countermeasures That Work guide. As previously mentioned, Hawai'i has existing helmet laws for children codified under Hawai'i Revised Statutes Chapter 291C, Section 150, but has not enacted helmet laws for adults. The NHTSA's Countermeasures That Work guide notes that a meta-analysis of 40 studies found that helmet

use by bicyclists was associated with 33% to 69% reduction in the odds of facial, head, and fatal injuries, and a 42% reduction in the risk of a non-fatal head injury. The effectiveness of this countermeasure is also backed by 21 empirical studies from Australia, Canada, New Zealand, and the United States that found that all-age helmet laws were effective in reducing serious head injuries by 35% for cyclists of all ages.⁹ While no states have enacted statewide bicycle helmet laws for adults, there are currently 49 jurisdictions across the United States that require people of all ages to wear helmets when bicycling.

One of the perceived downsides of enacting all-age helmet laws is that it will discourage bicycling and reduce ridership. Some research has found that laws on mandatory helmet use is not associated with the likelihood that children will cycle, and that implementing legislation is not associated with changes in the number of cyclists as a percentage of the population.¹⁰



Across the State between 2015 and 2020 there have been 1,879 crashes because of red-light and other traffic signal violations. Red-light running automated traffic enforcement can reduce costs of enforcement, lessen the danger of enforcement for officers, and increase the perception of drivers that there are consequences to violating traffic laws.

Other effective enforcement strategies listed in NHTSA's Countermeasures That Work guide include publicized sobriety checkpoints, speed enforcement, and traffic enforcement focused on pedestrian and driver safety. Publicized sobriety checkpoints are an extremely effective strategy if they are highly visible and publicized, conducted on a regular basis, and part of an ongoing program as they deter driving after drinking by increasing the perceived risk of arrest. Speed enforcement may be a more effective strategy than reducing speed limits if the speed limit has proven to be compatible with the roadway design and the surrounding environment, but is routinely ignored and exceeded by drivers. Traffic enforcement focused on pedestrian and driver safety was found to be effective as it reinforces pedestrian and driver behavior and raises the expectation that failure to comply would result in legal consequences. As noted in the guide, all these enforcement strategies should be

extensively publicized to increase effectiveness.

⁹ NHSTA "Countermeasures That Work".

¹⁰ NHSTA "Countermeasures That Work".

Table 21: Recommended Enforcement Strategies

| Enforcement Strategies | | |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Pros | Cons |
| Enforce bicycle, pedestrian, and motor vehicle violations | If enforcement is highly visible and publicized, it can deter unsafe driver, pedestrian, and bicyclist behaviors. | Enforcements targeting pedestrians and bicyclists viewed as a strategy that would discourage walking and bicycling, and is also not equitable. |
| Equip vehicles with in-car breathalyzer | Reduce crashes and fatalities from driving under the influence (DUI). | Cost to implement and install in vehicles. |
| Publicize and increase the frequency of sobriety checkpoints | Deter driving after drinking | Dependent on available law enforcement personnel and funding. |
| Require all riders of all ages to use helmets | Reduce serious and fatal head injuries for children and adults. | Viewed as a potential risk to level of ridership. |
| Remove all debris from the roadway shoulders prior to leaving the collision scene, especially along bike lanes and paths | Prevent more injuries and crashes or bicyclists | Extended lane or road closures. |
| Use speed and red-light cameras | In locations that have speed and red-light camera programs in place have been effective in reducing speeds (fewer drivers running red lights and a decline in crashes) | Practice can be controversial, but it has raised awareness about speeding and consequences |

Encouragement

Encouragement tools can come in a variety of forms, such as media campaigns and strategies, pedestrian and bicycle advocacy, and events. These programs are best used with educational programs that exist and are similar in nature.

Most of the encouragement countermeasures identified in the NHTSA’s Countermeasures That Work guide are rated on the lower end of the effectiveness scale as the strategies have not been determined to be effective either because there has been limited or no high-quality evidence, or because effectiveness is still undetermined based on available evidence. The only

countermeasure that is rated as likely to be effective is encouraging and/or enhancing conspicuity for both pedestrians and bicyclists through the use of retroreflective materials and lights or illumination devices. Enhancing conspicuity for pedestrians and bicyclists increases the opportunity for drivers to see and avoid collisions with pedestrians and bicyclists especially at night or in low-light conditions.

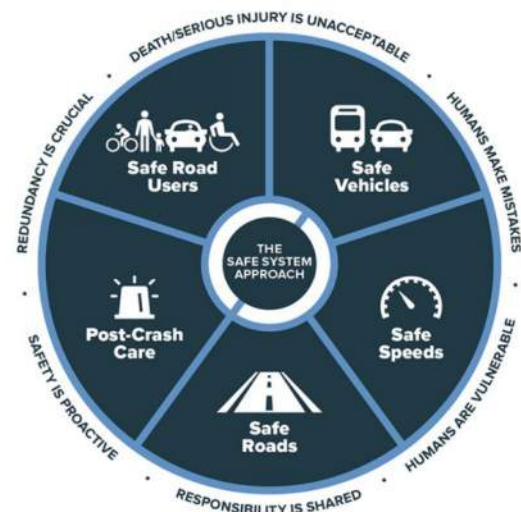
Table 22: Recommended Encouragement Strategies

| Encouragement Strategies |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Coordination between agencies to achieve master plan goals. <ul style="list-style-type: none"> ○ National Pedestrian Safety Month ○ National Bike Month ○ Recruit a Pedestrian Safety Media Coordinator (HDOT) ○ Mothers Against Drunk Driving (MADD) • Land use and developer partnerships. • Encourage safe pedestrian and bicyclist behaviors. <ul style="list-style-type: none"> ○ Looking both ways before crossing the street. ○ Enhancing conspicuity by wearing retroreflective materials and using lights or other illumination devices. • Promote walking and bicycling events. <ul style="list-style-type: none"> ○ Walkwise Hawai'i educational campaign ○ Fun runs/rides |

5.4 Safe System Approach

The Safe System Approach was at the core of the development of the VRUSA. Making a commitment to zero deaths means addressing crash risks through all of the five elements. A summary of the Safe System Approach is described below:

- Safe Roads
 - Systemic Approach (engineering strategies) – Crash data trends were utilized to identify systemic crash and roadway characteristics. Proven safety countermeasures were recommended to provide a widespread, proactive strategy program to increase the safety of roadways for all users.



Source: FHWA

- Safe Speeds
 - Actual speed data along select corridors were reviewed from Google Data. Average and 85th percentile speeds along these corridors were assessed over a typical one-week period to identify corridors with inconsistencies between posted and travel speeds. Speed management recommendations were made for the high-risk crash corridors that had higher 85th percentile speeds, although the majority of the corridors had an average 85th percentile speed within the posted speed limit and speed did not appear to be a significant contributing factor to the crashes.
 - FHWA has developed a Safe System Approach for Speed Management. Developing a speed management program can help to address excessive speeding moving forward. There is a five-stage framework to this approach:
 - Establish a vision and building consensus for speed management.
 - Collect and analyze speed and safety data.
 - Prioritize locations for speed management proactively.
 - Select speed management countermeasures.
 - Conduct ongoing monitoring, evaluation, and adjustment.¹¹
 - In the State of Hawai'i, the state and counties comply with Hawai'i Revised Statute §291C-107 Speed limits; Factors to consider. The statute requires an engineering study that considers the following:
 - (1) Roadway characteristics including but not limited to shoulder condition grade, alignment, sight distance, and lane widths;
 - (2) Roadside development and environment, including the following:
 - (A) Number and types of side road access including signalized or unsignalized intersections;
 - (B) Pedestrian activity and facilities;
 - (C) Parking practices and activity; and
 - (D) Type of bicycle accommodations and facilities;
 - (3) Motor vehicle crashes resulting in deaths or injuries; and
 - (4) Prevailing speeds as determined by traffic engineering measurements.

¹¹ U.S. Department of Transportation, Federal Highway Administration. "Safe System Approach for Speed Management." May 2023.

- Safe Vehicles
 - Vehicle types involved in VRU crashes were reviewed to identify any differing trends or results compared to national data.
 - Complement and support vehicle safety features (e.g. maintenance of pavement markings for drive assist features). Installing breathalyzers in vehicles to reduce the risk of crashes and fatalities caused from driving under the influence has also been listed as a recommended enforcement strategy.
- Safe Road Users
 - Safety of all road users equitably addressed – socioeconomic data was reviewed to identify disadvantaged communities and communities that have a high number of households with no vehicles available. This was used as criteria in the initial screening of projects and areas of concern to prioritize safety improvements in communities with a high social vulnerability index.
 - Education strategies are recommended to take a proactive approach to teach road users safe pedestrian and bicyclist behaviors and laws, as well as awareness of personal safety.
 - Input from law enforcement was solicited regarding existing and potential enforcement strategies that may be successful in increasing safety for all road users. Other recommended enforcement strategies were provided by stakeholders and also sourced from the NHSTA’s Countermeasures That Work guide.
 - Recommended encouragement strategies were suggested by stakeholders and include existing programs and events that encourage people to walk and bike while also providing safety education.



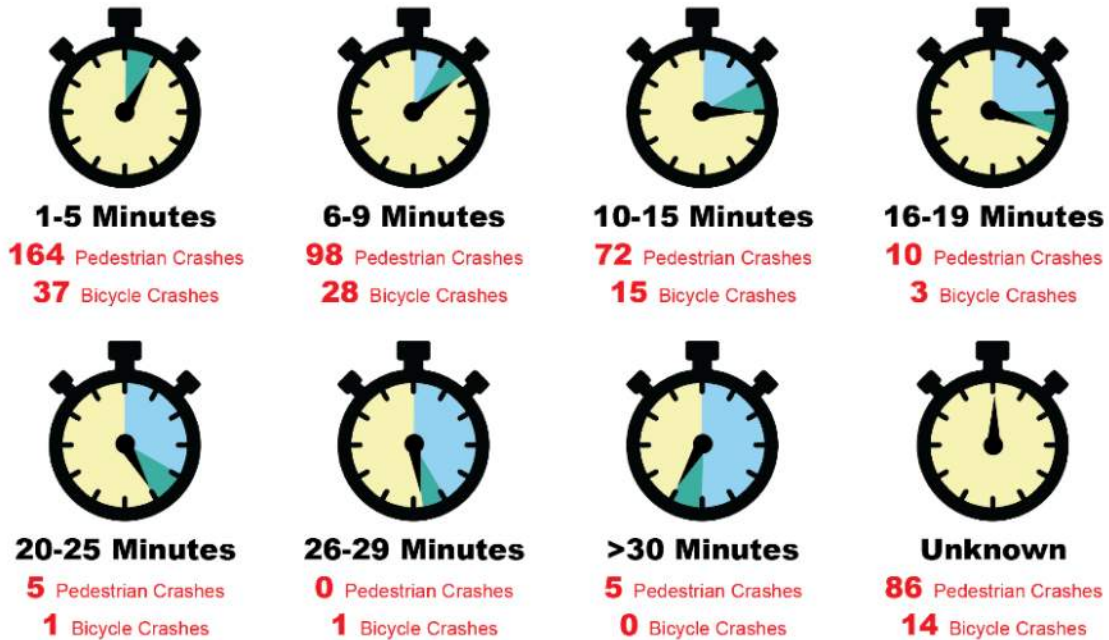
Safe Systems Approach: Safe Road Users
 The Safe System Approach targets the safety of all road users, including those who walk, bike, drive, ride transit, and travel by other modes. All road users should have the opportunity to travel safely, regardless of how they travel. At the same time, road users have a responsibility to operate, to the best of their ability, within the expectations and boundaries of the transportation system. Everyone shares ownership of the road system and all share responsibility for maintaining a Safe System.

Education and training on safe road behaviors comprise the cornerstones of promoting safe road users. Reinforcing positive behaviors are key, such as reminding motorcyclists to use proper safety gear and vehicle occupants to use proper adult and child restraints, and to deter dangerous behaviors (including impairment, distracted and/or inattentive road use).

Post-Crash Care

- Incident response times for all bicycle and pedestrian fatalities and serious injury crashes were reviewed, and most of the response times fell within 1 to 5 minutes, followed by 6 to 9 minutes.

Figure 44: EMS Response Times for All Pedestrian and Bicycle Fatalities and Serious Injury Crashes



- Improvements that can improve first responder capabilities for traffic-related crashes is to expand Emergency Medical Services (EMS) capacity to meet the population and community demand. On O’ahu, the targeted response time is 10 minutes. This can be achieved by conducting a statewide workforce study and identifying gaps by county, finding funding, and assessing options to improve 911 ambulance response times.
- Collaborate with all agencies to improve the availability and quality of EMS data.

5.5 Recommendations for Implementation

In this VRUSA, the Safe System Approach guided the development of a comprehensive program of strategies and projects using engineering solutions, education, enforcement, encouragement, coordination, and changes in safety related laws.

Program of Strategies

- Systemic Approach – Bicycle and high-crash pedestrian areas were reviewed through the systemic approach to identify high-risk facility characteristics and associated countermeasure strategies. Implementation of countermeasure strategies are

recommended to be proactively integrated within projects along facilities with the noted high-risk characteristics.

- Education, Enforcement and Encouragement – Non-engineering educational, enforcement and encouragement strategies are recommended to be implemented on an ongoing basis to emphasize the Safe Road User characteristics and support a safe transportation system for all vulnerable road users.

Program of Projects

- Crash Data – Fifty-three (53) bicycle and twenty (20) pedestrian cluster crash locations that are representative of the high-risk characteristics from the systemic approach assessment were identified as locations to implement the countermeasure strategies.
 - Bike: 17 State, 36 City/County
 - Pedestrian: 5 State, 15 City/County
- Other Input – Previous plan review recommendations, high-crash corridors and stakeholder input were assessed to identify potential project locations. Screening criteria consistent with the Safe Systems Approach was applied to filter and prioritize projects, resulting in fifteen (15) project locations (12 State, 3 County) and potential solutions recommended for implementation.

These recommendations will be on-going and implemented over time by State/County agency partners and stakeholder groups supporting vulnerable populations. Future updates of the VRUSA can build upon this initiative and should include additional assessment to address the dynamic nature of traffic safety issues.

The most efficient way for the State, City, and Counties to implement the Program of Projects is to integrate and include the recommendations with planned projects in the same locations. In addition, using the systemic approach, any planned project that meets the high-risk characteristic trends identified should consider taking a closer look at the surrounding land use, social vulnerability index, and vulnerable user needs in design.

Additional data to analyze as well as data recommended to be collected by agencies have been identified by the VRUSA stakeholders. These recommendations can be continued by the City, Counties, and the State to continue to further improve safety for vulnerable road users.

Recommended data to analyze:

- All pedestrian and bicycle crash data – The VRUSA and Safe Systems Approach focuses on addressing fatality and serious injury crashes. Input from stakeholders expressed that limiting the assessment to fatal and serious injury crashes may miss some high-risk behaviors and characteristics.
- Longer period of crash data – The annual number of pedestrian and bicycle crashes in Hawai'i, specifically on the neighbor islands, is low. Expanding the data set to up to 10 years

would capture additional crash history and may support identification of high-risk areas. A drawback of extending the data period is that both transportation systems and land use change over time, a longer period may highlight areas that have changed leading to incorrect trend assumptions.

- Crash data review – Vehicle maneuvers were reviewed for crash trend characteristics in this assessment. Specific maneuvers reviewed in conjunction with specific roadway characteristics could further identify trend characteristics of driver behaviors. Situations that were identified include:
 - Yielding at uncontrolled crosswalks
 - Yielding of left-turn vehicles to pedestrians at signalized crosswalks
 - Red-light running
- Houseless coordination – there appears to be a growing number of crashes that involve houseless pedestrians. Coordinate efforts with the Institute of Human Services and HDOT’s Houseless coordinator.

Recommended data to be collected by agencies:

- Standardization of data collection – Standards and guidance for data collection should be established through coordination amongst various State and County agencies to ensure the data collected is consistent across jurisdictions.
- Pedestrian and bicycle volumes – Identification of pedestrian and bicycle demands may provide additional insight on potential high-risk areas. Agencies should consider this data collection to inform any future non-motorized plans and projects.
- Pedestrian and bicycle facilities (County-wide level) – Publicly available GIS layers identifying the location of pedestrian and bicycle facilities would provide more accuracy in determining whether VRU crashes are occurring in areas where pedestrian and bicycle facilities do not exist and would provide better insight into recommended strategies and countermeasures to implement at high-risk areas.
- Analyze if vehicular volumes are a factor in VRU crashes – Volume levels could also be a trend/systemic characteristic of high-risk roadways. Average annual daily traffic volumes are currently not available along all roadways in the state. Agencies should review their data collection program and tools.
- Trip origin and destination – Identification of pedestrian and bicycle trip origins and destinations may provide additional insight on potential high-risk areas. Agencies should consider this data collection to inform any future non-motorized plans and projects.
- Vehicle weight involved in collision comparison to vehicle weight distribution in the State to analyze whether vehicle weight is a factor in crash severity – Larger vehicle



weight may transfer more kinetic energy to VRUs in a crash. Tracking of this data will inform if vehicle weight may or may not be a trend/systemic crash characteristic.

- EMS response times – Tracking emergency response times, could inform agencies of emergency service gaps and could also identify roadway infrastructure needs to support service providers.
- Number of fatalities and serious injury crashes involving houseless population – With houseless populations growing along roadsides statewide, crashes involving this demographic have been identified as an issue. The HDOT began tracking this crash statistic for fatalities in 2022. Continuing to track this will better inform decision making in the future.



Source: FHWA

A data driven approach to the VRUSA allows policymakers and traffic safety experts to understand the scope and nature of the fatality and serious injury VRU crashes throughout our state. Having the appropriate data helps us to understand the nature of the crashes, identify high-risk areas, and develop evidence-based interventions to address them. This VRUSA report is just one tool to help reduce the number of fatalities and serious injuries in the State. Safety issues and needs will continue to change and evolve over time. Continued assessment is necessary to improve safety and make informed investment decisions. Moving forward, the VRUSA will be integrated with the HSHSP updates.