CITY OF KEY WEST

Comprehensive Safety Action Plan

TOWARDS VISION ZERO

VISION ZERO
CITY OF KEY WEST

Contents

Duval street Mallory Square
shopping architecture

ACRONYMS AND ABBREVIATIONS

This Safety Action Plan refers to a wide range of agencies, policies, programs, committees, and organizations with unique abbreviations. The following are included in the Safety Action Plan report and listed here as a resource for readers.

- ADA – Americans with Disabilities Act
- CMF – Crash Modification Factor
- CRF – Crash Reduction Factor
- FDOT – Florida Department of Transportation
- FHWA – Federal Highway Administration
- HIN – High Injury Network
- ITS – Intelligent Transportation Systems
- KSI – Killed or Seriously Injured
- KWPD – Key West Police Department
- LPI – Leading Pedestrian Interval
- MPO – Metropolitan Planning Organization
- MUTCD – Manual on Uniform Traffic Control Devices
- NHTSA – National Highway Traffic Safety Administration
- PSC – Proven Safety Countermeasure
- ROW – Right-of-Way
- SS4A – Safe Streets and Roads for All
- USDOT – United States Department of Transportation
- VRU – Vulnerable Road User

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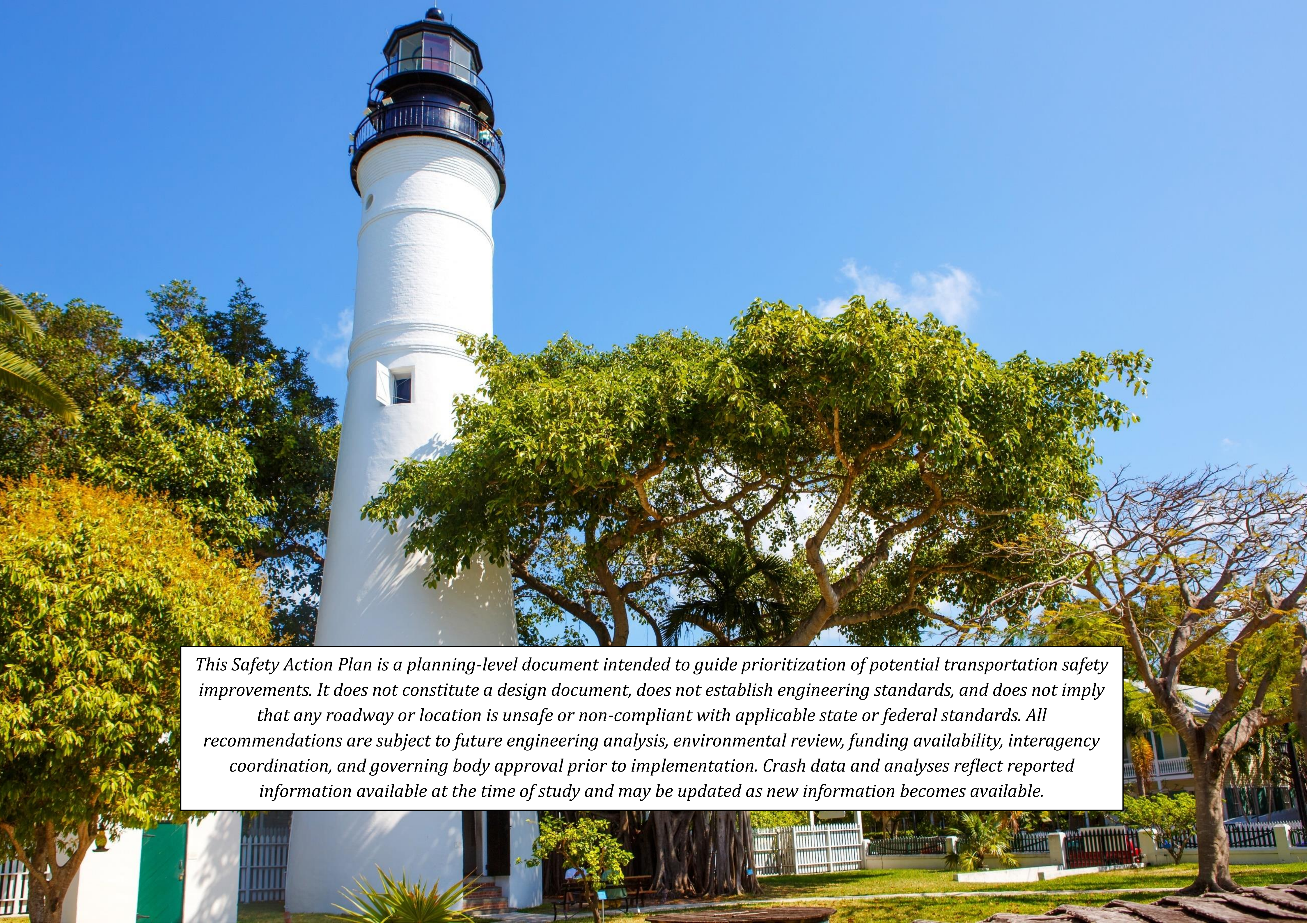


This Safety Action Plan is a planning-level document intended to guide prioritization of potential transportation safety improvements. It does not constitute a design document, does not establish engineering standards, and does not imply that any roadway or location is unsafe or non-compliant with applicable state or federal standards. All recommendations are subject to future engineering analysis, environmental review, funding availability, interagency coordination, and governing body approval prior to implementation. Crash data and analyses reflect reported information available at the time of study and may be updated as new information becomes available.

Executive Summary

The City of Key West developed this Safety Action Plan to to guide actions intended to reduce fatal and serious injury crashes and improve safety for all roadway users, including pedestrians, bicyclists, micromobility users, transit riders, and motorists. The plan aligns with the Safe System Approach and supports the City's long-term Vision Zero goals by focusing on proactive, data-driven, and equitable safety strategies.

The Safety Action Plan is informed by multiple sources of information including crash data analysis, field reviews and road safety audits, input from the Safety Action Plan Task Force, and feedback from the community through surveys and engagement activities. Together, these inputs helped identify consistent safety concerns and crash patterns that may be responsive to targeted safety strategies that can provide meaningful safety benefits.

Key Safety Issues Identified

The analysis found crash patterns which can be addressed with engineering treatments. Rear-end crashes associated with congestion and sudden braking are common, particularly during weekday peak periods at key corridors and intersections. Higher-than-desired operating speeds were observed in several locations, even where posted speed transitions are present. These speed concerns were consistently raised by the Task Force and community members and are supported by crash data.

The plan also identified conflicts involving rental scooters, e-bikes, and other micromobility users. Although these crashes do not represent the majority of total crashes, they account for a disproportionate share of injury crashes. Crash reports frequently cited loss of control, lane drifting, and unfamiliarity with the roadway or vehicle, indicating a need for targeted micromobility management strategies.

Pedestrian and bicycle crashes are relatively few in number; however, the severity is much higher. These concerns were treated as priority issues due to the vulnerability of these users, even when crash counts were low.

Another issue is the presence of closely spaced driveways and access points, particularly along major corridors. High access density contributes to multiple conflict points and forces drivers to accept smaller gaps when entering or exiting driveways, increasing crash risk. Field reviews also identified visibility constraints at certain driveways caused by vegetation and roadside features.

Finally, the plan identified a busy sign environment along several corridors. While critical warning and guidance signs are present, their effectiveness may be reduced due to the volume of competing information, particularly for visitors unfamiliar with the area.

Approach to Recommendations

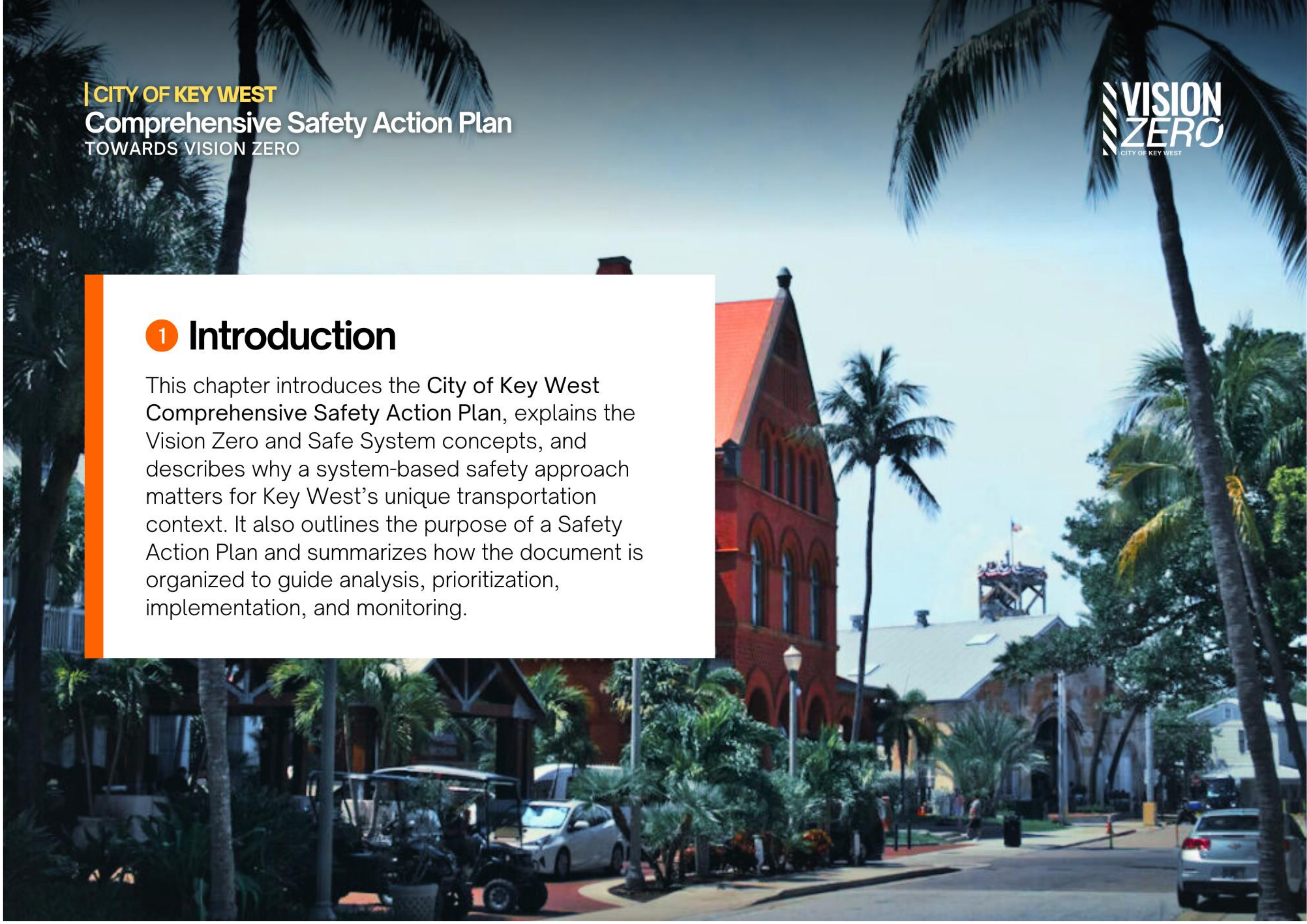
Based on these findings, the project team focused on identifying **correctable crashes** and developing strategies that directly address the underlying causes of those crashes. Recommendations were organized into **short-term, medium-term, and long-term actions** to provide the City with a flexible menu of treatments that can be implemented over time based on priorities, funding, and coordination opportunities.

Short-term strategies focus on low-cost, near-term improvements such as signal timing adjustments, pedestrian timing enhancements, visibility improvements at driveways, targeted signing, and speed feedback measures. Medium-term strategies include traffic simulation and speed studies to evaluate system-wide timing, coordination, and speed management, as well as access management evaluations to reduce conflict points along key corridors. Long-term strategies explore more transformative options, such as corridor redesigns, intersection reconfiguration, and enhanced pedestrian and bicycle infrastructure, where appropriate.

Moving Forward

This Safety Action Plan provides a roadmap for improving safety in Key West by addressing both observed crash patterns and the concerns raised by the community. The recommendations are intentionally scalable and adaptable, allowing the City to advance safety improvements incrementally while maintaining alignment with Vision Zero principles.

By focusing on correctable crashes, improving conditions for vulnerable road users, managing speed and congestion, and reducing conflict points, the City can make measurable progress toward reducing fatal and serious injury crashes and creating a safer, more comfortable transportation system for residents and visitors alike.



1 Introduction

This chapter introduces the **City of Key West Comprehensive Safety Action Plan**, explains the Vision Zero and Safe System concepts, and describes why a system-based safety approach matters for Key West's unique transportation context. It also outlines the purpose of a Safety Action Plan and summarizes how the document is organized to guide analysis, prioritization, implementation, and monitoring.

Key West's transportation system serves a wide range of users, including people walking, bicycling, using micromobility devices, accessing transit, and driving. Travel across these modes often occurs in close proximity within a constrained street network.

As a result, safety outcomes reflect how street design, operations, and user interactions function together. This plan focuses on understanding and addressing those interactions as part of a system-wide approach to safety.

The Safety Action Plan integrates crash data, community input, and established safety practices to:

- identify locations and conditions associated with elevated safety risk,
- understand factors that contribute to serious crashes, and
- guide decisions about where and how to invest in safety improvements.

The plan informs City decision-making, supports coordination among departments and partner agencies, and provides a consistent reference for implementing and evaluating safety actions over time.

Vision Zero and the Safe System Approach

Vision Zero is a transportation safety framework focused on eliminating traffic-related fatalities and serious injuries. It recognizes that people make mistakes and that transportation systems should be designed and operated so those mistakes do not result in severe outcomes. The Safe System framework operationalizes this philosophy by emphasizing system design, speed management, visibility, and predictable interactions among all users.

Under this framework, safety responsibility is shared. Road users are expected to follow traffic laws and travel responsibly, while agencies and decision-makers shape streets, policies, and operating conditions to reduce the likelihood that errors lead to serious harm. In Key West, the Safe System framework provides a consistent lens for evaluating safety needs across a diverse and space-constrained transportation network.

Principles of the Safe Systems Approach

What Is a Safety Action Plan?

A Safety Action Plan is the primary implementation tool for advancing Vision Zero at the local level. While Vision Zero establishes the safety goal and guiding framework, the Safety Action Plan defines how a community identifies safety needs, prioritizes actions, and tracks progress.

A comprehensive Safety Action Plan typically includes:

- analysis of crash trends and contributing factors,
- engagement with residents, stakeholders, and partner agencies,
- identification of location-specific and system-wide safety concerns,
- a transparent framework for prioritizing projects and strategies, and
- an approach for implementation and performance monitoring.

In Key West, the Safety Action Plan provides a structured and adaptable framework. The plan supports incremental progress, coordination across initiatives, and updates as conditions, data, and community needs evolve.

Why It Matters for Key West

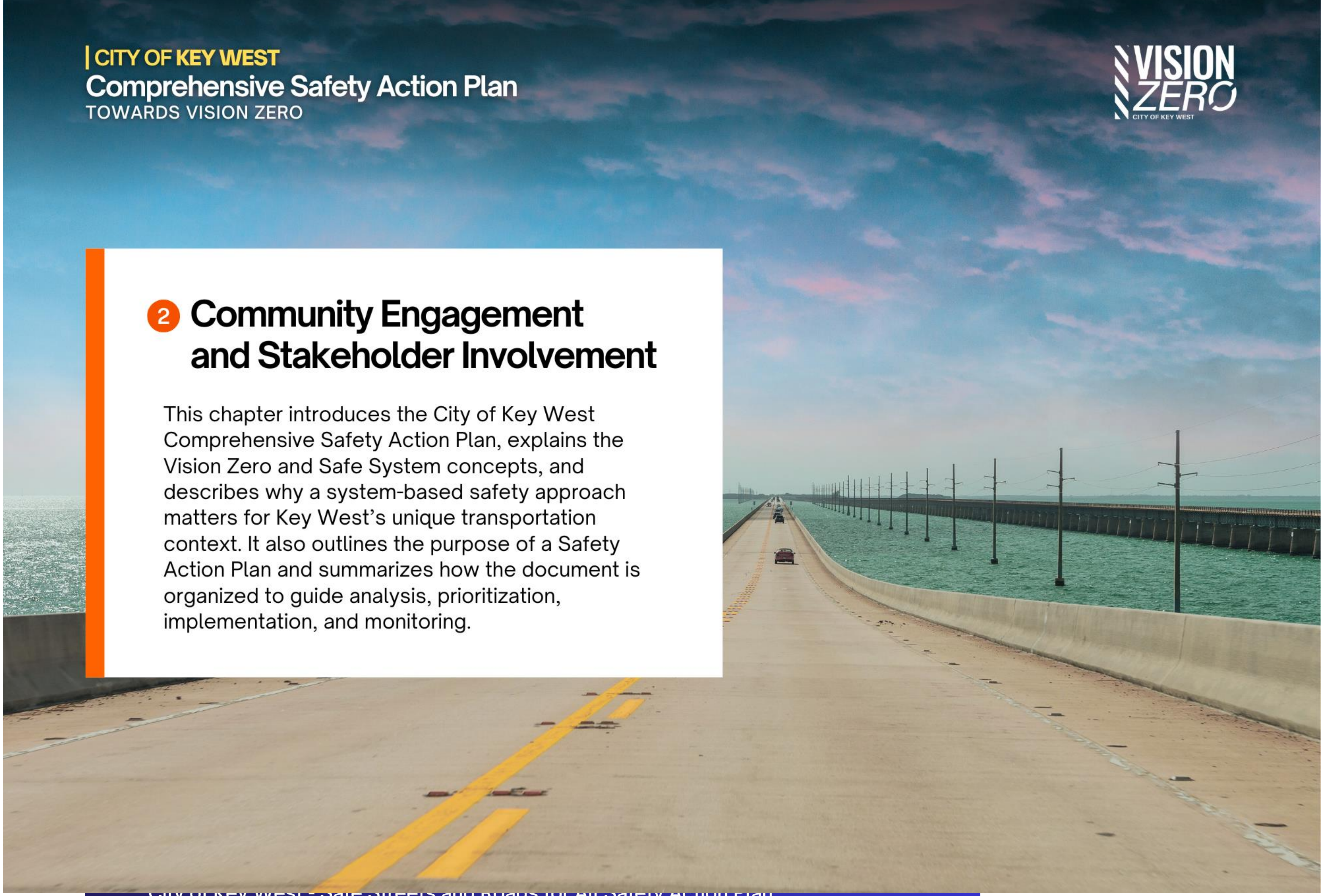
Key West's transportation system reflects the city's compact size, historic development patterns, and strong reliance on walking, bicycling, and micromobility. Streets often serve multiple functions, accommodating local travel, tourism activity, deliveries, transit access, and special events within limited right-of-way.

Crash data and community input consistently indicate that people walking and bicycling experience a disproportionate share of severe injuries, that a limited number of corridors and intersections account for a substantial portion of serious crashes, and that speed, visibility, and turning conflicts play a role in crash severity. Concerns related to e-bikes and scooters also continue to emerge as travel patterns evolve.

These conditions reinforce the importance of a Safe System framework for Key West. By focusing on speed management, visibility, and conflict reduction, the transportation system can better align with human tolerance to crash forces and improve safety outcomes across all modes.

How This Plan Is Organized

The remainder of this document builds on the framework introduced in this chapter. Subsequent chapters describe the community engagement process, summarize crash trends and contributing factors, present the Transportation Health and Access framework, explain the project prioritization methodology, and outline an implementation and monitoring roadmap.



2 Community Engagement and Stakeholder Involvement

This chapter introduces the City of Key West Comprehensive Safety Action Plan, explains the Vision Zero and Safe System concepts, and describes why a system-based safety approach matters for Key West's unique transportation context. It also outlines the purpose of a Safety Action Plan and summarizes how the document is organized to guide analysis, prioritization, implementation, and monitoring.

2.COMMUNITY ENGAGEMENT AND STAKEHOLDER INVOLVEMENT

Community engagement plays an important role in shaping the Safety Action Plan. While data analysis provides insight into where and how crashes occur, community input helps explain how safety concerns are experienced on a daily basis.

Engagement activities were designed to complement technical analysis by capturing observations related to perceived risk, near-misses, and everyday travel challenges. These efforts also supported transparency and helped build a shared understanding around safety priorities.

Safety Action Plan Task Force

Purpose and Composition

A Safety Action Plan Task Force was established to provide ongoing guidance throughout plan development. The Task Force brought together representatives from City departments, partner agencies, and community organizations with direct roles in transportation planning, operations, enforcement, emergency response, education, and advocacy.

Task Force representation included local government staff, law enforcement, fire and emergency services, school transportation officials, regional transportation agencies, business representatives, and community advocates. This multidisciplinary structure supported a balanced review of safety issues, combining technical analysis with operational experience and community perspective.

Role in Plan Development

The Task Force provided input at key milestones during plan development. Members reviewed interim crash analysis results, shared observations from daily operations, and identified locations or behaviors that warranted additional attention. This input helped refine the interpretation of data findings and ensured that analysis reflected on-the-ground conditions.

Task Force discussions also informed the development of potential strategies by assessing feasibility, clarity, and consistency with local practices. Members provided feedback on how infrastructure, operational, policy, education, and enforcement actions could work together within the Key West context, including consideration of seasonal travel patterns and increasing micromobility activity.

Community Engagement Methods

A combination of online and in-person engagement tools was used to reach a broad cross-section of the community. Each method captured different types of information and together provided a more complete understanding of transportation safety concerns across the island.

Project Website

A dedicated Safety Action Plan Website served as the central hub for project information, updates, and engagement tools. The website provided background on Vision Zero, explained the purpose of the Safety Action Plan, and linked residents to opportunities for participation, including the interactive mapping tool and community survey. The City also hosted a companion webpage that directed users to the engagement platform, ensuring accessibility through official City channels.

Key West Safety Action Plan Website
Link - Safety Action Plan | Key West, FL

Welcome!

Welcome to the site of the **City of Key West's Safety Action Plan Project**. This initiative has been created to ensure that the roads are safe and accessible to everyone living, working, or visiting Key West. The project focuses on using facts and real information with active participation and input from the Key West community. This project will produce a Safety Action Plan that will support the city's Vision Zero initiative, part of its broader **"Key West Forward"** strategy, which focuses on improving road safety and eliminating traffic-related fatalities and serious injuries.

About

The City of Key West's **Comprehensive Safety Action Plan** is a locally driven initiative that will help make the city's streets safer for everyone, eliminating traffic fatalities and serious injuries. The plan will draw from the City of Key West's Strategic Plan and Vision Zero principles. The project will use the state's crash database to analyze crash patterns and identify zones that are at high risk for crashes to identify high-risk locations. The project is also all

Interactive Mapping Tool

An interactive online mapping tool was developed allowing participants to report specific locations where they experienced safety concerns. Users could place markers, describe issues, and suggest potential improvements. This tool was particularly useful for capturing location-specific information such as near-misses, sight distance limitations, sidewalk gaps, driveway conflicts, and interactions involving e-bikes and pedestrians. The comments submitted through the mapping tool were detailed and spot specific, providing valuable qualitative insight. When reviewed alongside crash data and survey responses, mapping inputs helped highlight patterns and refine the list of locations warranting further analysis.

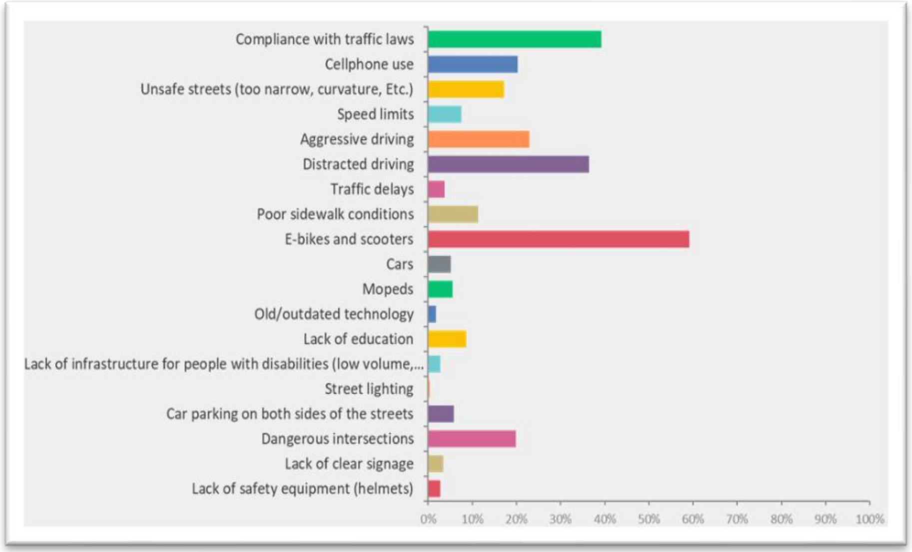
Feedback received from community on high-risk locations

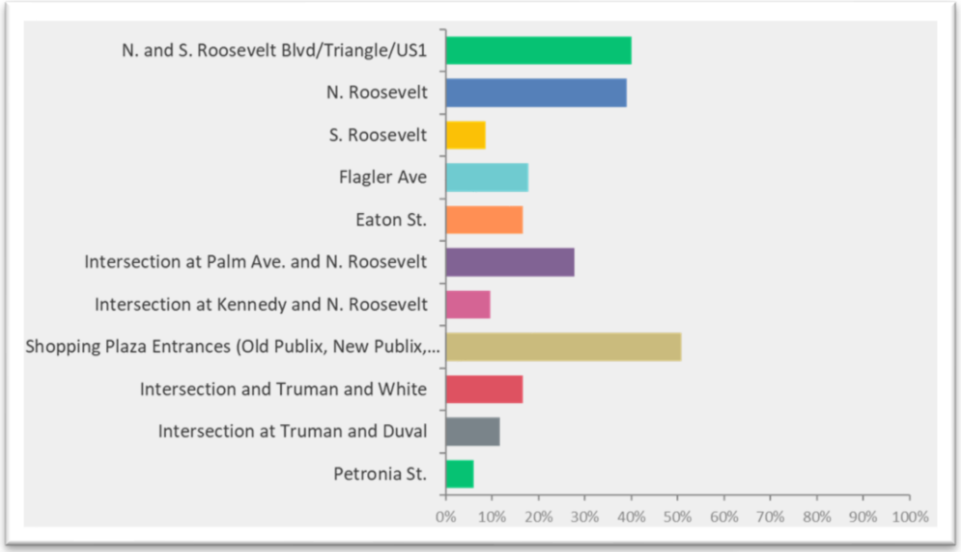
Community Survey

A citywide community survey was conducted to gather broader input on travel behavior, safety perceptions, and priorities for improvement. A total of 728 respondents participated in the survey, representing a range of ages, travel modes, and geographic areas within the city.

Survey respondents identified several corridors and intersections where they felt less comfortable traveling, including North Roosevelt Boulevard, the Triangle, Palm Avenue, Eaton Street, and Truman Avenue. Respondents also described common concerns related to yielding behavior, distracted and aggressive driving, turning conflicts, and the operation of e-bikes and scooters.

In addition to identifying concerns, the survey asked participants about potential solutions. Responses suggested support for a mix of strategies, including improved crossings, clearer signage and pavement markings, education and awareness campaigns, and targeted enforcement. Notably, many respondents reported experiencing near-misses or unsafe situations that were never formally reported, underscoring the importance of community input as a complement to crash data.



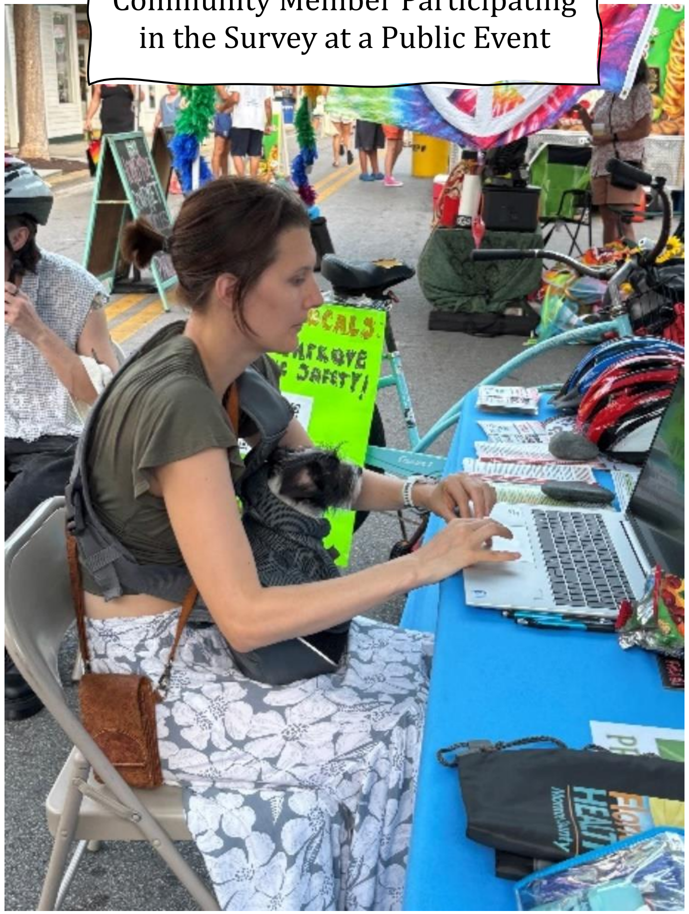


Left: Community-reported safety concerns, highlighting perceived contributors to unsafe travel such as speeding, aggressive driving, and micromobility interactions. **Right**: Locations most frequently identified by survey respondents as feeling unsafe, with concerns concentrated along North and South Roosevelt Boulevard and other high-activity corridors.

Public Events and In-Person Outreach

In-person outreach activities complemented online engagement and provided opportunities for direct interaction with community members. Safety Action Plan outreach booths were hosted at community events, including Pride Fest and Children's day, where safety education and helmet fittings were offered in partnership with local organizations. These events helped raise awareness of the Safety Action Plan, encouraged participation in the survey, and provided informal opportunities to hear concerns directly from residents and families. A second outreach event was planned during Children's Day, with a focus on youth bicycle safety and family-oriented engagement.

Community Input and Its Role in the Safety Action Plan


Community Member Participating in the Survey at a Public Event

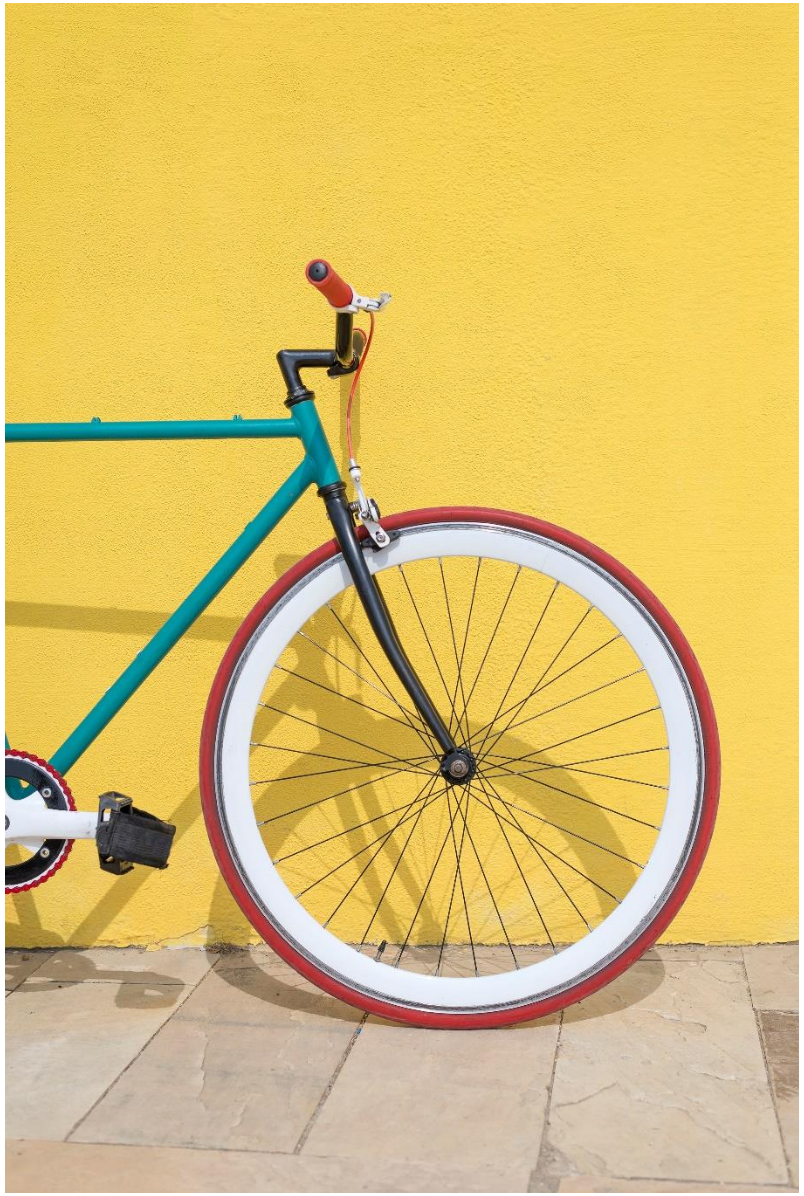
Across all engagement activities, several consistent themes emerged. Safety concerns were identified throughout the city rather than being limited to specific neighborhoods. Interactions involving pedestrians, bicyclists, e-bikes, scooters, and turning vehicles were frequently cited, particularly in areas with constrained street space and high activity levels. Speed and compliance were frequently cited by community members as influencing perceived safety conditions.

Community input highlighted locations where residents expressed perceived safety concerns that may otherwise have been overlooked due to having few or no documented crashes. Reports of near-misses, visibility challenges, and uncomfortable interactions emphasized the importance of perceived risk alongside crash data when evaluating safety needs. These observations aligned closely with patterns identified through crash analysis and field review, reinforcing the relevance of a Safe System approach that emphasizes speed management, visibility, and conflict reduction.

Community engagement informed each stage of the Safety Action Plan. Input from the Task Force, survey responses, interactive mapping comments, and in-person outreach helped validate technical findings, identify additional locations and behaviors of concern, and shape the development and prioritization of projects and strategies. By integrating community experience with crash data and transportation health considerations, the Safety Action Plan reflects both documented safety trends and everyday travel conditions, supporting informed implementation, funding decisions, and ongoing monitoring.

3 Transportation Health, Access and Safety Outcomes Framework

This chapter describes the framework used to understand transportation safety, access, and exposure in Key West. It explains how these factors are considered together to guide safety priorities and investment decisions.



3. TRANSPORTATION HEALTH, ACCESS, AND SAFETY OUTCOMES FRAMEWORK

Transportation safety is closely connected to community health, access, and overall quality of life. In Key West, where walking, bicycling, transit use, and shared mobility are common for daily travel, transportation conditions influence not only crash risk, but also access to jobs, services, housing, and social connections.

The Transportation Health, Access, and Safety Outcomes Framework defines how the City of Key West incorporates health, access, and exposure considerations into transportation safety planning and decision-making. The framework supports the City's Vision Zero goal by guiding how safety investments address locations and users that experience higher crash risk, greater exposure to traffic hazards, or barriers to safe mobility.

This framework integrates crash data, transportation system characteristics, and community input to support consistent, transparent, and data-informed safety decisions across the city.

Transportation Health in the Key West Context

Key West's physical, demographic, and economic context makes transportation health and access particularly important. As a compact island city with limited roadway space and high levels of pedestrian and bicycle activity, residents and workers are frequently exposed to traffic conflicts in close proximity to vehicles.

Several characteristics shape transportation health outcomes in Key West. A relatively high share of residents walk or bike to work, some households do not have access to a private vehicle, and a sizable portion of the population is older. In addition, many service-sector workers travel during non-traditional hours, increasing exposure during early morning, evening, and nighttime conditions.

Crash data shows that fatal and serious injury crashes are concentrated along corridors with high pedestrian and bicycle activity. These risks are often compounded by narrow streets, constrained sight distance, limited lighting, curbside activity, and seasonal congestion associated with tourism and special events. In this context, improving transportation health requires strategies that reduce exposure to risk, manage speed, and improve access to safe and predictable travel options.

Framework for Improving Transportation Health and Access

The City's Transportation Health Framework provides a structured method for identifying safety needs, prioritizing investments, and evaluating outcomes. The framework emphasizes early identification of locations where crash risk, exposure, and access challenges overlap and supports a range of responses, from near-term operational changes to longer-term capital improvements.

To operationalize transportation health considerations, the **INCLUDE** model was developed, organizing key factors into six complementary dimensions.

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Inclusive Mobility Needs

Designs streets to safely serve people of all ages, abilities, and travel modes, including pedestrians, bicyclists, transit users, and people with disabilities.

Network Accessibility

Prioritizes safe, continuous connections to key destinations such as jobs, schools, healthcare, and transit.

Cost-Sensitive Opportunity

Focuses on safety strategies that deliver meaningful risk reduction relative to cost, while recognizing funding limitations.

Localized Responsiveness

Adapts safety solutions to local conditions, including land use, tourism activity, street geometry, and operational constraints.

User-Centered Design

Improves clarity and predictability so users can make safe decisions with less confusion and error.

Dependability and Evaluation

Tracks performance over time to assess outcomes and guide continuous safety improvements.

Transportation Health and Safety Convergence Areas

Using the INCLUDE Model as a guiding framework, the Safety Action Plan identifies Transportation Health and Safety Convergence (e) Zones. These zones represent locations where multiple factors overlap, including higher crash severity, greater reliance on non-driving modes, and limited access to supportive infrastructure. While the zones are helpful planning tools, they do not represent regulatory classifications. The convergence area highlights locations where system-level changes can deliver meaningful safety benefits. This will

Map showing census block groups identified as underserved based on access to transportation and mobility-related indicators. Highlighted areas indicate locations with comparatively higher needs, informing equity-focused safety investments and prioritization across the city.

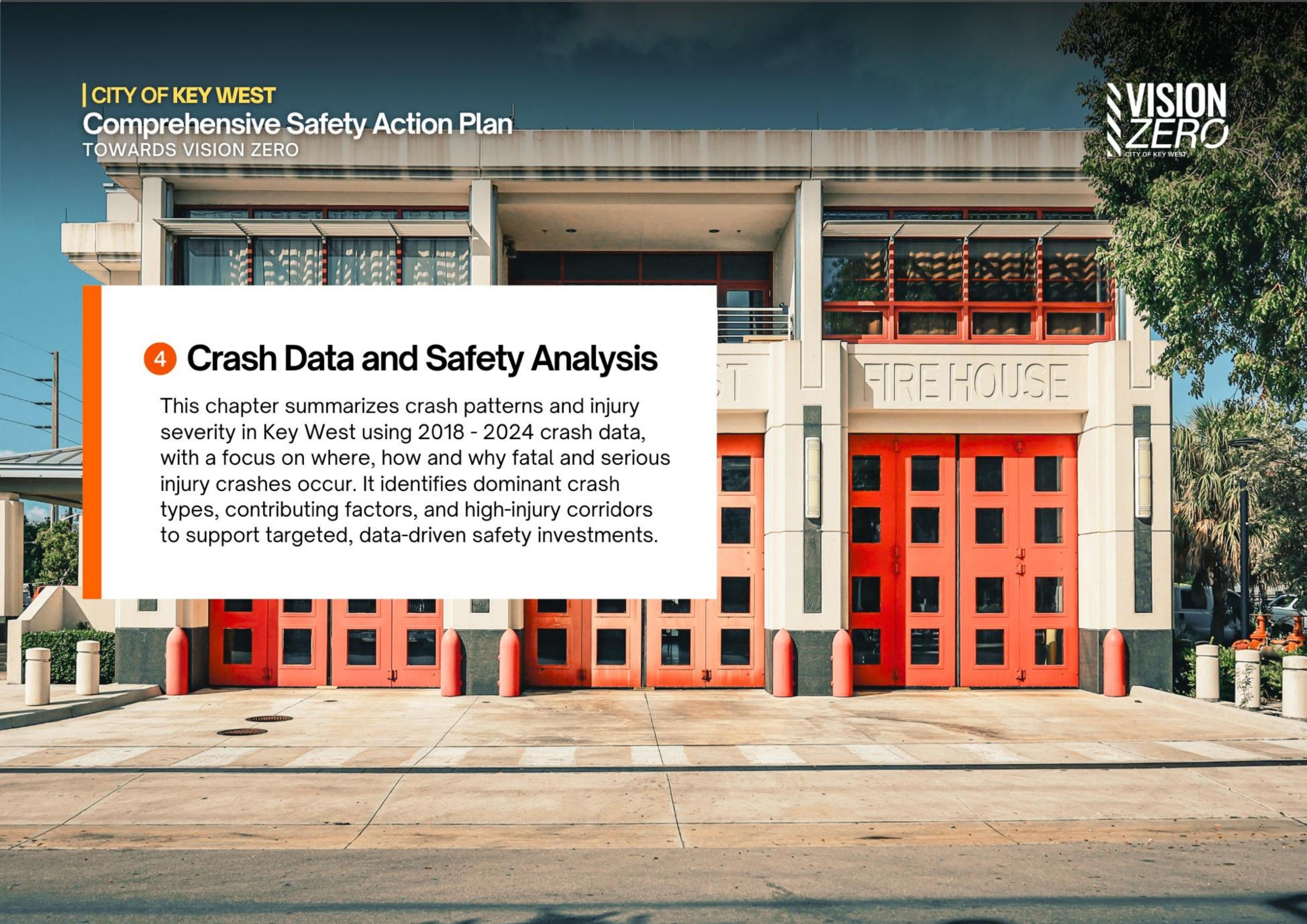
function as a planning tool that helps focus attention on locations where coordinated strategies can improve safety for daily travel outcomes.

Application Within the Safety Action Plan

The Transportation Health, Access, and Safety Outcomes Framework informs each stage of the Safety Action Plan. The framework shapes how safety needs are identified, how projects are developed, and how priorities are established.

When evaluating safety actions, the framework supports consideration of crash severity patterns, exposure levels for people walking and bicycling, infrastructure continuity, and operating context. Projects and strategies that address multiple INCLUDE dimensions receive greater consideration during prioritization, particularly when they support predictable interactions and reduce the likelihood of severe outcomes.

As projects advance and new data becomes available, the City can update transportation health indicators and convergence areas to reassess priorities. This approach allows the Safety Action Plan to remain responsive to changing conditions while maintaining a clear and consistent decision-making structure.



4 Crash Data and Safety Analysis

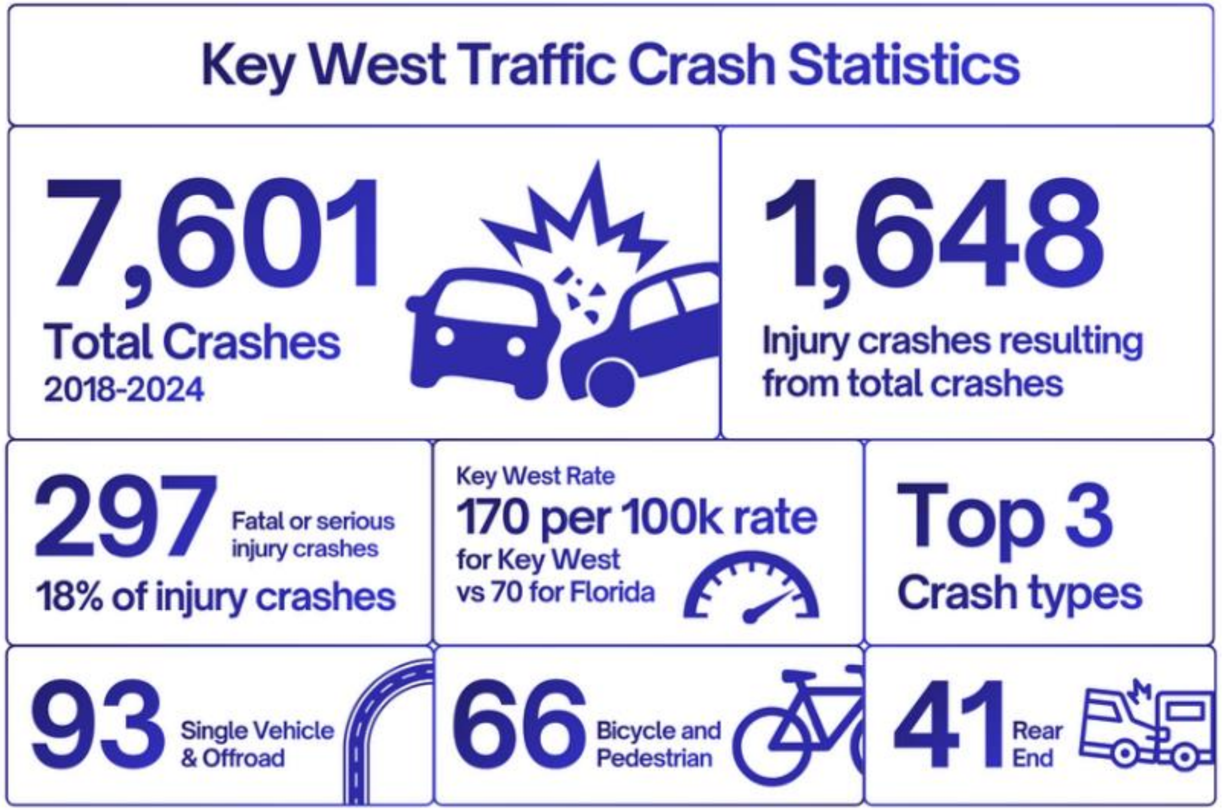
This chapter summarizes crash patterns and injury severity in Key West using 2018 - 2024 crash data, with a focus on where, how and why fatal and serious injury crashes occur. It identifies dominant crash types, contributing factors, and high-injury corridors to support targeted, data-driven safety investments.

4. Crash Data and Safety Analysis

Crash Data Overview

The crash analysis is based on reported crash data collected between 2018-2024 using Signal4Analytics[1], a Florida-based crash database. During this seven-year period, 7,601 crashes were reported citywide, including 1,648 crashes that resulted in injuries. Of these injury crashes, approximately 18 percent involved a fatal or serious injury (**KSI**), which are coded in the crash data as Fatal and Incapacitating Injury respectively.

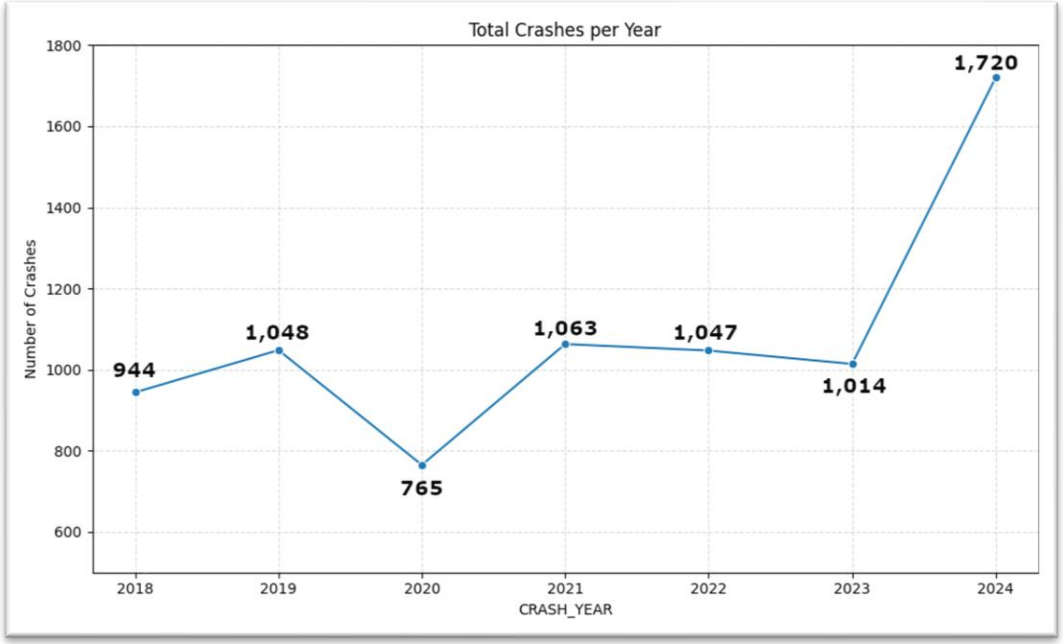
Over the years 2023-2025, Key West's fatal and serious injury crash rate per 100k residents is more than four times the statewide average[2], highlighting the severity of safety outcomes despite the city's relatively small size.



[1] Florida Traffic Safety Dashboard - S4Analytics
[2] Comparisons are based on resident population and do not account for seasonal visitor volumes or tourism-related exposure, which may influence comparative rates.

Over this three-year period, Key West experienced 189 KSI crashes with a population of 25,240, resulting in a rate of 249.6 KSI crashes per 100,000 residents. In comparison, Florida recorded 42,136 KSI crashes over the same period with a population of approximately 23.3 million, corresponding to a rate of 60.3 KSI crashes per 100,000 residents. These figures, based on Signal4Analytics crash data and U.S. Census population estimates, highlight the disproportionate severity of traffic safety outcomes in Key West.

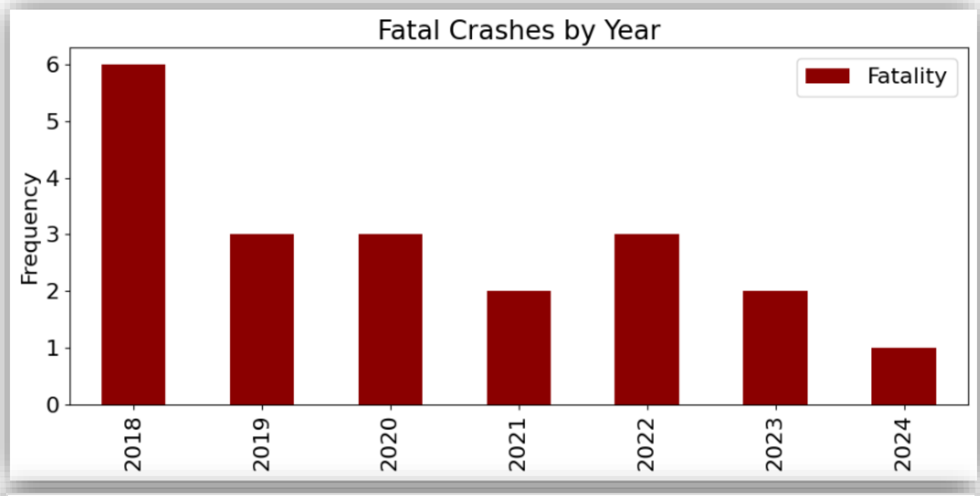
Annual Crash Data (2018-2024)

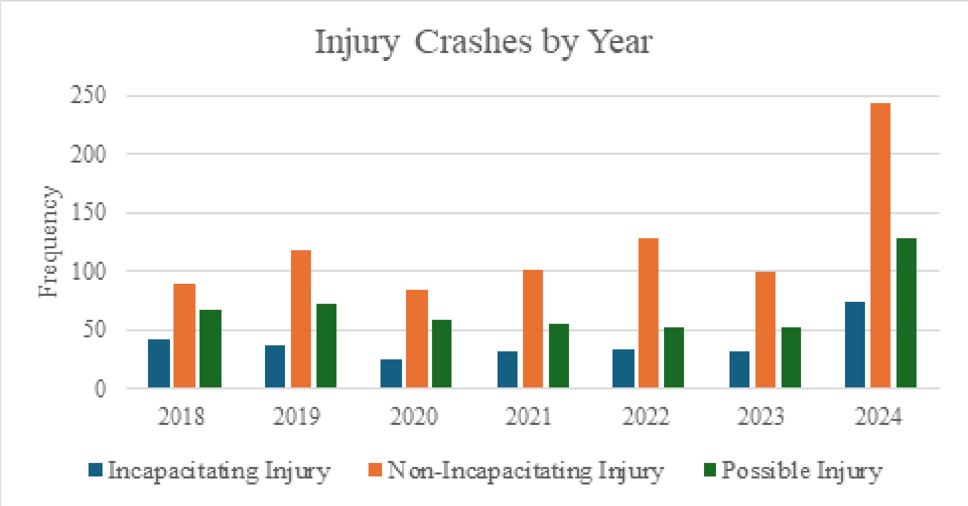


Annual crash totals (shown in the figure to the right) remain relatively stable from 2018 through 2019, followed by a notable decline in 2020 that coincides with reduced travel during the COVID-19 pandemic. Crash activity rebounded beginning in 2021 and remained near pre-pandemic levels through 2023. In 2024, total reported crashes increased substantially, reflecting a return to full tourism activity, higher travel volumes, and evolving travel behavior. These year-to-year fluctuations provide important context but do not alter the underlying safety challenge: KSI continue to occur at a consistently high rate.

These trends reflect the unique operating context of Key West. The city's compact street network, heavy reliance on walking, bicycling, and micromobili
interactions among users within constrained space. Within this environment, certain crash types consistently result in the most severe outcomes. Singl
largest share of fatal and serious injuries, followed by bicycle and pedestrian crashes and rear-end collisions.

Table and figures below summarizes systemwide crash types ranked by the number of fatal and serious injury crashes, providing the foundation for the



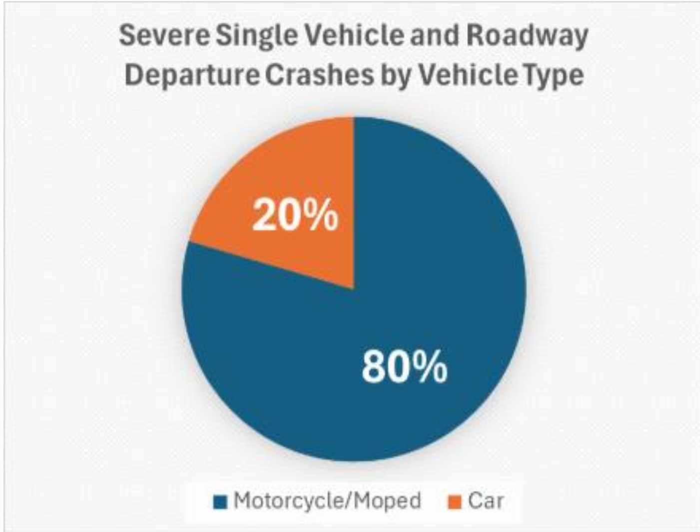


Crash Type	KSI Crashes	Total Crashes
Single Vehicle	64	436
Rear End	41	1214
Bicycle	40	403
Off Road	29	501
Pedestrian	26	109
Left Entering	18	213
Right Angle	16	373
Rollover	14	100
Parked Vehicle	12	2426
Left Leaving	10	140
Other	7	141
Same Direction Sideswipe	6	380
Left Rear	5	138
Head On	3	79
Opposing Sideswipe	3	103
Right/Through	2	60
Unknown	1	121
Animal	0	3
Backed Into	0	653
Right/U-Turn	0	0
Right/Left	0	8
Grand Total	**297**	**7601**

Figures show annual crash trends by severity. While fatal crashes show a decreasing trend, all other injury crash severities show an increasing trend. Table shows crash types ranked by number of fatal and serious injury crashes. The top five crash types, including single-vehicle and off-road crashes, bicycle and pedestrian crashes, and rear-end crashes account for 68% of all fatal and serious injury crashes and 35% of total crashes between 2018-2024

Single Vehicle and Offroad Crashes

Single-vehicle and off-road (roadway departure) crashes represent the largest share of fatal and serious injury crashes in Key West



...ure) crashes that involved motorcycle and moped.

Single-vehicle and off-road (roadway departure) crashes frequently involve loss of control and are strongly influenced by the city's tourism activity and widespread use of mopeds and motorcycles.

Crash records show a pattern of contributing factors, including impairment, rider inexperience, and nighttime conditions. These crashes often occur outside of traditional intersections and reflect situations where operating speed, roadway geometry, and user behavior interact in ways that increase injury severity.

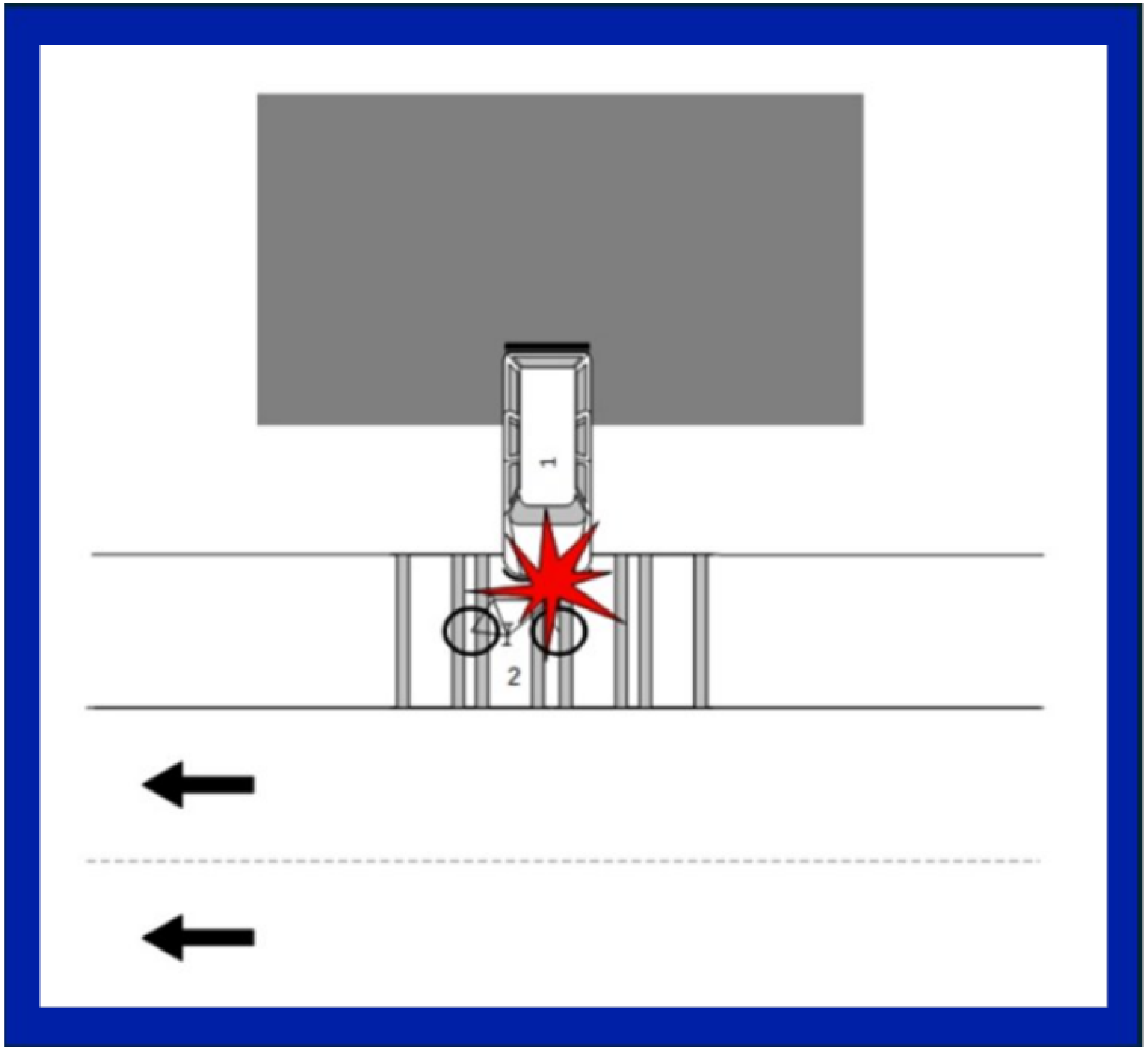
Bicycle and Pedestrian Crashes

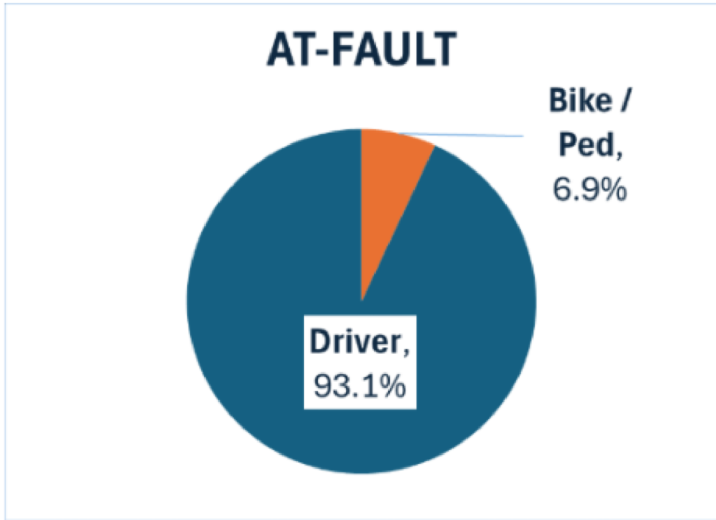
Vulnerable road users experience a disproportionate share of fatal and serious injuries in Key West.

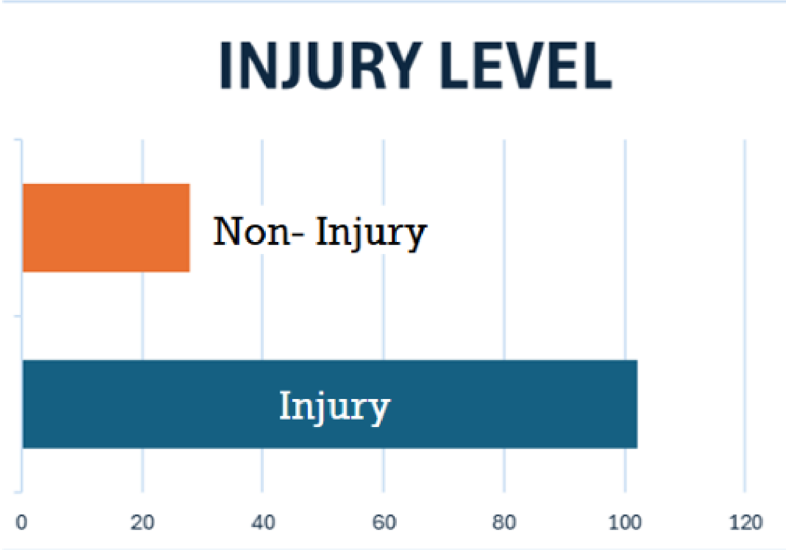
Bicycle and pedestrian crashes account for approximately one-quarter of fatal and serious injury crashes across the network, while representing only about eight percent of total reported crashes. This imbalance highlights the elevated injury risk faced by vulnerable road users (VRU) in Key West.

A substantial concentration of severe bicycle and pedestrian crashes occurs along N Roosevelt Boulevard, where available data indicates a crash pattern emerging at driveway crossings. At these locations, turning vehicles fail to yield to people walking or bicycling, creating repeated conflict points along the corridor. This pattern appears in 130 crashes and resulted in 102 injury crashes, including 14 fatal or serious injuries (KSI). Crash reports identify motorist contributing actions in approximately 93 percent of these reported incidents.

Additional clusters of severe bicycle and pedestrian crashes occur in Old Town, particularly along Eaton Street, Duval Street, and Greene Street, where high pedestrian activity, turning movements, and constrained space overlapping. In these areas, high pedestrian activity, frequent turning movements, and limited street space combine to increase the likelihood of severe outcomes.







Recurrent pattern of bicycle and pedestrian crashes along N Roosevelt Blvd observed. Drivers performed the contributing action for 93% of these crashes

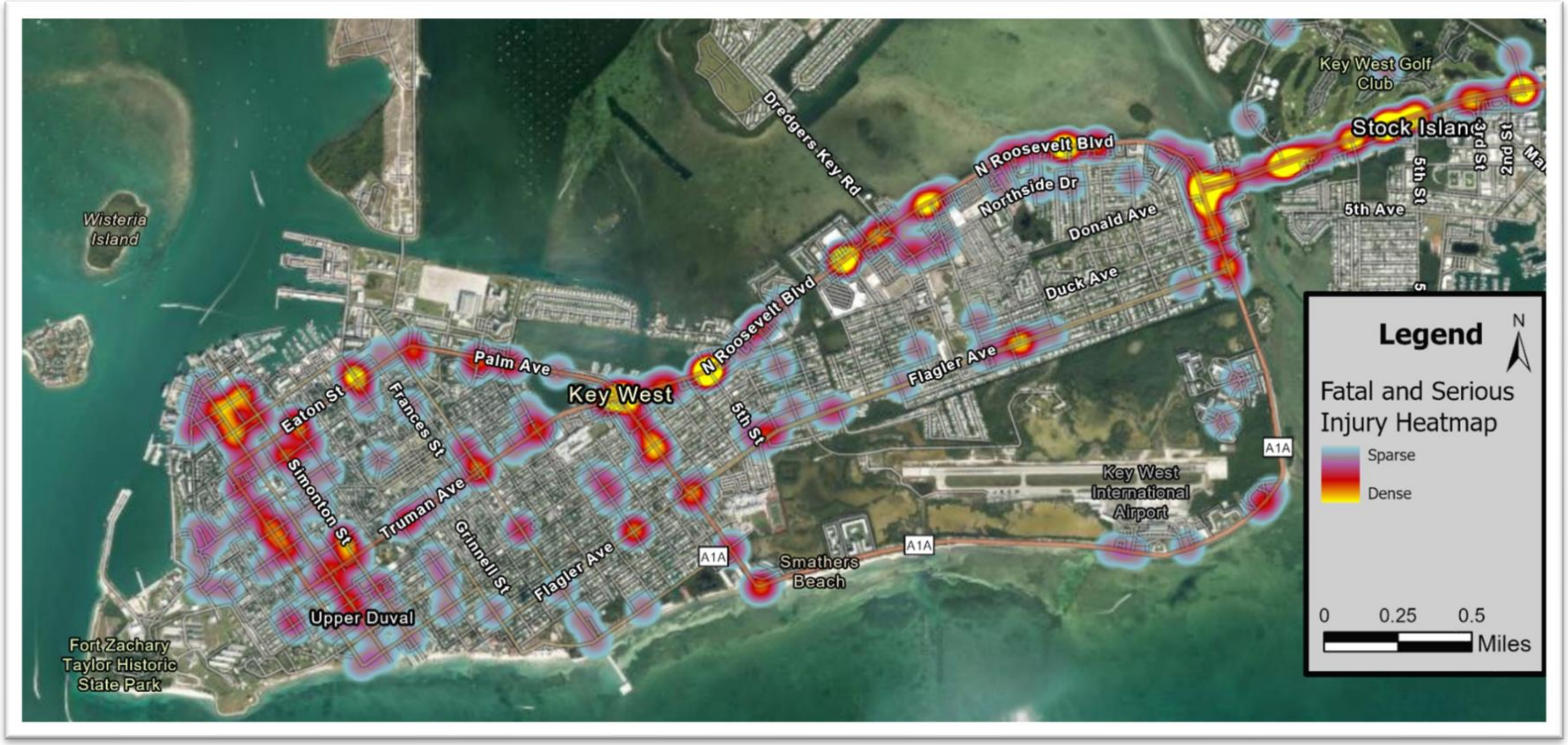
Rear End Crashes

Rear-end collisions form a critical component of Key West's crash profile. Between 2018 and 2024, more than 1,200 rear-end crashes were reported, of which 41 resulted in fatal or serious injuries. Interestingly, less than half of rear-end crashes occurred within 250 feet of an intersection, indicating that the problem is not confined to just signalized intersections. Instead, frequent driveway access points along North Roosevelt generate turbulence in the traffic stream, as turning vehicles force abrupt braking and create midblock conflicts. In combination with congestion, short following distances, and distracted driving, these access-related maneuvers significantly elevate crash risk out

The maps shows locations of rear end crashes by injury severity

The KSI crashes are not evenly distributed across the transportation network. Instead, they cluster in locations where higher traffic volumes, turning movements, and pedestrian or bicycle activity overlap. These areas often support multiple functions, including through travel, local access, curbside activity, and crossings, which increases conflict potential.

The figure below shows fatal and serious injury (KSI) crashes concentrate along key corridors, including Overseas Highway, North Roosevelt Boulevard, and 1st Street. Prominent hot spots also appear in areas such as the Triangle and Old Town, where constrained right-of-way and multimodal activity create complex operating environments.

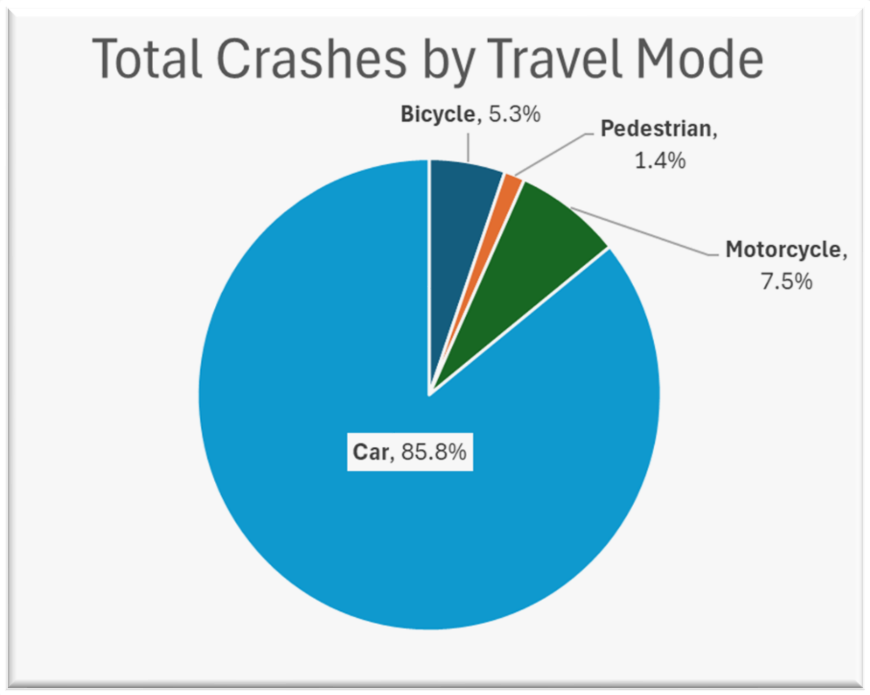


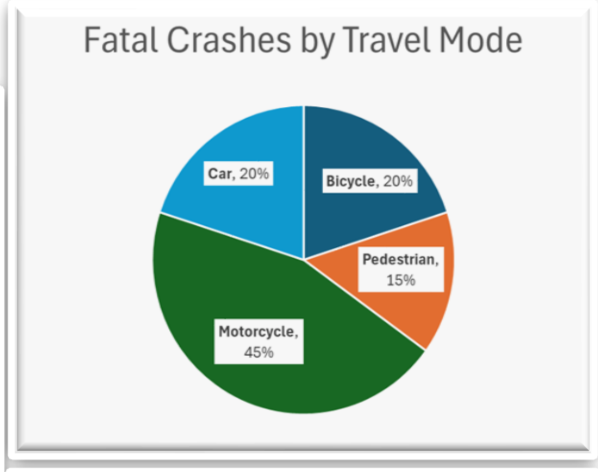
Heat map of fatal and serious injury crashes

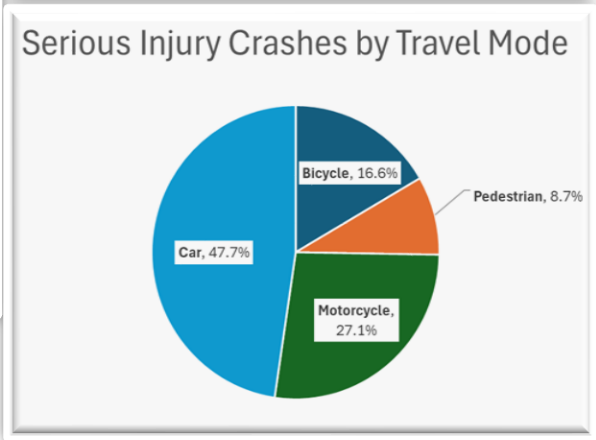
Crashes by Mode and Severity

Crash severity varies substantially by travel mode. People walking and bicycling represent a smaller share of total crashes (8%), but a higher share of fatal and serious injury crashes (26%). This pattern reflects the greater physical vulnerability of these users when conflicts occur and is consistent with national and statewide trends.

These findings reinforce the importance of strategies that reduce conflict severity, manage speed, and improve predictability for all users, particularly in areas with high pedestrian and micromobility activity.







Key Contributing Factors

Crash data and narrative review indicate that fatal and serious injury crashes in Key West are often associated with a combination of contributing factors rather than a single cause. Several patterns emerge across locations and modes.

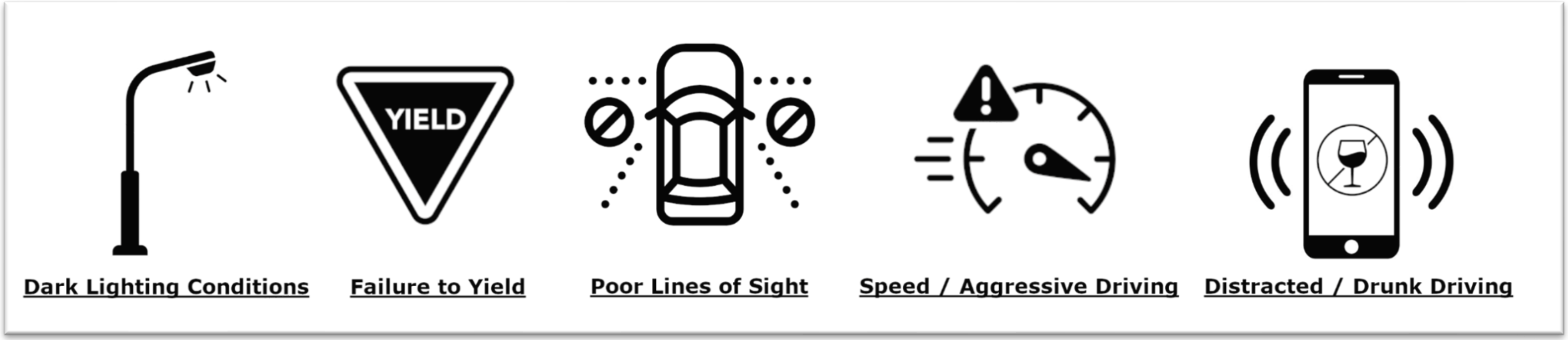
Speed-related factors are present in a notable share of KSI crashes, even in areas with relatively low posted speed limits. In the Key West context, speed-related risk often reflects inconsistent speeds, acceleration between intersections, and limited tolerance for error in constrained environments rather than sustained high-speed travel.

Non-compliance with yielding is another common contributing factor, particularly during turning movements at intersections and driveways. These crashes frequently involve interactions between vehicles and people walking or biking and are influenced by visibility constraints, complex movements, and competing demands for limited space.

Visibility limitations, including parked vehicles, curbside activity, street geometry, and lighting conditions, contribute to uncertainty and reduced reaction time. Distraction and impairment also appear in a subset of KSI crashes, particularly during nighttime hours.

Taken together, these factors point toward system-level challenges related to street design, operating context, and speed management rather than isolated behavioral issues.

Contributing factors in fatal and serious injury crashes



High Injury Network

The Safety Action Plan identifies a High Injury Network (HIN) (shown in figure below) to focus attention on locations where fatal and serious injury crashes concentrate. The HIN represents a limited portion of the transportation network that accounts for a disproportionate share of KSI crashes in Key West.

High Injury Network Identified Based on Crash Data (2018-2024)

The High Injury Network was identified using a seven-year rolling crash dataset and spatial concentration analysis. Corridors were selected based on proportional contribution to fatal and serious injury crashes relative to total network mileage. The HIN is intended as a prioritization tool and does not imply deficiency or non-compliance with design standards.

	Full Network	High-Injury Network	HIN % of Full Network
Centerline Miles	103.7	15.1	14.5%
All Collisions	7601	3372	44.4%
KSI (All Modes)	297	199	67.0%
PED KSI	27	22	81.5%
Bike KSI	49	32	65.3%
Motorcycle KSI	163	107	65.6%

The HIN corridors serve multiple roles within a constrained right-of-way. These streets support through traffic, local access, pedestrian and bicycle travel, transit activity, and curbside functions. The overlap of these uses increases turning movements, multimodal interactions, and competing demands for space, which contributes to elevated crash risk and injury severity.

The High-Injury-Network accounts for only 14.5% of the total roadway miles within Key West but accounts for nearly half of all crashes, and approximately two thirds of all fatal and serious injury crashes, shown in table. This presents a strong opportunity for targeted projects that can make a large difference while focusing on a relatively smaller share of the road network.

High Injury Network Corridors Identified

N Roosevelt Boulevard, S Roosevelt, Truman Ave, Eaton St., Flagler Ave., Simonton St., Duval St, Whitehead St. and the Overseas Highway – aligns with locations identified through community engagement

Data Considerations

The crash analysis presented in this Safety Action Plan is based on reported crash records from 2018–2024 obtained through Signal4Analytics. This dataset provides a consistent basis for evaluating fatal, serious injury, and reported crashes across the city; however, several data considerations should be recognized when interpreting results.

Crash data reflects only incidents formally reported and documented by law enforcement. Crashes that meet the state reporting threshold are consistently captured, while minor injury crashes, single-bicycle falls, and near-miss events are less likely to be recorded. In a compact, lower-speed environment such as Key West, where short trips and micromobility use are common, some incidents may not meet reporting thresholds or may be resolved without police documentation. Reported crash data therefore may underrepresent lower-severity conflicts and non-motorized incidents.

Contributing factors such as speed involvement, distraction, impairment, or yielding behavior are recorded based on officer assessment and may not fully capture environmental or operational conditions influencing crash risk.

E-bikes are not recorded as a distinct category in the statewide crash database and are typically classified within the broader bicycle category. This limits the ability to distinguish between conventional and electric-assist bicycles in trend analysis. Given the growing presence of e-bikes in Key West, particularly among visitors and service-sector workers, this constraint limits detailed mode-specific evaluation. Some bicycle-related crashes may also go unreported if injuries are not immediately identified.

Tourism-driven travel patterns further affect interpretation. Visitor volumes fluctuate seasonally and during major events, altering traffic mix, micromobility use, and pedestrian activity. Exposure levels vary throughout the year and are not fully reflected in resident-based population metrics. Crash rates calculated using static population estimates may therefore not fully represent the dynamic user environment.

Year-to-year comparisons should also be interpreted cautiously. Travel behavior and volumes shifted during the COVID-19 period. A seven-year dataset was used to reduce short-term variation; however, changes in visitor activity and mode share continue to influence annual totals.

To address these considerations, the Safety Action Plan integrates field observations, stakeholder input, and community-reported concerns alongside reported crash data to provide a more comprehensive understanding of safety conditions across the city.

5 Recommended Programs and Policy Updates

This chapter presents existing policies, guidelines, and standards that influence transportation safety and evaluates how they support Vision Zero and Safe System principles. It identifies policy strengths, gaps, and opportunities to better align street design, operations, enforcement, and emerging mobility with the Safety Action Plan's implementation.

transportation system in response. The effectiveness of safety investments therefore depends not only on identifying high-risk locations, but also on whether existing policies enable timely, flexible, and context-sensitive action. In Key West, transportation conditions reflect a compact street network, high pedestrian and micromobility activity, constrained right-of-way, and overlapping travel demands. Policies play a central role in determining how speed is managed, how crossings are designed, how curb space is allocated, and how emerging modes are accommodated in these environments.

The review included the following categories of documents:

Federal guidance

- FHWA Safe System Approach framework
- FHWA Vision Zero implementation guidance
- FHWA Proven Safety Countermeasures
- Manual on Uniform Traffic Control Devices (MUTCD)

Local documents

- City of Key West Comprehensive Plan and Transportation Elements
- Land Development Regulations related to access, parking, curb use, and visibility
- Existing traffic engineering practices and operational procedures
- Local ordinances governing micromobility, golf carts, parking, and right-of-way use

State and regional documents

- Florida Department of Transportation (FDOT) Design Manual
- FDOT Plans Preparation Manual
- FDOT Speed Zoning and Speed Study guidance
- FDOT Access Management standards
- Florida Statutes related to pedestrian, bicycle, micromobility, and golf cart operations

Each document was reviewed to determine how it applies to the operating conditions present in Key West and how it supports or constrains safety improvements at locations with documented crash risk.

Policies and standards were assessed based on their ability to:

- support context-based speed management,
- accommodate high pedestrian, bicycle, and micromobility activity,
- function within constrained right-of-way conditions,
- allow proactive and near-term safety improvements, and
- respond to crash patterns identified in the data.

The review emphasized how policies are implemented in practice, particularly on corridors with overlapping travel modes, frequent driveway access, and high turning activity.

Findings and Gaps

The policy review indicates that existing local, state, and federal guidance provides tools that can support safer street design and operations in Key West. However, application of these tools remains inconsistent and does not fully reflect the operating conditions associated with fatal and serious injury crashes.

FDOT design and speed-setting guidance allows for context-sensitive approaches, but local implementation on state-maintained corridors often applies state standards that may not always reflect the local operating context.. This limits the routine use of lower operating speeds, traffic calming, and enhanced pedestrian crossings in areas with high pedestrian and micromobility activity.

Local codes and operational practices address access, parking, and curbside activity, but do not consistently include visibility, daylighting, or pedestrian-scale design standards. As a result, crash patterns related to turning movements, driveway conflicts, and constrained sight distance persist.

Micromobility and golf cart regulations focus primarily on where devices may operate rather than on operating speed, visibility, fleet oversight, or user education. This gap is particularly relevant in tourist-oriented areas with high volumes of short trips and unfamiliar users.

Enforcement, education, and data collection efforts occur across multiple departments, but formal mechanisms to coordinate these activities around shared safety performance objectives remain limited.

These policy gaps directly align with the crash patterns identified in the crash analysis, including vulnerable road user injuries, midblock conflicts, nighttime crashes, and speed-related severity.

Policy Actions and Recommendations

Based on the review, the Safety Action Plan identifies a set of targeted policy actions[2], presented in table below, intended to strengthen alignment between safety goals, observed crash risk, and implementation tools.

Table 1. ***Policy Gaps and Recommended Actions***

Focus Area	Gap / Issue	Recommended Action	Lead / Partner Agency	Implementation Mechanism	Timeframe	Expected Outcome / Vision Zero Link
Speed Management	No formal citywide speed management framework	Adopt a *Vision Zero Speed Management Ordinance* establishing context-based target speeds (20 mph downtown, residential) and procedures for speed setting and review	City Commission / Public Works / FDOT Dist VI	Ordinance update	Short-term	Establishes measurable, enforceable target speeds and aligns with Vision Zero.
	No standardized traffic-calming process	Develop a *Traffic Calming Design Manual* with approved treatments (speed humps, curb extensions, raised crosswalks, mini-roundabouts).	Public Works / Engineering	Design manual supplement	Medium-term	Institutionalizes consistent, Safe System–based design.
	Limited speed monitoring	Create an *Annual Speed and Crash Performance Report* integrating KWPD data and field studies.	KWPD / Planning Dept.	Administrative reporting program	Medium-term	Enables data-driven evaluation of speed-reduction impacts.
	Fragmented jurisdictional control	Establish a *City–FDOT Speed Coordination MOU* for U.S. 1 and N. Roosevelt Blvd.	City Manager / FDOT Dist VI	Interagency agreement	Long-term	Aligns local and state speed setting and enforcement.

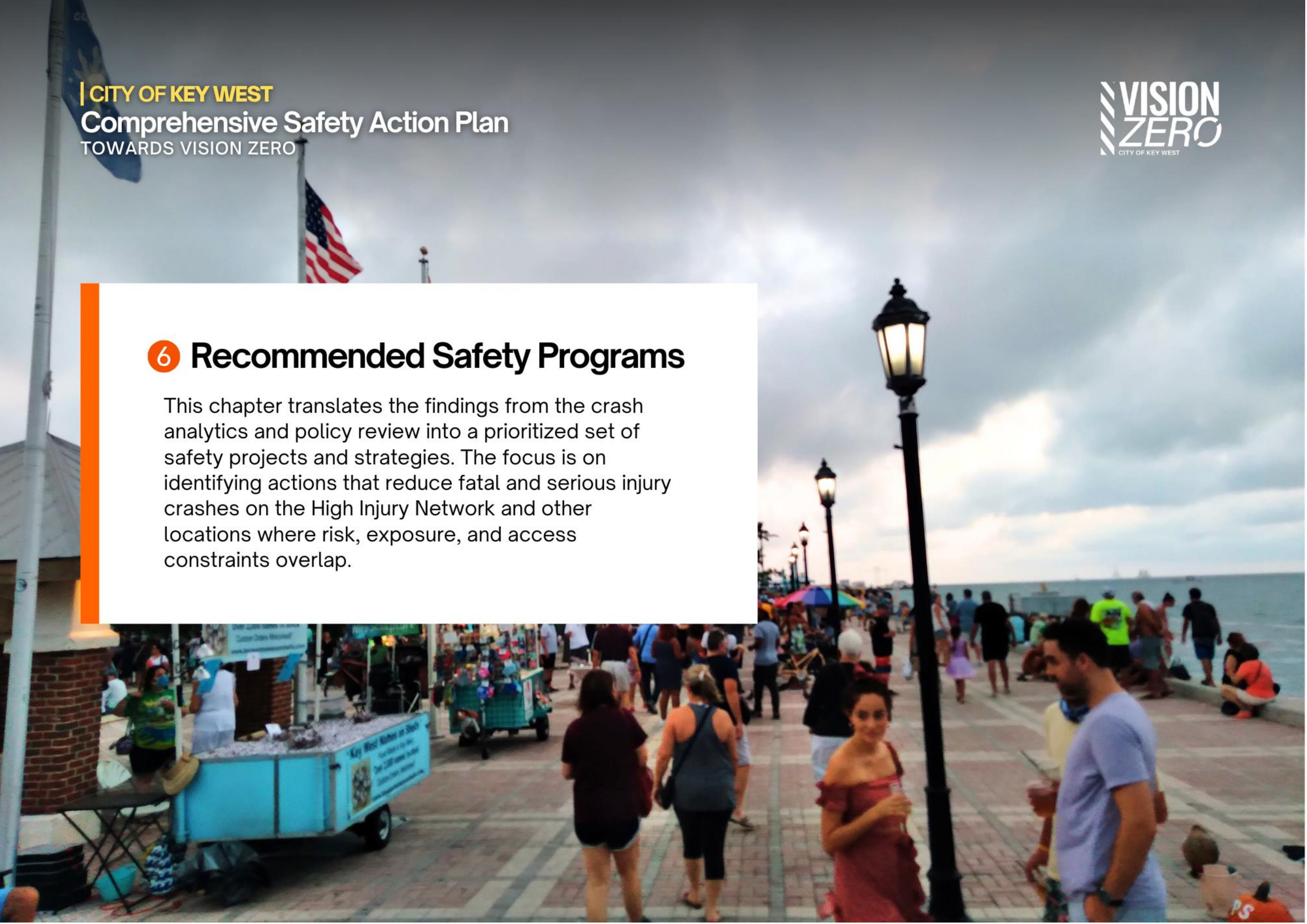
[2] All policy actions are conceptual and subject to legal review, public process, and formal adoption procedures prior to implementation.

Focus Area	Gap / Issue	Recommended Action	Lead / Partner Agency	Implementation Mechanism	Timeframe	Expected Outcome / Vision Zero Link
Street Design and Crossings	Dependence on FDOT standards without local supplement	Adopt a *Complete Streets Design Supplement* to the FDOT Design Manual specifying protected bike lanes, raised crosswalks, narrower lane widths, intersection treatments,, and pedestrian-scale lighting.	Public Works / Engineering	Design guideline update	Short-term	Embeds Vision Zero-oriented design in local projects.
	Unstandardized pedestrian crossing upgrades	Implement a *Crosswalk Enhancement Program* (RRFBs, LPIs, median refuges, high-visibility markings) on high-injury corridors.	Public Works / Planning Dept. / FDOT	Capital program	Medium-term	Reduces pedestrian crash risk at intersections.
	Lack of intersection visibility standards	Introduce *Daylighting and Corner Visibility Standards* within the Code of Ordinances (Ch. 70).	City Commission / Public Works	Ordinance amendment	Short-term	Improves sight distance and pedestrian safety.
Signals and Traffic Control	No policy on LPIs or turn restrictions	Adopt a *Leading Pedestrian Interval and No-Turn-on-Red Policy* for urban and school zones.	Public Works / FDOT Traffic Ops	Administrative policy	Short-term	Enhances pedestrian priority and crossing safety.
	Outdated signal timing on state corridors	Pilot *Adaptive Signal Timing* along N. Roosevelt Blvd with pedestrian recall phases.	FDOT Dist VI / City ITS	Technology pilot project	Medium-term	Improves efficiency and reduces conflicts with vulnerable users.

Focus Area	Gap / Issue	Recommended Action	Lead / Partner Agency	Implementation Mechanism	Timeframe	Expected Outcome / Vision Zero Link
Micromobility and Golf Carts	Limited regulation beyond sidewalk ban	Enact a *Comprehensive Micromobility Ordinance* defining operating zones, speed limits (≤ 15 mph shared spaces), helmet, lighting requirements, and education expectations.	City Commission / KWPD	Ordinance adoption	Short-term	Reduces micromobility crash risk and improves user compliance.
	Lack of fleet oversight and education	Establish a *Micromobility Fleet Permit Program* requiring operator training, insurance, and data sharing.	Public Works / Car-Free Key West / Vendors	Licensing program	Medium-term	Improves accountability and data for safety evaluation.
	Low awareness among tourists and workers	Launch a *"Ride Right Key West" Education Campaign* in English, Spanish, and Creole targeting e-bike and scooter users.	City Comms Office / Keys Immigrant Coalition / Schools	Public education initiative	Short-term	Promotes safe behaviors and equitable outreach.
Lighting and Nighttime Visibility	No codified illumination standards	Update *City Lighting Standards* to require pedestrian-scale lighting (12–16 ft poles) at crossings and transit stops.	Engineering / Planning Dept.	Design standard update	Short-term	Enhances visibility and reduces nighttime crashes.
	Insufficient lighting on arterial corridors	Implement a *Lighting Retrofit Program* on N. Roosevelt Blvd and Flagler Ave based on crash hotspot analysis.	Public Works / FDOT	Capital retrofit program	Medium-term	Improves pedestrian and bicyclist safety after dark.

Focus Area	Gap / Issue	Recommended Action	Lead / Partner Agency	Implementation Mechanism	Timeframe	Expected Outcome / Vision Zero Link
Transportation Health and Accessibility	No transportation health and accessibility based project prioritization	Introduce a Transportation Health and Accessibility *Scoring Matrix* using Social Vulnerability Index and crash data for project selection.	Planning Dept. / Public Works	Administrative tool	Medium-term	Directs resources to high-risk and underserved areas.
	Limited focus on Safe Routes to School	Develop *Safe Routes Design Packages* for schools (raised crosswalks, signage, LPIs, education).	Public Works / School District / KWPD	Program development	Medium-term	Improves child safety and supports Vision Zero youth goals.
	Need for inclusive outreach	Launch a *Community Ambassador Program* with churches and schools for helmet and bike-light campaigns.	City Comms Office / Car-Free Key West	Partnership program	Short-term	Builds grassroots ownership of safety initiatives.
Enforcement and Data Integration	STAR Night and HVE campaigns operate independently	Formalize a *Vision Zero Enforcement Data Partnership* between KWPD, Public Works, and Planning for quarterly data sharing.	KWPD / Public Works / Planning	Inter-departmental agreement	Short-term	Enables coordinated data-driven enforcement.
	No automated enforcement authority	Pursue FDOT-approved *Automated Enforcement Pilot* for school zones and high-crash corridors, subject to state authorization	City Manager / FDOT Dist VI	Pilot program	Long-term	Supplements officer presence and reduces serious speeding.
	Limited public transparency	Publish an *Annual Traffic Enforcement and Education Report* summarizing citations and outreach.	KWPD / City Comms Office	Reporting requirement	Medium-term	Builds accountability and public support for Vision Zero.

Focus Area	Gap / Issue	Recommended Action	Lead / Partner Agency	Implementation Mechanism	Timeframe	Expected Outcome / Vision Zero Link
Policy Integration and Governance	No formal Vision Zero ordinance or working group	Adopt a *Vision Zero Policy Ordinance* committing to zero fatalities by 2035 and creating an inter-departmental working group.	City Commission / City Manager	Ordinance adoption	Short-term	Establishes official governance for Vision Zero implementation.
	Integration and Governance No standardized use of safety performance metrics across projects	Adopt a Citywide Safety Performance Framework specifying LTS as the primary active-transportation metric, VMT as a supporting system indicator, and LOS as supplemental context only	Planning Dept. / Public Works	Administrative policy	Short-term (0–12 mo)	Ensures consistent, safety-focused decision-making across planning, design, and capital prioritization
	Fragmented review process for projects	Require a *Safety Impact Review Checklist* for all major capital projects and plan updates.	Planning Dept. / Public Works	Administrative policy	Medium-term	Ensures that all projects consider safety outcomes.
	Limited regional coordination	Execute a *City–County–FDOT Safety MOU* for shared corridors and crash data analysis.	City Manager / FDOT / Monroe County	Inter-agency agreement	Long-term	Strengthens regional consistency in speed setting and design.



6 Recommended Safety Programs

This chapter translates the findings from the crash analytics and policy review into a prioritized set of safety projects and strategies. The focus is on identifying actions that reduce fatal and serious injury crashes on the High Injury Network and other locations where risk, exposure, and access constraints overlap.

6. RECOMMENDED SAFETY PROJECTS

Projects were developed to respond directly to documented crash patterns, systemic risk factors, and policy gaps identified earlier in the plan. The intent is to define a realistic, implementable roadmap that balances safety impact with delivery feasibility.

Projects and strategies address four broad categories of need:

- locations with high concentrations of fatal and serious injury crashes
- corridors with systemic risk factors even where crash history is moderate
- policy and operational gaps that contribute to crash patterns observed in the data
- concerns raised through stakeholder and community input

Projects and strategies were identified using three primary inputs:

1. **High Injury Network (HIN)**
   Corridors and locations with the highest concentration of fatal and serious injury crashes, including North Roosevelt Boulevard, US-1, the Triangle, Flagler Avenue, Palm Avenue, and College Road.

2. **Systemic Risk Screening**
   Locations and corridors exhibiting risk factors such as high driveway density, poor nighttime visibility, constrained pedestrian space, high micromobility activity, and documented sight-distance limitations, even where crash history is currently moderate.

3. **Policy and Stakeholder Input**
   Gaps identified through the policy review and concerns raised by the Safety Task Force, City staff, elected officials, and community members, including speed management, pedestrian crossing safety, micromobility conflicts, and visibility at driveways and intersections.

Project Categories

To improve clarity and implementation planning, projects are grouped into five categories based on scale, location specificity, and delivery mechanism:

Corridor-Level Safety Improvement Projects (CSP)

Multi-segment or corridor-wide projects that address systemic safety risks across extended roadway sections.

Spot-Specific Safety Projects (SSP)

Targeted improvements at individual intersections, bridges, curves, or short segments with clearly defined crash patterns or operational issues.

System-Wide Safety Strategies (SWS)

Citywide programs, standards, or toolkits applied consistently across multiple locations to address recurring risk factors.

Targeted Safety Deployments (TSD)

Treatments deployed at a defined list of priority locations based on screening analysis, crash history, or community input.

Private Property / Non-Jurisdictional Safety Projects (PPS)

Advisory recommendations requiring coordination with private property owners where driveway design, access, or vegetation contributes to safety risk on public roadways.

Prioritization Framework

Projects were prioritized using a structured, two-stage framework designed to balance safety impact with implementation feasibility. The approach first evaluates projects using a **composite scoring system** and then organizes them into **implementation tiers** to guide near-, mid-, and long-term delivery.

I. Composite Score

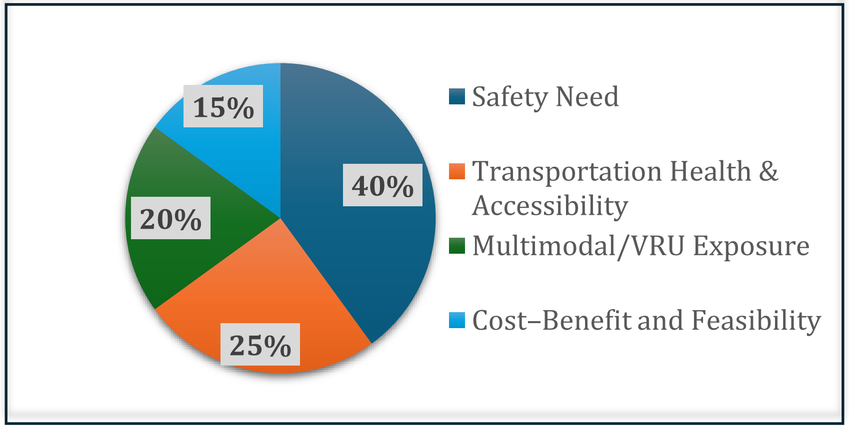
- Safety Need (40%)
- Transportation Health and Accessibility Considerations (25%)
- Multimodal / Vulnerable Road User Exposure (20%)
- Cost–Benefit and Feasibility (15%)

II. Implementation Tier

- Tier 1 – Near-Term (0–3 years)
- Tier 2 – Mid-Term (3–7 years)
- Tier 3 – Long-Term (7+ years)

Stage 1: Composite Scoring

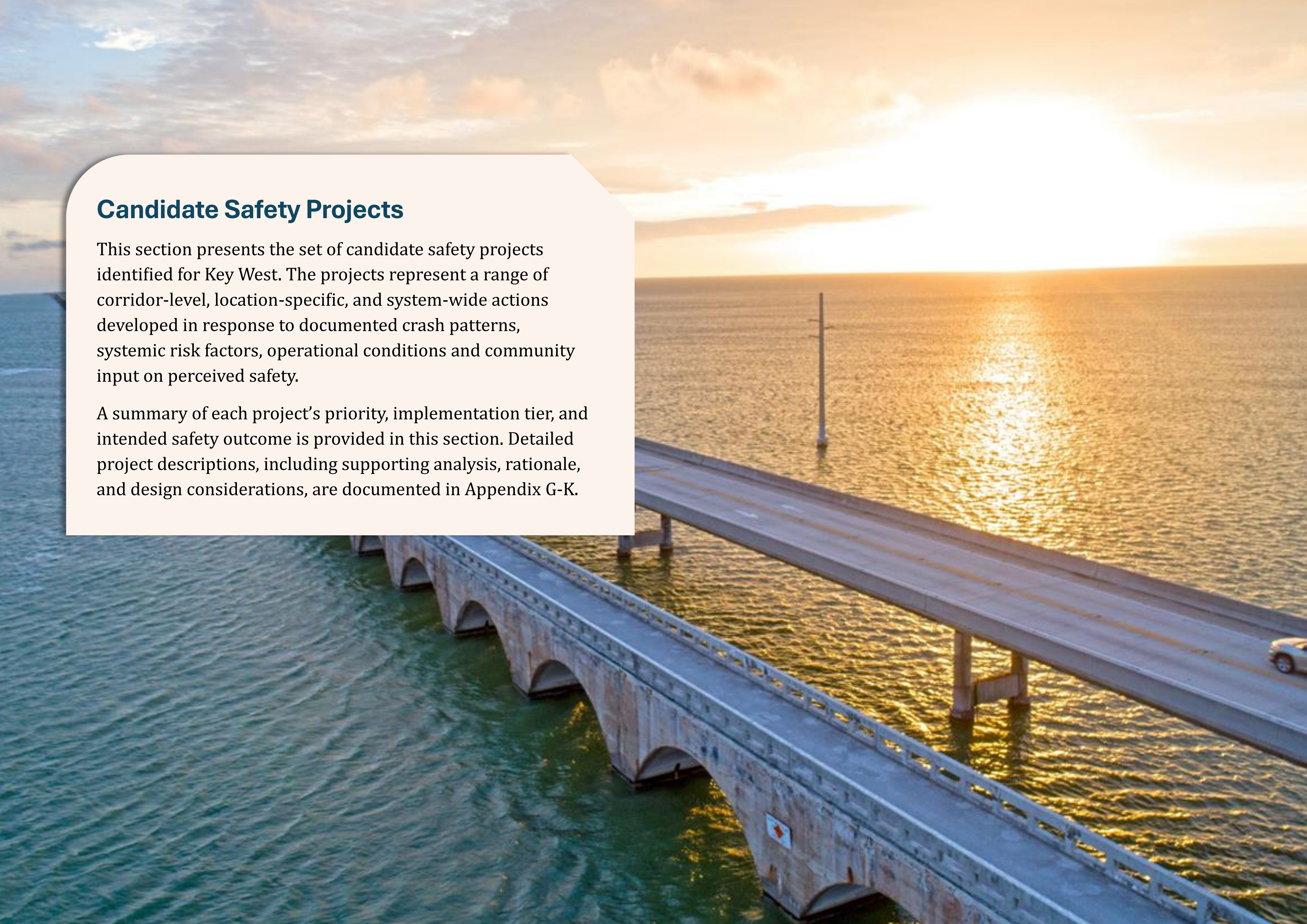
Four evaluation criteria are used to score each project. These criteria were selected to reflect conditions observed in Key West and are consistent with multi-criteria approaches used in peer jurisdictions. Figure X below summarizes the evaluation criteria and assigned weights. Each criterion is scored on a 1–5 scale using explicit rules to ensure consistency and minimize subjectivity. Higher scores indicate greater priority. The detailed description on the scoring is given in Appendix E.



Stage 2: Assignment to Implementation Tiers

This step ensures that projects with high safety benefit and low delivery barriers can advance sooner, while larger capital projects remain visible for long-term planning.

- Tier 1 – Near Term or Quick Build (0-3 years)
- Tier 2 – Mid-Term (3-7 years)
- Tier 3 – Long-Term (7+ years)
- Systemwide Strategies



Candidate Safety Projects

This section presents the set of candidate safety projects identified for Key West. The projects represent a range of corridor-level, location-specific, and system-wide actions developed in response to documented crash patterns, systemic risk factors, operational conditions and community input on perceived safety.

A summary of each project's priority, implementation tier, and intended safety outcome is provided in this section. Detailed project descriptions, including supporting analysis, rationale, and design considerations, are documented in Appendix G-K.

Corridor-Level Safety Improvement Projects (CSP)

Project ID	Corridor	Project Description	Safety Issue Addressed	Project Type	Implementation Term	BC Ratio[3]	Rank[4]
CSP-1 Speed Feedback Signs	US 1 (College Rd to Triangle, 1.2 Mi)	Install radar-based speed feedback signs at targeted locations to reinforce posted speeds and improve speed consistency	Speed variability; rear-end and angle crashes	Implementation	Short	229.16	8
CSP-2 Sign Consolidation and Clarity		Consolidate and prioritize regulatory and warning signage to reduce visual clutter and reinforce critical safety messages, including trail and crossing awareness	Driver distraction; reduced sign comprehension	Planning	Medium	134.73	13
CSP-3 Dynamic Queue Warning		Deploy vehicle-activated queue warning signs to alert approaching drivers to stopped or slow-moving traffic ahead	Rear-end crashes related to unexpected congestion	Implementation	Medium	235.04	19
CSP-4 Speed Management and Visibility Improvements	N Roosevelt Blvd (Triangle to Truman Ave, 2.6 Mi)	Reduce speed limit, manage vegetation to improve sight lines at driveways. Add route shield pavement markings to help drivers navigate the Triangle	High conflict points, Congestion, rear-ends, speeding, aggressive driving, poor sight lines, high frequency/severity ped bike crashes	Implementation	Short	188.57	6
CSP-5 Access Management		Consolidate access points to reduce conflicts with sidewalk users. Consider right-in/right-out designs.		Planning	Medium	52.45	5
CSP-6 Traffic Simulation Study		Study potential for signal timing and offset adjustments to reduce risky turning and gap acceptance behavior.		Planning	Medium	544.96	9
CSP-7 Sign Consolidation and Clarity		Simplify and reduce sign to bring driver attention to critical signs.		Planning	Medium	83.53	4
CSP-8 Origin Destination Study		Understand the origin/destination of traffic on N Roosevelt including local trips, through trips, access to Oldtown, commercial areas and residential neighborhoods. Identify opportunities for traffic redistribution - to reduce unnecessary through traffic on North Roosevelt and rerouting through Flagler Ave and South Roosevelt, as well as mode share redistribution opportunities		Planning	Medium	315.24	10

[3] Benefit-cost ratios are planning-level estimates developed for prioritization purposes and will require refinement during project development.
[4] Based on prioritization framework

Project ID	Corridor	Project Description	Safety Issue Addressed	Project Type	Implementation Term	BC Ratio[3]	Rank[4]
CSP-9 Nighttime Visibility Enhancements	College Rd	Install high-reflectivity thermoplastic pavement markings for center and edge line, as well as raised pavement markers	Pavement markings that may benefit from enhanced visibility treatments	Implementation	Short	25.78	37
CSP-10 Crosswalk Construction		Construct a crosswalk and MUTCD W11-2 crosswalk sign between the College of the Flora Keys and Lower Keys Medical Center	There is no crosswalk at this location. No crashes reported, this is a community request	Implementation	Medium	0[5]	43
CSP-11 Nighttime Visibility and Resurfacing	Palm Ave	Install high-reflectivity thermoplastic pavement markings for center and edge line, as well as raised pavement markers	Worn pavement markings causing limited visibility at night	Implementation	Short	12.17	31
CSP-12 Curve Signage Improvement		Upgrade curve warning sign to oversized W1-6 with flashing beacon to improve visibility. Replace the existing curve warning sign on either side with a W1-2R/W1-2L curve warning sign supplemented by a 15-mph advisory speed plaque (W13-1P) and an overhead flashing warning beacon	Elevated frequency of nighttime crashes at the curve including lane departure crashes	Implementation	Short	93.04	30
CSP-13 Daylighting	Flagler Ave	Re-evaluate effectiveness of existing daylighting at intersections. Consider the following: Add flexible delineators at corners where parked vehicles continue to block sight lines, Replace the first on-street parking stall on hotspot corridors with short-duration loading/drop-off zones, Painted or Modular Corner Extensions	Reported crash patterns associated with parked vehicles, with side-street sight distances being blocked by parked vehicles. Daylighting present but may benefit from enhancement	Planning	Medium	1030.19	32
CSP-14 Visibility Improvements	S Roosevelt Blvd (Triangle to Bertha St, 2.9 mi)	Vegetation Management/Sight-line Improvements at Driveways	Vegetation that may affect sight distance in certain locations	Implementation	Short	13.20	36
CSP-15 Road Diet Evaluation Study		Evaluate alternate configuration	Long -term safety and multimodal benefits	Planning	Long	119.1	42

[5] No crash reported at the location between 2018-2024. Perceived safety issues and near missed reported in community survey

Spot-Specific Safety Projects (SSP)

Project ID	Corridor	Project Description	Safety Issue Addressed	Project Type	Implementation Term	BC Ratio[3]	Rank[4]
SSP-1 Signal Plan Update	Triangle	Implement Leading Pedestrian Intervals (LPIs), Reevaluate and update pedestrian clearance intervals for better allowance.	High-speed approaches and long cycle times increase rear-end risk and queue times. Long wait time for pedestrian signal, no leading pedestrian interval, and multi-stage pedestrian crossing discourages safe use.	Planning	Short	32.69	7
SSP-2 Sight Distance/Vegetation Management at Driveways	Triangle	Vegetation Management at driveways near triangle on N and S Roosevelt. This includes private driveways near the hotels	High-speed approaches and long cycle times increase rear-end risk and queue times. Long wait time for pedestrian signal, no leading pedestrian interval, and multi-stage pedestrian crossing discourages safe use.	Implementation	Short	2.50	3
SSP-3 Speed Feedback and Driver Awareness	Triangle	Install speed feedback sign past the curve on N Roosevelt @ about 0.15 mi N of triangle	High-speed approaches and long cycle times increase rear-end risk and queue times. Long wait time for pedestrian signal, no leading pedestrian interval, and multi-stage pedestrian crossing discourages safe use.	Implementation	Short	65.70	1
SSP-4 Traffic Simulation Study	Triangle	Evaluate shorter cycles during peak periods, Evaluate ped recall during high VRU volume hours, Evaluate max-green extension to avoid dilemma zones	High-speed approaches and long cycle times increase rear-end risk and queue times. Long wait time for pedestrian signal, no leading pedestrian interval, and multi-stage pedestrian crossing discourages safe use.	Planning	Medium	274.51	11
SSP-5 Speed Study	Triangle	Speed study to evaluate the operating speed	High-speed approaches and long cycle times increase rear-end risk and queue times. Long wait time for pedestrian signal, no leading pedestrian interval, and multi-stage pedestrian crossing discourages safe use.	Planning	Medium	154.85	12
SSP-6 Intersection Redesign Study	Triangle	Evaluate traditional T intersection and roundabout. Consider rethinking multi-stage pedestrian crossing. Consider Raised crossings or raised intersection. Evaluate grade-separated alternatives if supported by future engineering feasibility analysis.	High-speed approaches and long cycle times increase rear-end risk and queue times. Long wait time for pedestrian signal, no leading pedestrian interval, and multi-stage pedestrian crossing discourages safe use.	Planning	Long	171.75	22
SSP-7 Shared-Use Path Warning Signage	Staples Bridge	Install shared-use path warning signing at both approaches	High bicycle and e-bike speeds; create conflicts with pedestrians, Pedestrian walkway is underutilized	Implementation	Short	0[4]	38
SSP-8 Speed Awareness & Expectation	Staples Bridge	Include W16-13P "SLOW" plaque or W16-9P "AHEAD" plaque plus pavement markings	High bicycle and e-bike speeds; create conflicts with pedestrians, Pedestrian walkway is underutilized	Implementation	Short	0[4]	39
SSP-9 Wayfinding Signs	Staples Bridge	Install MUTCD compliant D1-1 destination guide signs identifying key connections served by Staples Bridge, including directional arrows to adjacent corridors.	--	Implementation	Short	0[4]	40
SSP-10 Delineation and Visibility Enhancements	Staples Bridge	Enhance edge delineation and reflectivity along the bridge to reinforce the constrained width, especially for nighttime conditions. Improve visibility at bridge entry points to reduce surprise conflicts.	High bicycle and e-bike speeds; create conflicts with pedestrians, Pedestrian walkway is underutilized	Implementation	Short	0[4]	41
SSP-11 Targeted Operational Review	Palm Ave @ Eisenhower Drive	Evaluate queue spillback, turning movement behavior, access management conflicts, and interaction with Truman Ave congestion patterns	Stop-and-go traffic, queue formation, and turning-related conflicts arelikely contributors to rear-end crashes during peak periods	Planning	Medium	17.85	35

System-Wide Safety Strategies (SWS)

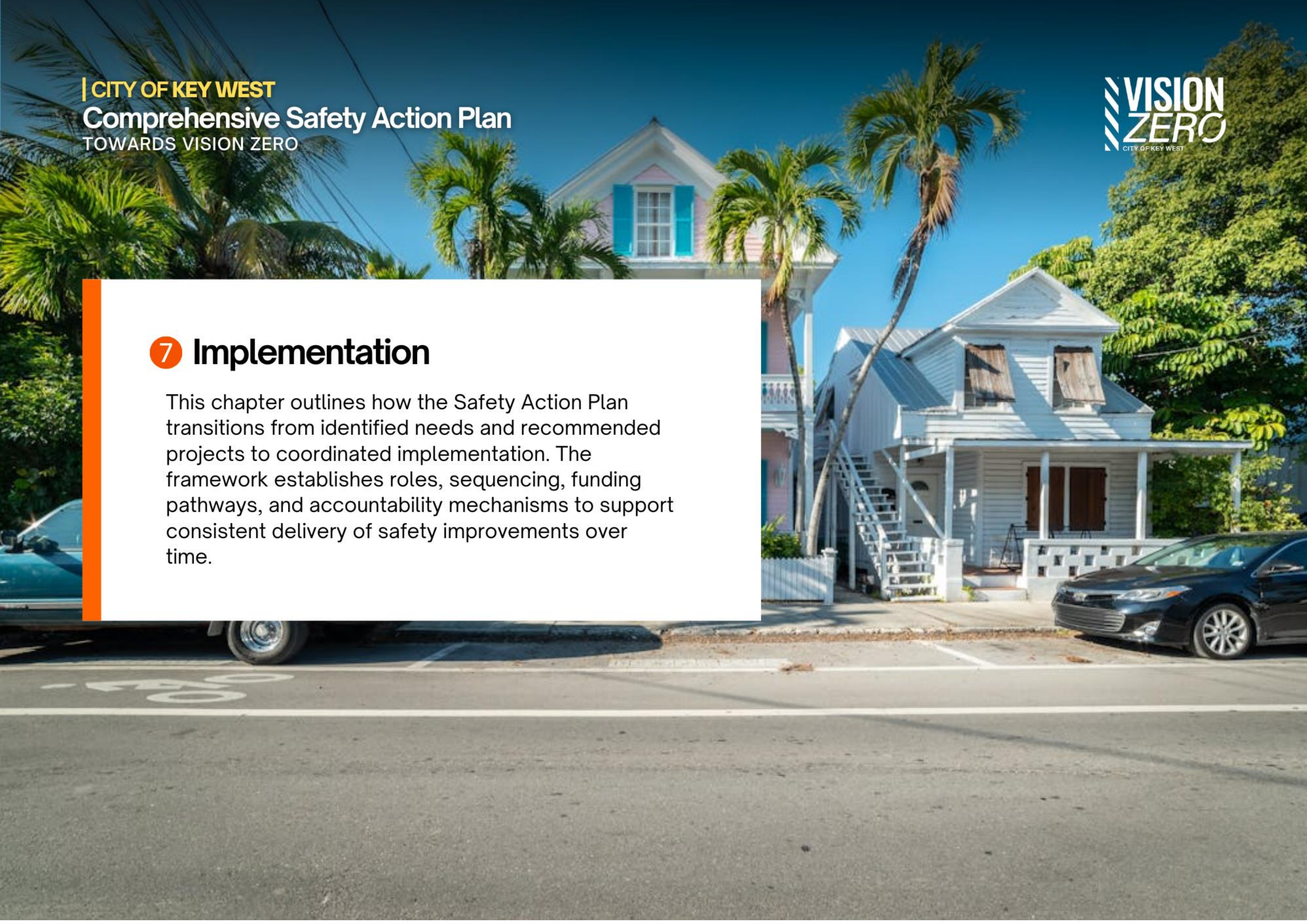
Project ID	Corridor	Project Description	Safety Issue Addressed	Project Type	Implementation Term	BC Ratio[3]	Rank[4]
SWS-1 Sign Consolidation and Clarity	US-1, N Roosevelt, Old Town	Simplify and reduce sign to bring driver attention to critical signs and improve compliance	--	Implementation	Long	60.77	**15**
SWS-2 High Visibility Crosswalks	Citywide	1. City-wide; 2. High Priority intersections: Fleming St at Margaret St, Southard St at Margaret St, Duval St at Angela St, 1st Street @ Fogarty, 1st Street @ Harris, 1st Street @ Staples, S Roosevelt @ Duck Ave, Eaton St @ Grinnel St, Eaton St @ White St, Truman Ave @ White St	Pedestrian and Bicycle related crashes	Implementation	Short/Medium	31.51	**29**
SWS-3 Pavement Marking Improvements		1. City-wide; 2. High Priority corridors: Truman Ave, White St, Whitehead St, Duval St, Eaton St, Simonton St, Caroline St, Angela St, College Rd, Palm Ave	Crashes involving low visibility including nighttime and bad weather, as well as roadway departure crashes	Implementation	Short/Medium	38.32	**28**
SWS-4 Signal Head Improvements	Old Town	1. Old Town; 2. High Priority corridors: Truman Ave, Duval St, White St, Simonton St, Whitehead St, Eaton St, Fleming St, Southard St, 1st St, Reynolds St	Crashes involving red-light running or other traffic signal non-compliance	Implementation	Short/Medium	63.09	**14**
SWS-5 Curb Ramp Improvements	Citywide	S Roosevelt Blvd @ Douglas Cir, White St @ Fleming St, S Roosvelt @ Duck Ave	Pedestrian and Bicycle related crashes	Implementation	Short/Medium	5.38	**18**
SWS-6 Retroreflective Signage Improvements		1. City-wide, 2. High Priority Locations: Near Schools	Crashes involving low visibility including nighttime and bad weather, as well as roadway departure crashes	Implementation	Short/Medium	183.39	**27**
SWS-7 Vegetation Management and Sight-Distance Improvements		1. City-wide; 2. High Priority Locations: N Roosevelt (triangle to Truman), S Roosevelt, Truman Ave, 1st St; 3. Private driveways listed under PPS 3	Poor sight lines at driveways	Implementation	Short/Medium	15.8	**17**
SWS-8 Daylighting Reevaluation	Old Town and Flagler Ave	Re-evaluate effectiveness of existing daylighting at intersections. Consider the following: Add flexible delineators at corners where parked vehicles continue to block sight lines, Replace the first on-street parking stall on hotspot corridors with short-duration loading/drop-off zones. Painted or Modular Corner Extensions, Advisory Speed / "Slow Street" Treatments @ Priority Corridors: Flagler Ave, Duval St, Simonton St, Whitehead St, Eaton St, Truman Ave, Caroline St, White St, Olivia St, Petronia St, Fleming St	Reported crash patterns associated with parked vehicles, with side-street sight distances being blocked by parked vehicles. Daylighting present but may benefit from enhancement	Planning	Medium	293.42	**20**

Targeted Safety Deployments (TSD)

Project ID	Corridor	Project Description	Safety Issue Addressed	Project Type	Implementation Term	BC Ratio[3]	Rank[4]
TSD-1 Pedestrian and Bicycle Warning Signage	Selected Locations	Install MUTCD-compliant pedestrian (W11-2) and bicycle (W11-1) warning signs at top Problem Intersections: Simonton & Greene St, Duval & Greene St, Duval & Eaton St, Duval & Southard St, Southard & Whitehead St, Whitehead & Olivia St, Duval & Truman Ave, Truman Ave & Windsor Ln, Truman Ave & White St, N Roosevelt Blvd & 1st St	Pedestrian and Bicycle related Crashes	Implementation	Short	38.14	**2**
TSD-2 Traffic Calming	Selected Locations	Raised Crosswalk and Traffic Calming Measures		Implementation	Short	59.01	**33**
TSD-3 Crosstown Greenway Crossing Improvements	Crosstown Greenway	Crossing and Marking Improvements at three key intersections: Staples Ave & 1st Street, Kennedy Drive & Crosstown Greenway, S Roosevelt & Duck Ave	Pedestrian and Bicycle roadway crossing related crashes	Implementation	Short	46.66	**21**
TSD-4 Crosstown Greenway Mini-Roundabouts	Staples & 5th, 6th, 7th, 8th	Construct four mini-roundabouts to coordinate with the existing one at Staples & 4th St. Evaluate the feasibility for mini-roundabouts at other locations	Improve visibility of Crosstown Greenway and reduce conflicts between drivers and vulnerable road users	Planning / Implementation	Medium	2.29	**34**

Private Property / Non-Jurisdictional Safety Projects (PPS)

Project ID	Corridor	Project Description	Safety Issue Addressed	Project Type	Implementation Term	BC Ratio	Rank[4]
PPS-1 Sidewalk-Level Driveway Crossings	N Roosevelt Blvd (Selected Driveways, Triangle to Truman Ave, 2.6 Mi)	Convert select high-conflict driveways to sidewalk-level raised driveway crossings to reinforce sidewalk priority. Retrofit driveway aprons to remain level with the sidewalk, minimizing vertical discontinuities. Modify driveway geometry to improve driver sight lines to pedestrians, bicyclists, and approaching traffic. Locations: All private driveways on N Roosevelt (Triangle to Truman including Yacht club entrance) and S Roosevelt (Triangle to Berta)	Corridor-level crash pattern associated with driveway crossings. Bicyclist's right of way violated by driver turning in and out of driveways along N Roosevelt	Implementation	Medium	14.61	**24**
PPS-2 Pedestrian and Bicycle Warning Signs	N Roosevelt Blvd (Selected Driveways, Triangle to Truman Ave, 2.6 Mi)	Install MUTCD-compliant pedestrian (W11-2) and bicycle (W11-1) warning signs. Locations: All private driveways on N Roosevelt (Triangle to Truman) and S Roosevelt (Triangle to Berta)		Implementation	Medium	49.2	**26**
PPS-3 Vegetation Management and Sight Distance Improvements	N Roosevelt Blvd (Selected Driveways, Triangle to Truman Ave, 2.6 Mi)	Vegetation Management	Limited visibility due to foliage	Implementation	Medium	20.84	**25**



7 Implementation

This chapter outlines how the Safety Action Plan transitions from identified needs and recommended projects to coordinated implementation. The framework establishes roles, sequencing, funding pathways, and accountability mechanisms to support consistent delivery of safety improvements over time.

7. IMPLEMENTATION

Governance and Ownership

Successful implementation depends on coordination across departments and partner agencies. Safety improvements span planning, engineering, operations, enforcement, and public engagement, and clear responsibility supports timely and consistent delivery.

Implementation of the Safety Action Plan will occur through existing departments responsible for transportation planning, engineering, public works, and traffic operations, with coordination across enforcement, emergency response, and community-facing functions as appropriate. This approach aligns safety actions with established roles and day-to-day decision-making processes.

Several recommended projects and strategies occur on corridors or facilities under shared or external jurisdiction. In these cases, implementation will involve coordination with partners such as the Florida Department of Transportation, Monroe County, and regional transportation agencies. The Safety Action Plan supports this coordination by clearly defining project intent, safety rationale, and anticipated delivery pathways.

The Safety Action Plan Task Force will continue to serve in an advisory and coordination role following plan adoption. The Task Force provides a forum for reviewing implementation progress, addressing coordination challenges, and maintaining alignment between technical analysis, operational conditions, and community priorities. Ongoing engagement through this group supports accountability and helps keep safety actions responsive as conditions evolve.

Phasing and Time Horizons

Projects and strategies identified in the Safety Action Plan are organized into implementation timeframes based on complexity, cost, coordination needs, and readiness. This phasing approach supports realistic delivery while allowing multiple types of actions to advance in parallel.

- Near-term actions include quick-build infrastructure improvements, operational changes, pilot deployments, and policy updates that can move forward within existing right-of-way and with limited design effort. These actions deliver early safety benefits and build momentum.
- Mid-term actions include corridor-level improvements and targeted capital projects that require additional design, funding coordination, or partnership with external agencies. These projects respond to observed crash patterns and systemic risks identified through analysis.

- Long-term actions include larger capital investments and transformational projects that depend on capital programming cycles, interagency agreements, or substantial reconstruction. These projects remain part of the Safety Action Plan to support long-range planning and funding coordination.

Funding Strategy and Grant Readiness

The Safety Action Plan is designed to support implementation through multiple funding pathways rather than a single program. Projects vary in scale, cost, and readiness, allowing the City to align actions with funding opportunities as they become available.

Implementation of projects is contingent upon funding availability, interagency coordination, and completion of necessary engineering and environmental review processes.

Several near- and mid-term projects are well suited for U.S. Department of Transportation Safe Streets and Roads for All Implementation Grants. These projects directly address High Injury Network corridors, demonstrate clear safety benefits, and can be delivered within defined timeframes. The plan's documented crash analysis, prioritization framework, and community engagement process provide the technical foundation required for competitive grant applications.

Additional funding sources include state and regional transportation programs, local capital improvement programs, resurfacing and maintenance coordination, and targeted safety initiatives implemented through administrative or ordinance-based mechanisms. Some system-wide strategies and policy actions require limited capital investment and can advance independently of major funding cycles.

Project readiness, ranging from conceptual to design-ready, informed both prioritization and phasing. This enables the City to efficiently match projects with appropriate funding sources and pursue implementation opportunities as they arise.

Implementation Conditions and Coordination

Implementation of the recommended projects and strategies will require site-specific engineering review to confirm feasibility and refine scope. Planning-level concepts presented in this Safety Action Plan will be evaluated during design for drainage impacts, utility conflicts, right-of-way constraints, Americans with Disabilities Act (ADA) compliance, and consistency with applicable design standards. Final treatment selection and configuration may vary based on field verification and engineering analysis conducted at the time of implementation.

Several recommendations occur along corridors with shared or external jurisdiction, including state-maintained roadways and facilities subject to regional oversight. Projects located on U.S. 1, North Roosevelt Boulevard, and other state facilities will require coordination with the Florida Department of Transportation (FDOT). Implementation timelines and design details for these corridors will be influenced by state review processes, permitting requirements, and capital programming cycles.

Certain visibility and access-related improvements involve driveways or frontage conditions adjacent to private property. In these cases, implementation may require coordination with property owners to address vegetation management, access modifications, or maintenance responsibilities. The City's role may include notification, technical guidance, and enforcement of existing sight-distance or right-of-way standards, as applicable.

Project costs presented in this plan are planning-level estimates intended to support prioritization and funding discussions. Advancement of projects is contingent upon funding availability, interagency coordination, completion of engineering review, and any required environmental or regulatory approvals. As projects move into design, cost estimates and implementation schedules will be refined to reflect site-specific conditions and partnership requirements.

Safety Performance Metrics

Crash data from 2018–2024 establishes the baseline condition for this Safety Action Plan. The City will use the seven-year rolling average of fatal and serious injury crashes to measure progress and reduce the influence of short-term fluctuations.

Performance will be evaluated through annual updates of crash data and review of trends across all modes, with particular attention to vulnerable road users. Progress will be assessed using multi-year comparisons rather than single-year totals to ensure stability in interpretation.

Long-term performance targets are consistent with the City's Vision Zero commitment to eliminate traffic fatalities and serious injuries by 2035. Specific reduction benchmarks will be refined through formal adoption and periodic data updates as implementation advances.

Monitoring, Evaluation, and Reporting

To ensure that implementation remains effective and responsive, the City will follow a structured, recurring review process.

- Annual data refresh and safety review. Each year, the City will update crash data and supporting context layers using the same methods applied in this plan. This includes reviewing fatal and serious injury crashes by corridor and mode, identifying changes in crash patterns, and incorporating updated community input and field observations.
- High Injury Network re-evaluation. The High Injury Network will be recalculated annually using the same methodology documented in this plan. Results will be compared to the adopted baseline to identify corridors

that remain high risk, newly emerge as priorities, or show improvement over time.

- Implementation tracking. The City will maintain a project tracking register documenting the status of recommended actions, responsible parties, coordination needs, and upcoming milestones. This register will support internal management and transparent decision-making.
- Performance review and adjustment. Outcome measures will focus on trends in fatal and serious injury crashes, corridor-level safety performance, and impacts to vulnerable road users. Process measures will track project delivery and policy implementation. Together, these measures will inform adjustments to priorities, phasing, and implementation strategies.
- Public reporting. The City will provide regular public updates on implementation progress through summary reports or online dashboards. Consistent reporting supports accountability, builds public trust, and reinforces safety as a shared responsibility.

The Safety Action Plan is intended to function as a living framework. As conditions change and projects advance, monitoring results will guide refinements to ensure continued alignment with safety goals.

Conclusion: Commitment to Safer Streets

This Safety Action Plan establishes a clear, data-informed, and community-driven roadmap to reduce traffic fatalities and serious injuries in Key West. Through comprehensive crash analysis, focused stakeholder engagement, and a systematic approach to project identification and prioritization, the plan defines actions that respond directly to documented safety needs.

The plan demonstrates that traffic crashes in Key West follow identifiable patterns shaped by street design, operating conditions, and system-level factors. By addressing these factors through targeted projects, policy alignment, and coordinated implementation, this safety action plan provides a structured framework to guide future implementation.

Implementation of this plan requires sustained leadership, interagency coordination, and continued engagement with the community. The City is committed to advancing the recommended projects and strategies and to pursuing state and federal funding, including SS4A Implementation Grants, to accelerate progress.

This Safety Action Plan marks a transition from planning to delivery. By acting on the recommendations outlined herein, Key West affirms that can be addressed through engineering, policy, and behavioral strategies, and affirms that safer streets are essential to the city's long-term health, access, and quality of life.


THE CONCH REPUBLIC
90 Miles to CUBA
SOUTHERNMOST
POINT
CONTINENTAL U.S.A.
KEY WEST, FL
Home of the Sunset
SEAL OF THE CITY OF
KEY WEST, FLORIDA

TECHNICAL APPENDIX

A - Task Force Meeting Materials and Minutes

B – Summary of Community Engagement Results

The survey was distributed widely throughout Key West to residents and workers. In total, 728 people responded to the survey.

Demographic Information

Where respondents live

- Key West 82% (BV 3%)
- Stock Island 11%
- Key Haven 4%

Age group

- 41 – 65 yrs. 62%
- 19-39 yrs. 21.5%
- Over 66 yrs . 15%
- Under 18 yrs. 1.5%

Gender

Female 58%
Male 36%

Mental or physical disabilities

None 85%
Mobility 5%
Deaf/Hard of Hearing 4%
Others 2%<

Race/nationality

White 76%
Hispanic Latino/a 8%
Black/African American 3%

Household income

$125K + 44%
$60K - $100K 39%
<$60K 17%

Main mode of transport

Car, bus truck 54%
Pedal bike 16%
Walking 9%
Moped/scooter 6%
Electric car 5%
Ebike 4%
Golf cart 2%

Crash last 5 yrs?

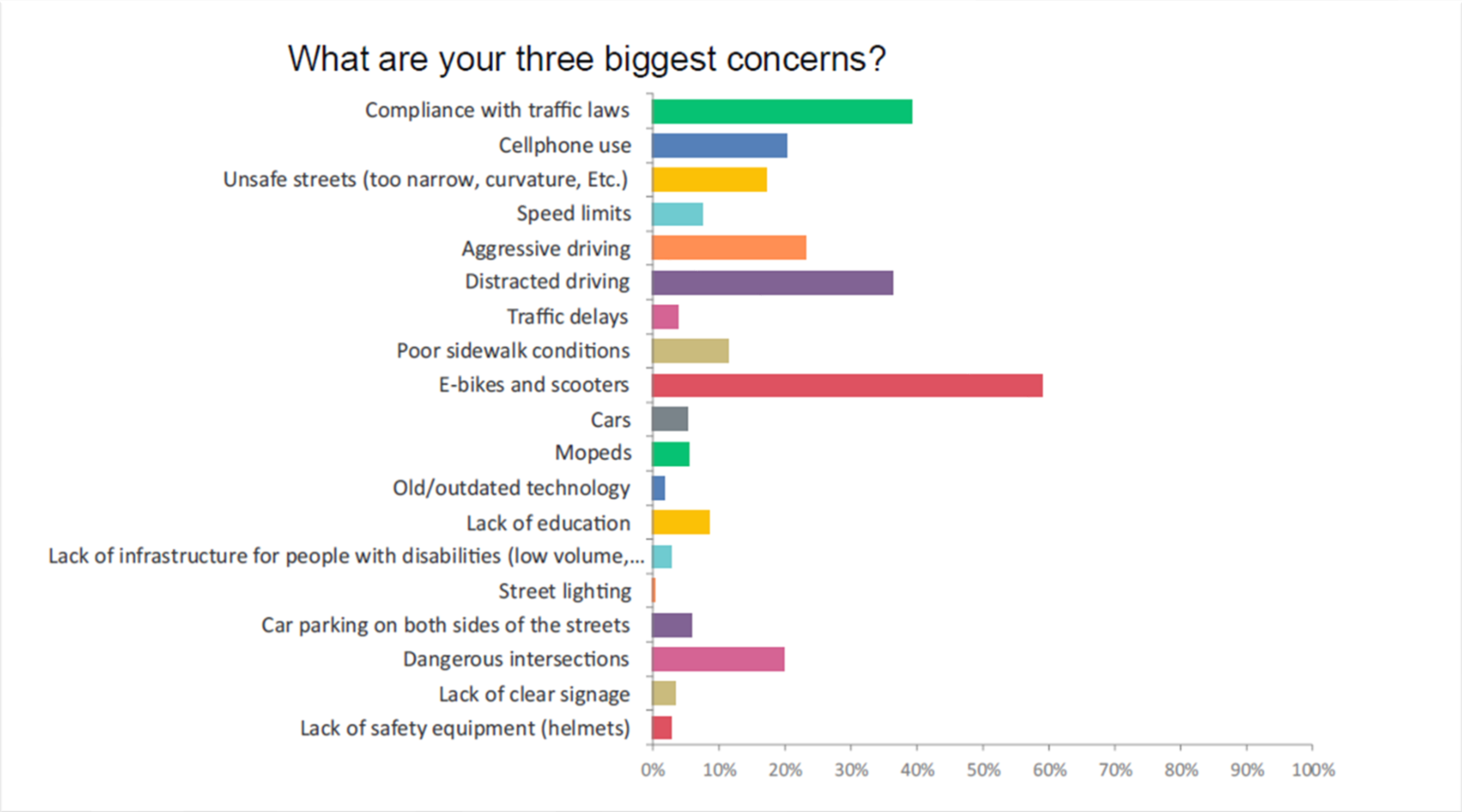
Yes 41%

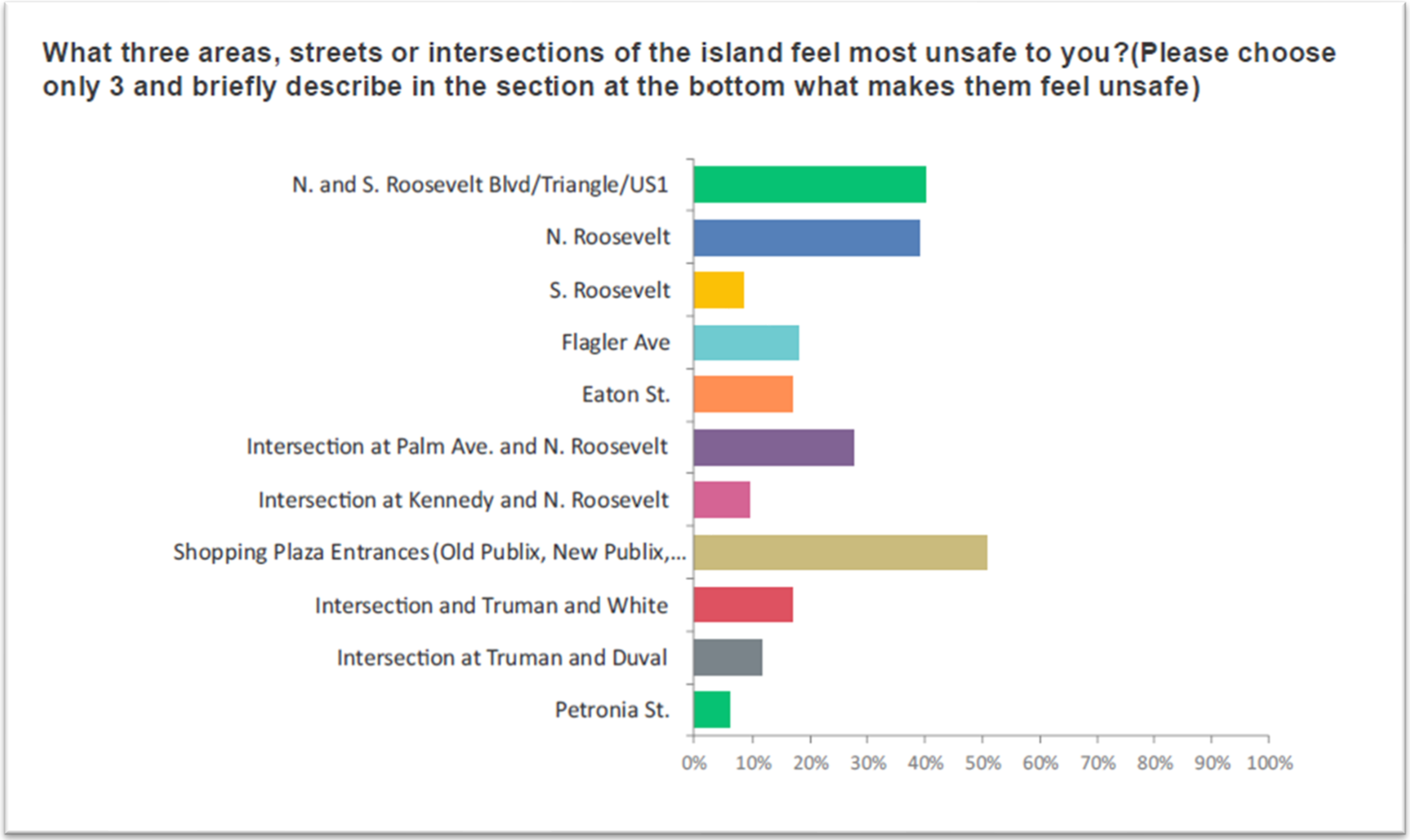
Police report filed?

No 78%

Powered by SurveyMonkey

1


What are your three biggest concerns?
Compliance with traffic laws
Cellphone use
Unsafe streets (too narrow, curvature, Etc.)
Speed limits
Aggressive driving
Distracted driving
Traffic delays
Poor sidewalk conditions
E-bikes and scooters
Cars
Mopeds
Old/outdated technology
Lack of education
Lack of infrastructure for people with disabilities (low volume,...
Street lighting
Car parking on both sides of the streets
Dangerous intersections
Lack of clear signage
Lack of safety equipment (helmets)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%


What three areas, streets or intersections of the island feel most unsafe to you?(Please choose only 3 and briefly describe in the section at the bottom what makes them feel unsafe)
N. and S. Roosevelt Blvd/Triangle/US1
N. Roosevelt
S. Roosevelt
Flagler Ave
Eaton St.
Intersection at Palm Ave. and N. Roosevelt
Intersection at Kennedy and N. Roosevelt
Shopping Plaza Entrances(Old Publix, New Publix,...
Intersection and Truman and White
Intersection at Truman and Duval
Petronia St.
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

UF Transportation Institute

Additional areas of concern

Pedestrian crossing sign (removed) from Simonton and Catherine	Whitehead and Oliva	Whitehead and Angela	Oliva	Olivia and Duval
Greene St. and Duval	Crossing Over Palm Ave to the Sailing Center	S. Roosevelt and Eagle (commuter path for bikes)	N. Roosevelt and 5th St.	Bank of America turn from Flagler (no turn lane)
Windsor and Truman	Turning into the Beachside Resort on N. Roosevelt	Truman and Eisenhower	1st and Fogarty	1st and Harris (Exit of Key Plaza)
Kennedy and Flagler (Habana Plaza Parking Lot)	Flagler between White St. and Bertha	Keys Plaza (making a left out from the Plaza)	12th St. Bike Path (12th street should be a dead end)	Watson St. between Virgina and Truman
Grinnell through Simonton	Foliage at the Hurricane Hole (Stock Island)	All intersections near public housing or where an abundance of residents live	Tight corner turning from Truman to White St.	Angela St. (near cemetery)


UF Transportation Institute
Safety solutions
Adding or improving sidewalks, bike lanes or paths
Better marking on intersections
Changing rules and enforcement to improve drivers' behaviors
Improving how traffic moves (adding turning lanes, improving traffic...
Improving visibility (clear space at corners, larger corners, lighting)
Adding or improving signs and pavement markings
Upgrading traffic control devices (traffic lights, signs and medians)
Improving road service conditions for safety
Making road edges safer with better striping wider shoulders, Etc.
Educational campaigns for drivers
Educational campaigns for e-vehicle users
More driver education offerings for new drivers
Remove car parking from one side of the streets
Traffic gardens
Sharrows
Near miss cameras
Ordinances to further prohibit e-bikes and scooters on sidewalks
Expanded video in corridors
Raised signage
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Top 6 Solutions
1. Adding or improving sidewalks, bike lanes or paths
2. Ordinances for e-vehicles
3. Improving how traffic moves
4. Improving visibility
5. Changing rules and enforcement
6. Educational campaigns

C – Recommended Programs and Policies

This appendix is a technical companion to the main chapter on Recommended Programs and Policy Updates. It summarizes what was observed during the review of Key West's policy, planning, and enforcement materials, focusing on findings and gaps that affect the City's ability to implement Vision Zero and Safe System principles. It also documents the performance metrics decision framework used to interpret policy needs and support implementation tracking.

This appendix is organized in two parts:

1. Findings and gaps by document reviewed.
2. Performance metrics and decision framework, including LOS, LTS, and VMT, and the feasibility considerations for adopting these metrics in practice.

Findings And Gaps from the Review

City Code of Ordinances: Chapters 62 and 70			
Focus Area	**Relevant Provisions**	**Strengths / Existing Policies**	**Gaps and Opportunities**
Speed Management & Traffic Calming	§§ 70-61, 70-86 to 70-87	Establishes 20 mph residential and 15 mph school-zone limits; City Manager may designate safety zones.	Gaps: Lacks a codified Speed Management Policy, context-based target-speed framework, or procedures for engineering traffic-calming measures such as lane narrowing, raised crossings, mini-roundabouts, lane-narrowing, raised crossings, or before/after evaluation. Recommendation: Adopt a dedicated Traffic Calming and Speed Management ordinance authorizing slow zones, geometric treatments, and context-based speed setting.
Automated Enforcement	—	—	Gaps: Florida law now allows limited local camera pilots. Recommendation: Adopt enabling language for speed/red-light camera pilot programs in school zones and high-crash locations (contingent upon state authorization).
Micromobility Regulation	§§ 70-901 to 70-902	Defines e-bike / scooter operation; bans sidewalk riding; 15 mph on shared paths; ADA exceptions.	Gaps: No comprehensive micromobility management framework covering fleet permitting, device parking, lighting/helmet standards, geofencing, and structured enforcement. Recommendation: Develop a complete Micromobility Management ordinance, including permitting, education, enforcement, and data-sharing requirements.
Parking & Curb Management	§§ 70-116 to 70-120 and §70-119	Clear parking and ADA rules; established enforcement procedures.	Gaps: No citywide curb management policy balancing deliveries, passenger pickup, ADA loading, TNC activity, and micromobility parking. Recommendation: Adopt a Curb Management Plan and incorporate daylighting standards (20–30 ft) at all intersections and crosswalks.
Right-of-Way Maintenance & Construction Safety	Ch. 62 §§ 62-116 to 62-123 and §62-31 (amended 2023)	Regulates ROW permits and vegetation obstruction.	Gaps: No requirement for Temporary Pedestrian Access Routes or Safe System–aligned work-zone safety plans in ROW permits. Recommendation: Update ROW permitting to require pedestrian detour plans, sight-distance protections, and FDOT-compliant work-zone standards.
Intersection Safety	Ch. 70 general traffic rules	—	Gaps: No authority for left-turn bans, No-Turn-on-Red restrictions, or LPIs. Recommendation: Codify authority for LPIs, turn restrictions, and conflict-reduction strategies at high-crash intersections.
Lighting / Nighttime Visibility	—	—	Gaps: No adopted minimum lighting standards. Recommendation: Establish lighting levels (≥1.0 fc) for major corridors and require reflective signage/markings in high-crash zones.
Distraction Management	§§ 70-802 to 70-806	Restricts mobile billboards.	Gaps: Does not cover digital or flashing signs. Recommendation: Expand ordinance to regulate digital sign brightness, dwell time, and placement near schools and major intersections.
Public Education & Behavioral Change	—	—	Gaps: No formal safety education program; no multilingual requirements; no coordinated visitor or school outreach. Recommendation: Develop an annual safety education program with standardized messaging and partnerships with schools, employers, and tourism channels.
Coordination with State / FDOT Roads	—	—	Gaps: No formal process or agreement for speed reviews, safety treatments, signal timing requests, or crash-data coordination. Recommendation: Adopt a City–FDOT Safety Coordination MOU outlining shared procedures for speed management, design requests, and annual Vision Zero coordination.

City Comprehensive Plan: Transportation and Land Use Elements			
Focus Area	**Relevant Provisions**	**Strengths / Existing Policies**	**Gaps and Opportunities**
Transportation Safety	Objective 2-1.1: Safe, convenient, and efficient transportation system	Encourages safety and operational improvements through multimodal measures rather than capacity expansion.	Gaps: Does not explicitly incorporate Vision Zero, Safe System principles, crash-reduction targets, or annual reporting requirements. Recommendation: Add Vision Zero policy language and measurable safety targets.
Speed Management	Section 2-1.1, coordination with FDOT	Emphasizes roadway efficiency and safety but defers speed-setting to FDOT.	Gaps: Defers speed authority to FDOT and lacks context-based target-speed policy or traffic-calming framework.
Bicycle and Pedestrian Access	Objective 2-1.4: Bicycle and pedestrian facilities	Supports use of state/federal funding for active modes; requires new developments to provide safe pedestrian and bicycle access.	Gaps: Lacks connectivity criteria, safety performance benchmarks, and prioritization tied to crash data.
Right-of-Way and Development Impacts	Objective 2-1.2: Developer contributions	Ensures new developments mitigate traffic impacts and contribute to roadway improvements.	Gaps: Relies heavily on Level of Service (LOS); lacks Safe System–aligned development review standards.
Integration of Land Use and Transportation	Objectives 2-1.5 to 2-1.6	Promotes internal circulation and reduced pedestrian-vehicle conflicts within new developments.	Implementation relies on coordination without defined accountability or safety performance criteria.
Micromobility and Emerging Modes	N/A (plan predates e-bikes and shared mobility)	Emphasizes walking and cycling as key modes.	Gaps: Plan predates micromobility; lacks policies for e-bikes, scooters, shared mobility, and device parking. Recommendation: Add local design and regulation framework.
Equity and Accessibility	ADA compliance under transportation and public facilities policies	Addresses accessibility in general terms.	Gaps: No equity framework for prioritizing improvements for seniors, children, and low-income workers.
Performance Monitoring	LOS-based mobility metrics	Uses Level of Service standards for roadway evaluation.	Gaps: LOS-centric evaluation conflicts with Vision Zero; lacks crash-based metrics and annual reporting.

Key West Forward Strategic Plan and current priorities			
Focus Area	**Relevant Goals / Actions (from 2021–2024 plan & 2024–2025 priorities)**	**Strengths / Existing Policies & Progress**	**Gaps and Opportunities**
Complete Streets and Multimodal Safety	Priority 6: Traffic & Pedestrian Friendliness – Goal 1: Implement Complete Streets projects and the Bicycle & Pedestrian Master Plan	Commitment to Complete Streets; several segments of the Crosstown Greenway completed; ADA repairs undertaken annually through Engineering budget.	Gaps: No explicit safety performance measures; shared-street pilots lacked evaluation protocols.
Roads, Streets, and Sidewalks (2024–2025 priority)	Goal: Improve the condition of roadways; protect resident parking; provide safe alternative methods of transportation	Focuses on maintenance and accessibility improvements; integrates drainage and elevation for climate resilience.	Gaps: No safety goals, speed management actions, or high-injury network reference
Wickers Bike Trail Realignment and Trail Gap Closures	Goal 1: Complete Streets	Trail realignment and gap closures intended to reduce conflicts between cyclists and vehicles; signage improvements initiated.	Gaps: No protected intersection standards; no transition design guidance; realignment not implemented
Pedestrian Crossing Enhancements	Priority 6, Goal 1: Install HAWK beacons, lighting, and high-visibility crossings	Added several high-visibility crosswalks; continued use of in-street pedestrian signage.	Gaps: No crossing warrant policy tied to crash data or nighttime visibility standards.
Micromobility Regulation	Priority 6, Goal 1: Regulate e-bikes, scooters, and micro-mobility devices	Recognition of micromobility safety issues; preliminary restrictions codified in §70-902; enforcement discussion through Task Force.	Gaps: Lacks fleet permitting, data requirements, behavioral enforcement structure, and multilingual education.
Speed Management and Traffic Calming	Priority 6, Goal 4: Shared Streets and Carbon Footprint Reduction	Shared-street and slow-speed concepts promoted; temporary pilots tested (e.g., Lazy Way).	Gaps: Shared-street concepts not codified; no slow-zone program or measurable outcomes.
Transit and Curb Management	Priority 6, Goal 2–3: On-demand transit pilot, Intermodal Center planning, parking modernization	"Key West Rides" pilot and parking modernization in progress; coordination with Lower Keys Shuttle.	Gaps: Safety impacts not assessed; curbspace allocation not safety-prioritized.
Lighting, Visibility, and Clean Streets	Priority 5: Cleanliness – Goals 1–4	Includes street lighting and clutter reduction to improve aesthetics.	Lighting improvements not tied to pedestrian visibility or corridor safety needs.
Climate and Safety Resilience	Priority 2: Sea Level Rise; Priority 4: Environmental Protection	Emphasizes LiDAR mapping, drainage retrofits, and resilient roadway elevations.	Does not connect resilience investments to safe mobility or evacuation safety.
Equity and Public Communication	Part I & III: Communication & Employee Plan	Expands multilingual communication and inclusion in engagement.	No direct linkage to safety education; no structured outreach for vulnerable road users.
Monitoring and Accountability	Annex 1: Monitoring & Accountability Framework	Establishes check-ins and status reporting for action items.	No inclusion of safety performance metrics; lacks crash or speed indicators.

Bicycle and Pedestrian Master Plan and Car Free Key West			
Focus Area	**Relevant Goals / Actions**	**Strengths / Existing Policies**	**Gaps and Opportunities**
Vision and Safety Framework	"Vision Zero (Zero Traffic Deaths)" and safety targets (Ch. 7–8)	States a zero-deaths goal and sets near-term targets for crashes and mode share.	Status of targets is not tracked in code or annual reports. Create a formal accountability structure and require annual Vision Zero reporting tied to this plan.
Network Planning and Design	"Vision of the Future" network (Ch. 5) and Complete Streets Resource Guide (Ch. 6)	Identifies connected bikeway tiers, shared-use paths, and key pedestrian upgrades at priority locations.	No adopted city design supplement. Adoption is project-by-project. Publish a City supplement that locks in protected facilities, raised crossings, lighting, and intersection treatments.
Pedestrian and Bicycle Safety Goals	"Programs and Policies" and "Phased Action Items" (Ch. 7–8)	Calls for reducing crash rates, expanding bike parking, and advancing crossing safety.	Not integrated with a citywide crash database or routine performance checks. Tie actions to the High-Injury Network and require before-and-after evaluations.
Education and Enforcement	Five E's framework (Education, Encouragement, Enforcement, Engineering, Evaluation)	Emphasizes outreach, law-enforcement coordination, and targeted messaging.	Programs are not institutionalized or funded. Align with KWPD STAR operations and set a standing education budget with multilingual deliverables.
Equity and Accessibility	Engagement for underserved populations and schools	Recognizes the need for outreach to schools and non-English speakers.	No measurable equity outcomes. Add targets, language access requirements, and partner MOUs (schools, churches, Keys Immigrant Coalition).
Evaluation and Performance Monitoring	"Evaluating Performance" metrics (Ch. 7, pp. 122–128)	Provides baseline indicators for safety, mode share, and facility delivery.	No mechanism for yearly data collection or cross-department reporting. Assign roles, data cadence, and a public dashboard.
Integration with Climate and Land Use	Linkage to Climate Action Plan	Connects active modes to emissions and resilience goals.	Safety and climate tracked separately. Combine indicators so corridor projects report both safety and GHG outcomes.

Transit Development Plan (FY 2025 to 2034)			
Focus Area	**Relevant Goals / Actions**	**Strengths / Existing Policies**	**Gaps and Opportunities**
Safety and Accessibility	Goal 4 – Ensure a safe and accessible transit system	Commits to ADA-compliant stops, shaded shelters, and improved accessibility (Ch. 9).	Lacks measurable safety indicators, no linkage to Vision Zero crash data, and no framework for evaluating post-implementation safety performance.
Bus Stop Design and Amenities	Chapter 9 – Short-Term Operating and Capital Improvements	Funds new shelters, seating, shade structures, bike racks; references FDOT's 2023 *Accessing Transit Design Handbook*.	Prioritization is based on ridership rather than crash risk or exposure. No adopted standards for lighting, sight lines, curb radii, or safe pedestrian crossings at stops.
Land Use and Transit-Supportive Design	Section 5.1.6 – Transit-Friendly Land Use and Urban Design	Aligns with Car-Free Key West (2017) and the 2023 Mobility Study; promotes TOD, sidewalk continuity, and stormwater-friendly design.	Coordination with the Comprehensive Plan and zoning is informal. No TOD overlay district or transit-corridor design standards to guide development.
Service Quality and Performance	Goal 1 – Enhance transit quantity and quality (Obj. 1.1–1.3)	Establishes targets for ridership growth, on-time performance, and fleet condition.	Performance metrics focus on reliability, not safety. No targets for reducing pedestrian conflicts, unsafe crossings, or improving safe access.
Regional Coordination and Governance	Goal 3 – Coordination with FDOT and regional providers	Encourages partnerships with FDOT District VI, Lower Keys Shuttle, and DOPA.	No formal MOU for safety data sharing, joint corridor audits, or transit-priority treatments on shared corridors like N. Roosevelt.
Funding and Implementation	Section 5.1 – Funding programs	Identifies federal, state, and local funding streams including Section 5311 and potential bed tax revenues.	No dedicated funding criteria for safety or Vision Zero outcomes; prioritization does not consider crash risk or safety improvements at stops.
Equity and Public Engagement	Outreach Summary – Phase I and II	Surveys identify needs of seniors, low-income workers, and non-English speakers.	Equity feedback is not tied to measurable indicators. No Title VI metrics or standardized multilingual outreach program.

Monroe County Comprehensive Plan			
Focus Area	**Relevant Policies / Objectives**	**Strengths / Existing Policies**	**Gaps and Opportunities**
Transportation Safety and Mobility	Goal 301 / Objective 301.1 – Provide a safe, convenient, efficient, and environmentally compatible transportation system.	Recognizes safety as a core principle and promotes multimodal and resilient transportation.	Safety is expressed as a broad goal with no measurable indicators. Add Vision Zero language and performance measures such as fatality, injury, and risk-reduction targets.
Level of Service (LOS) Standards	Policy 301.1.2 – Maintain LOS D for county roads and LOS C for U.S. 1 (per F.S. §163.3177).	Provides clear LOS standards for development review and roadway performance.	LOS framework prioritizes vehicle flow and excludes pedestrian/bicycle LOS or safety metrics. Future updates r incorporate Level of Traffic Stress (LTS) for active modes and crash-based, exposure-based measures alongside any LOS requirements. Where a full shift from LOS to VMT-based evaluation is desired for regulatory purposes, coordination with FDOT and potential state-level action may be required.
Multimodal Transportation	Objective 301.4 – Coordinate with FDOT and municipalities to improve multimodal facilities.	Encourages sidewalk, bicycle, and shared-use path improvements along county and state corridors.	No formal coordination process with Key West or FDOT. No safety-data sharing, joint audits, or multimodal performance metrics.
Mass Transit and Paratransit Coordination	Goal 401 / Policies 401.a–c – Develop a coordinated system with KWDOT, FDOT, DOPA.	Supports regional transit mobility and paratransit coordination.	No safety or accessibility standards for transit stops (lighting, ADA paths, crossing distance). No routine evaluation of transit-stop safety.
Traffic Circulation and Capacity Management	Goal 301 / Policy 301.1.3 – Ensure capacity meets development impacts.	Provides structure for concurrency and development review.	Focus is on capacity, not safety outcomes. Development review lacks safety performance criteria or mitigation requirements tied to crash risk.
Climate Adaptation and Resilience	Objective 302.1 – Protect infrastructure from flooding and wind hazards.	Integrates sea-level rise and drainage improvements into transportation planning.	Emphasizes infrastructure resilience but not mobility safety during flooding or evacuation. Add criteria for "safe access" and emergency mobility.
Equity and Accessibility	Policy 301.4.3 – Ensure facilities are accessible for elderly and disabled users.	Supports ADA compliance and accessibility.	No equity-based prioritization or data metrics for underserved populations. Add an equity-screening layer to project selection.
Coordination with Municipal Plans	Objective 301.4 and Goal 401 – Coordinate with municipal governments and FDOT.	Provides a general framework for joint planning with Key West and FDOT.	Coordination is informal and lacks an MOU for speed reviews, crash data exchange, design standards, or Vision Zero alignment on shared corridors (U.S. 1 and N. Roosevelt).

Commission And District Priorities			
District / Source	**Location or Issue**	**Safety Concern**	**Suggested Action or Policy Gap**
District IV	Kennedy Dr at Poinciana School / Flagler Ave	Congestion and unsafe drop-off/pick-up conditions during school hours.	Evaluate for raised crosswalks, flashing beacons, and curb management. Incorporate into Safe Routes to School program; develop a school-zone design standard.
	Wickers Trail / Staples Bridge / Greenway	Incomplete trail alignment limits safe, continuous bike routes.	Prioritize Wickers completion in next CIP cycle; apply protected intersection design treatments at Staples Bridge.
	N. Roosevelt near GFS / Starbucks	Excessive e-bike speeds on sidewalks; limited speed-awareness signage.	Add "Share the Path" pavement markings and signage. Evaluate 15 mph shared-path limits and targeted enforcement.
District I	Key West Triangle	High crash frequency with multiple injury crashes.	Conduct a focused safety audit; evaluate signal timing, turning movements, and access control.
	Crosstown Bike Path	Unbuilt segment due to past environmental constraints.	Re-scope alignment to reduce conflicts, with updated environmental review. Incorporate into Bike/Ped Plan update.
	Visitor driver awareness	Many visitors unaware of local bike/ped rules.	Develop seasonal PSAs with FDOT: "Bikes May Use Full Lane," "3-Foot Passing," micromobility etiquette.
District II	N. Roosevelt Driveways / Yacht Club	Poor sight distance causes frequent conflicts at driveways.	Enforce sight-triangle ordinance (§62-31). Require driveway visibility audits for commercial parcels along N. Roosevelt.
	Flagler & Kennedy School Zone	Congestion and unsafe crossing behavior near schools.	Implement school-zone signal timing, raised crosswalks, and crossing guards during peak periods.
	Distracted Driving & Scooter Use	Texting while driving or riding scooters.	Launch distracted-driving education; explore blue-light signal detection pilot at high-risk intersections.
District III	Community-wide	Lack of e-bike education for multilingual populations.	Produce trilingual education materials (English, Spanish, Creole) through churches, schools, and workforce groups; embed in Micromobility Ordinance outreach.
	Enforcement resources	Limited sustained enforcement for e-bike/scooter violations.	Use SS4A funds to support targeted enforcement waves tied to crash hotspots.
Mayor	N. Roosevelt corridor	Recurrent crashes near GFS, Walgreens, and Yacht Club.	Prioritize N. Roosevelt for a Vision Zero corridor retrofit with speed reduction, improved lighting, and driveway visibility standards.
	Distracted driving citywide	Frequent texting and driver inattention.	Consider higher fines, public-awareness billboards (subject to FDOT permits), and coordinated enforcement campaigns.

Police Enforcement Policy And Operations			
Focus Area	**Relevant Policies / Programs**	**Strengths / Existing Policies**	**Gaps and Opportunities**
Targeted Enforcement	Strategic Traffic Accident Reduction (STAR Night) operations	Data-driven deployment of officers in high-risk zones; strong public visibility; effective deterrence.	Program is reactive; no formal linkage to crash trend analysis or Vision Zero evaluation; lacks post-crash review coordination with Public Works and Planning.
High-Visibility Enforcement	FDOT-funded Pedestrian & Bicycle Safety HVE campaigns	Reinforces multimodal safety and driver compliance in priority corridors.	No routine integration into citywide safety performance metrics or annual reporting.
Distracted / Aggressive Driving Enforcement	Local enforcement under Ch. 70, STAR Night citations	Regular enforcement waves reduce repeat violations.	No escalating penalty structure; public awareness campaigns are ad hoc and not multilingual.
Automated Enforcement Potential	Red-light and speed-camera pilots (concept)	Evidence from peer cities shows proven crash-reduction benefits.	Requires enabling legislation and FDOT coordination; no current ordinance or pilot plan.
Education and Outreach	Informal school and community engagement	Builds trust through face-to-face education; supports youth safety.	No structured driver or e-bike education program with schools or the Keys Immigrant Coalition.
Data and Performance Tracking	Internal KWPD enforcement logs	Tracks officer activity and citations.	No inter-agency data sharing or annual enforcement impact report linked to Vision Zero.

Performance Metrics and Decision Framework: LOS, LTS, And VMT

The reviewed documents show that LOS is a standard reporting tool used in Florida for development review, concurrency context, and traffic operations discussions. However, LOS reflects vehicle delay and operational performance and does not directly measure safety, comfort, or exposure for people walking and bicycling. Because the Safety Action Plan is oriented around reducing fatal and serious injuries, the plan identifies LTS as the primary metric for evaluating walking and bicycling conditions, while treating LOS as supplemental context where legacy processes require it. VMT is included as a supporting system level indicator that reflects overall driving exposure. In a constrained environment like Key West, VMT can support longer term monitoring of exposure and mode shift trends, but it does not replace corridor level design and safety evaluation.

Metric	**What it measures**	**Strengths**	**Limitations**	**SS4A alignment**
LOS (Level of Service)	Vehicle delay, capacity, and operational performance	Widely understood and consistent with legacy processes; useful for reporting vehicle operations	Does not directly measure safety, comfort, or exposure for people walking and biking; can unintentionally favor capacity expansion	Low (supplemental context only)
LTS (Level of Traffic Stress)	Walking and bicycling comfort and perceived stress based on roadway context (speed, volumes, separation, crossings)	User-focused and safety-relevant; reflects stress, separation, and crossing conditions; supports network prioritization for vulnerable users	Requires network and context data; may require staff training and consistent application across projects	High (primary active-mode metric)
VMT (Vehicle Miles Traveled)	Total driving exposure (vehicle miles driven)	Supports mode shift and reduced exposure over time; aligns with land use and demand-management strategies; can complement safety prioritization	Often requires modeling, assumptions, or proxy data; not a substitute for corridor-level safety design metrics	High (supporting system indicator)

Feasibility and Authority Considerations for Adopting the Metrics

Some metric applications can be implemented under local authority, such as using LTS in plans and project scoring and de emphasizing LOS in safety decision making while retaining it for compatibility. Other applications, especially those tied to state controlled guidance and regulatory evaluations, require FDOT coordination and in some cases legislative change.

Proposed policy change	Description	Local authority	FDOT action	Legislature	Expected effort
Adopt LTS as the primary active transportation metric	Use LTS in plans, project scoring, and the CIP	✓	—	—	Low
Use LOS only as supplemental	Retain LOS for compatibility and reporting but not as the basis for safety decisions	✓	—	—	Low
Incorporate VMT into City project scoring	Use VMT reduction potential as a supporting indicator	✓	—	—	Moderate
Adopt VMT in comprehensive plan language	Update plan language to support VMT aware planning and TDM strategies	✓	—	—	Moderate
Shift mitigation from widening to TDM	Prioritize demand management and pricing, shared mobility, and parking reform strategies	✓	—	—	Moderate
Develop a regional VMT baseline or model	Coordinate with MPO and City to establish baseline and targets	—	✓	—	Moderate to high
FDOT adoption of VMT in statewide guidance	Update statewide guidance to reflect VMT use where applicable	—	✓	—	High
Use VMT in PD and E or NEPA evaluations	Adopt VMT as an official clearance metric where applicable	—	✓	✓	Very high
Statewide replacement of LOS for transportation impact evaluation	Legislative shift similar to a full LOS replacement approach	—	✓	✓	Very high

D – INCLUDE Model

This appendix provides additional detail on the INCLUDE Model introduced in Chapter 3 and documents how Transportation Health and Safety Convergence Zones were identified. The purpose of this section is to clearly describe the data sources, variables, thresholds, and reasoning used to operationalize the model.

The methodology described below aligns with the Safe System approach and national best practices for identifying communities with elevated transportation risk and exposure.

Overview of the INCLUDE Model

The INCLUDE Model provides a structured framework for integrating transportation safety, access, and health considerations into decision-making. It supports consistent identification of locations where crash risk, exposure, and community characteristics overlap.

INCLUDE represents:

- I – Inclusive Mobility Needs
- N – Network Accessibility
- C – Community Context
- L – Land Use and Displacement Considerations
- U – User Experience
- D – Data-Driven Evaluation
- E – Evaluation and Monitoring

Within the Safety Action Plan, the model supports the identification of areas where severe crash patterns intersect with socioeconomic and transportation-related indicators that suggest elevated exposure or limited mobility options. This integrated approach ensures that safety investments are informed not only by crash counts, but also by who is most affected and how travel occurs in different parts of the city.

Data Sources and Geographic Unit of Analysis

Data used in this screening process were obtained from:

- American Community Survey (ACS)
- Signal Four Analytics crash database (2018–2024)

Census Block Groups were selected as the geographic unit of analysis because they provide consistent, federally recognized demographic boundaries and allow for comparison across neighborhoods. Using Block Groups ensures that the methodology can be replicated in future updates.

The screening process was divided into two primary components:

1. Income-related indicators
2. Transportation-related indicators

Crash severity data were then spatially overlaid with screened Block Groups to identify convergence areas.

Income-Related Indicators and Rationale

Two variables were used to evaluate income-related vulnerability:

- Median household income
- Percentage of households enrolled in the Supplemental Nutrition Assistance Program (SNAP)

Median Household Income

Median household income was selected because research demonstrates that it serves as a strong general indicator of socioeconomic disadvantage and is highly correlated with multiple dimensions of vulnerability[6]. Income levels influence access to safe housing, transportation options, and the ability to absorb economic impacts from crashes.

A threshold of approximately $60,000 was applied. This threshold corresponds to 80 percent of Area Median Income (AMI) as defined by the U.S. Department of Housing and Urban Development (HUD)[7]. For Key West, this equates to roughly $60,000 based on local AMI estimates[8]. HUD methodology is widely used to classify lower-income households and provides a nationally consistent benchmark.

SNAP Participation

The percentage of households participating in SNAP was included to supplement income data and capture households experiencing direct income-based assistance reliance.

A threshold of greater than 10 percent SNAP participation was applied. National participation averages are closer to 12 percent[9], but applying that higher threshold in Key West would exclude neighborhoods identified locally as having meaningful economic need. The 10 percent cutoff balances national

[6] Troland, E., Agnes, I., Dries, E., Liu, J., Merchant, Z., Shaalan, F., Tran, M., Tranfaglia, A., & Webber, D. (2025). Suitability of a County-Level Income Definition for Analysis of Lower-Income Communities. Finance and Economics Discussion Series 2025-039. Washington, DC: Board of Governors of the Federal Reserve System. https://doi.org/10.17016/FEDS.2025.039

[7] U.S. Department of Housing and Urban Development. (2022). *FY 2022 Income Limits Methodology.* Office of Policy Development and Research. Retrieved from https://www.huduser.gov/portal/datasets/il/il22/IncomeLimitsMethodology-FY22.pdf

[8] Data USA. (2023). *Key West, FL Profile.* Retrieved from https://datausa.io/profile/geo/key-west-fl

[9] U.S. Department of Agriculture, Food and Nutrition Service. (2024). *Florida SNAP State Fact Sheet.* Retrieved from https://fns-prod.azureedge.us/sites/default/files/resource-files/snap-state-factsheet-fl.pdf

comparability with local sensitivity, ensuring that areas with measurable reliance on assistance are captured without overclassifying the city.

A Census Block Group met the income-related screening criteria if both thresholds were exceeded.

Transportation-Related Indicators and Rationale

Two transportation-related exposure variables were used:

- Percentage of households without access to a personal vehicle
- Percentage of workers who walk or bike to work

These indicators were selected based on recommendations from an equity metrics inventory developed at the University of California, Berkeley[10]. The research identifies these variables as reliable predictors of populations with elevated exposure to traffic risk.

Zero-Vehicle Households

Households without access to a personal vehicle often depend on walking, bicycling, transit, or shared mobility. These users are more frequently exposed as vulnerable road users in mixed-traffic environments.

A threshold of greater than 15 percent zero-vehicle households was selected to identify communities where carless households are present at rates well above the citywide baseline. A lower threshold would have classified much of the city, reducing the screening's usefulness for prioritization.

Walking and Biking to Work

The share of workers who walk or bike to work reflects daily exposure to traffic environments as vulnerable road users. National research demonstrates that walking and bicycling populations experience disproportionately higher rates of fatal and serious injury crashes compared to vehicle occupants [11,9].

Because Key West has a higher active mode share than many U.S. cities, a threshold of greater than 20 percent walking or biking to work was applied. Lower thresholds would have encompassed most of Old Town and reduced the ability to distinguish areas with concentrated exposure.

A Census Block Group met the transportation-related screening criteria if both thresholds were exceeded.

[10] Othering & Belonging Institute, University of California, Berkeley. (2022). *Meaningful Measurements of Mobility: Advancing Equity in Transportation Planning.* Retrieved from https://belonging.berkeley.edu/meaningful-measurements-mobility

[11] Grembek, O. (2015). *Relative Vulnerability Matrix for Evaluating Multimodal Traffic.* In *New Frontiers in Road and Airport Engineering.* Retrieved from https://safetrec.berkeley.edu/sites/default/files/publications/relative_vulnerability_matrix.pdf

Crash Severity Overlay and Convergence Identification

Crash data from 2018–2024 were analyzed with a focus on fatal and incapacitating injury crashes to align with the Safe System emphasis on reducing severe outcomes.

Census Block Groups that met income-related or transportation-related thresholds were spatially overlaid with crash severity data. Transportation Health and Safety Convergence Zones were identified where:

- A Block Group met one or more screening thresholds; and
- Elevated concentrations of fatal or serious injury crashes were present within or directly adjacent to the area.

This approach ensures that screening is not based solely on demographic indicators or solely on crash frequency. Instead, it identifies areas where vulnerability and documented severe crash risk intersect.

Role in Project Prioritization

Transportation Health and Safety Convergence Zones serve as a planning and prioritization tool within the Safety Action Plan. These zones:

- Inform composite project scoring
- Support transparent allocation of safety investments
- Strengthen alignment with federal funding requirements
- Provide a repeatable and defensible screening methodology

The zones do not represent regulatory designations. They function as analytical tools to guide data-informed investment decisions.

Replicability and Future Updates

The INCLUDE screening methodology is structured to allow periodic updates as new ACS data and crash records become available. Thresholds and Block Group classifications can be recalculated using the same documented variables and reasoning.

By documenting the variables, thresholds, research foundation, and spatial overlay process, this appendix ensures that the INCLUDE Model remains transparent, defensible, and aligned with national best practices while reflecting Key West's specific transportation context.

E - Project Prioritization Framework

Projects were prioritized using a structured, two-stage framework designed to balance safety impact with implementation feasibility. The approach first evaluates projects using a composite scoring system and then organizes them into implementation tiers to guide near-, mid-, and long-term delivery.

Stage 1: Composite Scoring

Each project is evaluated using four criteria selected to reflect Key West's operating context and align with approaches used in peer Safety Action Plans. Safety Need carries the greatest weight, followed by Transportation Health and Accessibility, Multimodal/Vulnerable Road User (VRU) Exposure, and Cost–Benefit/Feasibility.

- Safety Need: 40 percent
- Transportation Health and Accessibility Considerations: 25 percent
- Multimodal / VRU Exposure: 20 percent
- Cost–Benefit and Feasibility: 15 percent

Projects are scored on a consistent 1–5 scale for each criterion using defined rules to minimize subjectivity. Higher scores indicate greater priority.

Criteria 1 - Safety Need

Safety Need is recommended as the primary determinant of project priority. This criterion reflects both **data** and **community-perceived safety risk**. Scores are based on recorded crash severity, proximity to KSI crash clusters, conflict patterns, and consistent community-reported concerns such as speeding, near-miss events, and difficulty crossing.

Score	Safety Need Scoring Rule
5	Project lies on the High Injury Network (HIN) and has ≥2 KSI crashes **or** is repeatedly identified by community members as a location with severe safety concerns (e.g., speeding, frequent near-misses, inability to cross safely), corroborated by field observations
4	Project is on the HIN **or** has 1 KSI crash with multiple injury crashes or conflict patterns **and/or** strong, consistent community feedback identifying the location as unsafe, with supporting operational or geometric risk factors
3	Not on the HIN but location has multiple injury crashes or documented speed or pedestrian conflicts **or** moderate community concern related to speed, visibility, or crossing difficulty
2	Low crash frequency but documented operational risks identified during field review **or** isolated community-reported safety concerns
1	Minimal crash history and no observed or reported safety concerns

Criteria 2 - Transportation Health and Accessibility

This scoring incorporates the Transportation Health and Safety (THS) Convergence Area and evaluates the extent to which a project benefits vulnerable or historically underserved populations. These designations reflect relative comparison within the study area, using publicly available data sources, and are intended solely for planning and prioritization purposes.

Score	Transportation Health and Accessibility Scoring Rule
5	Project located fully inside a THS or directly benefits high-priority populations
4	Project partially inside or directly adjacent to a THS
3	Outside THS but improves access to sensitive land uses (schools, senior housing, transit)
2	Indirect relevance with limited direct benefit
1	No meaningful linkage

Criteria 3 - Multimodal / Vulnerable Road User Exposure

This criterion evaluates exposure of pedestrians, bicyclists, micromobility users, and tourists. Given Key West's VRU-dense environment, this criterion ensures projects serving high-activity corridors receive elevated priority.

Score	VRU Exposure Scoring Rule
5	Very high VRU activity (e.g., Duval Street, Old Town, school zones, waterfront corridors) and/or high micromobility conflict presence
4	High pedestrian or bicycle volumes or major tourist corridors
3	Moderate and consistent VRU activity
2	Low VRU presence; primarily residential
1	Minimal multimodal activity

Criteria 4 - Cost–Benefit and Feasibility (15 percent)

Feasibility scoring captures cost-level considerations, right-of-way limitations, design complexity, and interagency coordination requirements. This criterion ensures that high-benefit, low-effort improvements can be advanced early.

Score	Feasibility Scoring Rule
5	Quick-build improvements; low cost; implementable within existing ROW; high expected safety benefit
4	Minor design required; moderate cost; limited constraints
3	Moderate ROW restrictions or design needs; mid-range cost
2	Significant coordination required (e.g., FDOT corridors) or high construction complexity
1	Major capital project requiring long-term programming or substantial reconstruction

Composite Scoring Approach

Each project receives a score in all four criteria. A composite score is calculated as follows. This produces a normalized project rating between 1.0 and 5.0. Higher scores indicate higher priority for implementation.

Composite Score = (Safety × 0.40) + (Transportation Health & Accessibility × 0.25) + (VRU Exposure × 0.20) + (Feasibility × 0.15)

Stage 2: Implementation Tiers

Following composite scoring, projects are organized into implementation tiers. Tier assignment considers both the composite score and feasibility characteristics to ensure that high-impact projects can advance when implementation barriers are minimal.

Rationale for the Recommended Methodology

The selected methodology is recommended for the following technical reasons:

- Balances Data-Driven Scoring with Implement ability - Weighted scoring ensures that locations with the highest crash risk and VRU exposure rise to the top. The feasibility score and tier structure ensure that project timing reflects both benefit and deliverability.

Tier	Composite Score Range	Feasibility Considerations	Typical Project Types
Tier 1 Near-Term (0–3 years)	High composite score (e.g., ≥3.5–5.0)	Minimal ROW constraints Quick-build eligible Low–moderate cost Limited design effort No major FDOT/utility conflicts	Crossing upgrades Quick-build traffic calming Markings/signage Signal timing adjustments VRU-focused treatments
Tier 2 Mid-Term (3–7 years)	Moderate composite score (≈2.5–3.4)	Moderate ROW or design needs Potential FDOT coordination Requires detailed engineering Medium cost	Corridor calming Refuge islands Local geometric updates
Tier 3 Long-Term (7+ years)	Lower feasibility or capital-intensive projects	Significant ROW constraints High cost Major utility relocation Requires full capital programming	Major intersection redesign Full roadway reconstruction Multimodal corridor redesign
Systemic Strategies	Categorized separately and scored context specific	Not location-specific	Education Enforcement Micromobility policy Data improvements

- Integrates All Analytical Inputs Developed for Key West - The methodology directly incorporates the High Injury Network, ECZ analysis, VRU exposure mapping, crash pattern analysis, and field audit observations. This ensures consistency with the broader technical work completed to date.
- Consistent With Leading Practices in Peer Communities - Peer cities with similar constraints and multimodal conditions (e.g., Cortez, Menlo Park, Sylvester, Coventry) apply comparable multi-criteria evaluation structures. Cities using rule-based systems also prioritize feasibility after identifying high-risk corridors (e.g., Fort Pierce, Newport, Van Buren Twp).
- Suited to Key West's High VRU Environment and Limited ROW - Key West's compact network, constrained ROW, high VRU flows, and tourist-driven mobility patterns require a method that emphasizes VRU safety while recognizing practical implementation limits.
- Ensures Transparency and Repeatability - The explicit scoring rules allow staff to apply the methodology consistently across projects and update the rankings as new data becomes available.

F – Before and After Evaluation Protocol

Projects recommended under this Safety Action Plan should incorporate post-implementation monitoring to assess changes in crash trends, operating speeds, and user behavior. Where feasible, evaluation will follow consistent pre- and post-implementation methodologies to allow comparison over time.

Pre-implementation conditions should be documented prior to construction or deployment. Documentation may include crash history, speed data, traffic volumes (where available), pedestrian and bicycle activity, and field observations of user behavior.

Post-implementation evaluation should occur after a reasonable stabilization period, recognizing that behavioral adaptation may take time. Where crash frequency is low, supplementary indicators such as speed reduction, yielding compliance, and observed conflict patterns may be used to assess effectiveness.

Evaluation results should inform adjustments to design treatments, future project prioritization, and funding decisions.

G - Corridor-Level Safety Improvement Projects (CSP)

This appendix provides supporting detail for each recommended corridor-level safety project. For each corridor or location, the discussion summarizes:
(1) key findings from crash data analysis and field observations,
(2) why the recommended treatment is appropriate for the corridor context,
(3) planning-level cost and benefit considerations where feasible, and
(4) key implementation considerations.

Planning-level cost estimates were developed using FDOT Historical Item Average Costs[12], which provide standardized unit cost references for transportation safety improvements. Safety benefits were estimated using Crash Modification Factors (CMFs) from FDOT-recommended sources and the FHWA CMF Clearinghouse[13], consistent with federal and state practice. Benefit–cost ratios were calculated using the FDOT-approved Benefit–Cost Analysis tool[14].

Benefit–cost results are intended for relative comparison across projects, not precise prediction of future outcomes. Several recommendations are identified as studies, programs, or systemic strategies, for which a single benefit–cost ratio is not presented. In these cases, the final scope, quantities, or locations will be refined during subsequent design or **coordination and** therefore do not lend themselves to a single planning-level estimate at this stage.

[12] Historical Item Average Cost Reports
[13] CMF Clearinghouse
[14] Tools

US 1/Overseas Highway

Study Corridor: Key Haven Road to Triangle (approximately 1.4 miles)

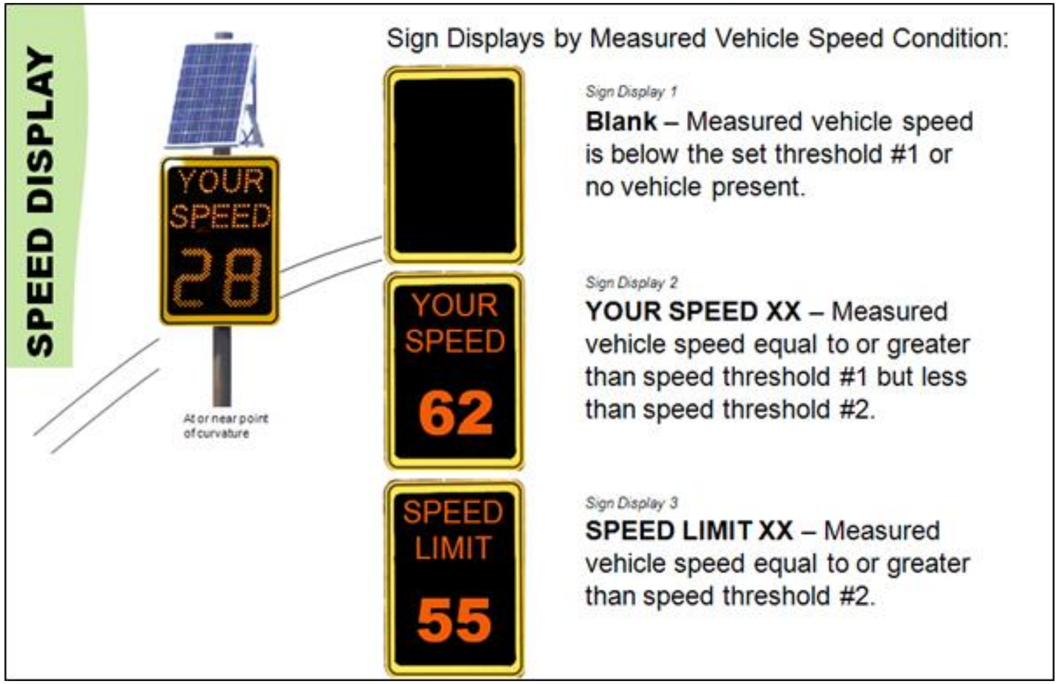
This segment of US-1 functions as a primary gateway into Key West and carries high traffic demand with multiple decision points. Field reviews and stakeholder input indicate that driver attention is often divided across competing visual cues, including frequent signing, turning activity, and user activity associated with the Overseas Heritage Trail.

Observed operating conditions and crash data analysis suggest that near-term safety opportunities lie in **speed awareness, speed consistency, and rear-end crash risk reduction**, paired with a medium-term signing strategy that improves recognition of the most critical information without disrupting corridor function.

CSP 1: Speed Feedback Signs (Short Term)

Project Description:
Installation of dynamic speed feedback signs that display an approaching driver's speed, typically paired with a posted speed message.

Speed feedback signs are a practical "speed management" tool when speeding complaints and speed variability are part of the operating context. They work by giving immediate, easy to understand feedback at the point where drivers make speed decisions. That makes them especially useful where enforcement cannot be continuous and where roadway context can "feel faster" than the intended speed.



This treatment is most aligned with:

- Speeding and speed variability (a common contributor to rear end conflicts)
- Reduced reaction time entering complex areas with turning and crossing activity
- Rear-end crash risk associated with unexpected slowing

NHTSA[15] identifies dynamic speed feedback signs as a recognized **speed management countermeasure**, with documented speed reductions across multiple roadway contexts.

Cost Benefit Considerations

Speed feedback signs are relatively low cost compared to geometric or signalized interventions and can often be installed within existing right-of-way. While individual speed reductions may be modest, the benefit–cost ratio is favorable due to low installation and maintenance costs and the ability to deploy signs strategically at multiple locations. These signs also complement other safety investments by enhancing driver awareness ahead of high-conflict zones, improving the overall effectiveness of corridor safety strategies.

Implementation Considerations

- Target placement should be evaluated based on speed data and approach context (for example, transition areas, segments with observed speeding concerns, and approaches to queues)
- Power source (solar vs. hardwired) and maintenance responsibilities must be evaluated
- MUTCD-compliant design and placement are essential to maintain credibility and effectiveness

[15] Dynamic Speed Display/Feedback Signs | NHTSA

CSP 2: Sign Consolidation and Clarity Program (Medium Term)

Project Description:
A corridor wide signing review and implementation plan that inventories existing signs, identifies which messages are most critical, and then reconfigures signing focused on improving message prioritization and clarity. The objective is not wholesale sign removal, but deliberate management of the roadside information environment so that the most critical regulatory and warning messages are more noticeable and easier to process.

Field observations along this segment of US-1 identified a high concentration of regulatory, warning, and informational signage. While individual signs are warranted, their cumulative presence creates a visually complex operating environment in which critical safety messages compete with less time-sensitive information.

Research[16] indicates that that high sign density can reduce driver comprehension and delay recognition of key warnings by increasing visual and cognitive demand. When multiple messages are presented within a short distance, drivers may need to divide their attention across several signs, reducing the likelihood that priority regulatory or warning information is noticed and understood in time to support safe decision-making.

The Manual on Uniform Traffic Control Devices (MUTCD) emphasizes that traffic control devices should be easily recognizable, convey a clear and simple meaning, and provide adequate time for drivers to respond. In environments with excessive or closely spaced signage, these objectives can be undermined, as driver attention may be dispersed and the conspicuity of critical messages reduced.

FHWA human factors research similarly highlights that increased visual complexity and information load can affect driver scanning behavior and information processing, particularly in constrained or high-demand roadway environments. When drivers are required to process multiple signs simultaneously, reaction time and message comprehension may be adversely affected.

Crash patterns along the corridor suggest that driver expectancy and timely response play an important role in safety performance. Improving the clarity and prioritization of roadway information can support other countermeasures, such as speed management and advance warning strategies, by

[16] Horberry, T., et al. (2006). *Driver distraction and road environment complexity*. Accident Analysis & Prevention.

helping drivers identify and respond to critical cues more efficiently.

Consistent with all these guidances, this approach focuses on strategic sign use to preserve the effectiveness of critical safety messages.

Typical Program Elements

- Comprehensive sign inventory documenting type, purpose, condition, and redundancy
- Review of sign spacing, sight lines, and conflicts with roadside features
- Identification of safety-critical messages requiring emphasis
- Updated signing plan addressing placement, consolidation, and replacement timing
- Coordination with maintenance practices to prevent gradual sign proliferation

Cost Benefit Considerations

A signing program often does not map neatly to a single crash modification factor because it is a corridor communication strategy, not a single device installed at a single location. The value is improving driver expectancy and recognition of the most safety critical information across the entire segment, which supports other safety investments (like speed management and queue warning).

Implementation Considerations

- Coordinate early to confirm sign ownership, MUTCD compliance, and approval requirements for modifications.
- Implement the program in phases, starting with the most congested and high-conflict segments, and expand corridor-wide based on field verification and observed operational improvements.
- Preserve all regulatory and safety-critical signs while removing, relocating, or consolidating redundant and lower-priority signs to improve message clarity.
- Align sign consolidation activities with scheduled maintenance, resurfacing, striping, or signal work to reduce cost, disruption, and reinstallation of unnecessary signage.
- Verify sight lines, spacing, and visibility in the field to ensure retained signs remain conspicuous and readable under real operating conditions.
- Manage transitions carefully to maintain driver expectancy, avoiding abrupt information loss and allowing for minor adjustments after implementation.
- Implement primarily within existing right-of-way, relying on targeted replacement and relocation rather than new construction, which supports feasibility and cost control.
- Establish internal review practices to limit future sign proliferation and preserve the effectiveness of the consolidated signing environment over time.

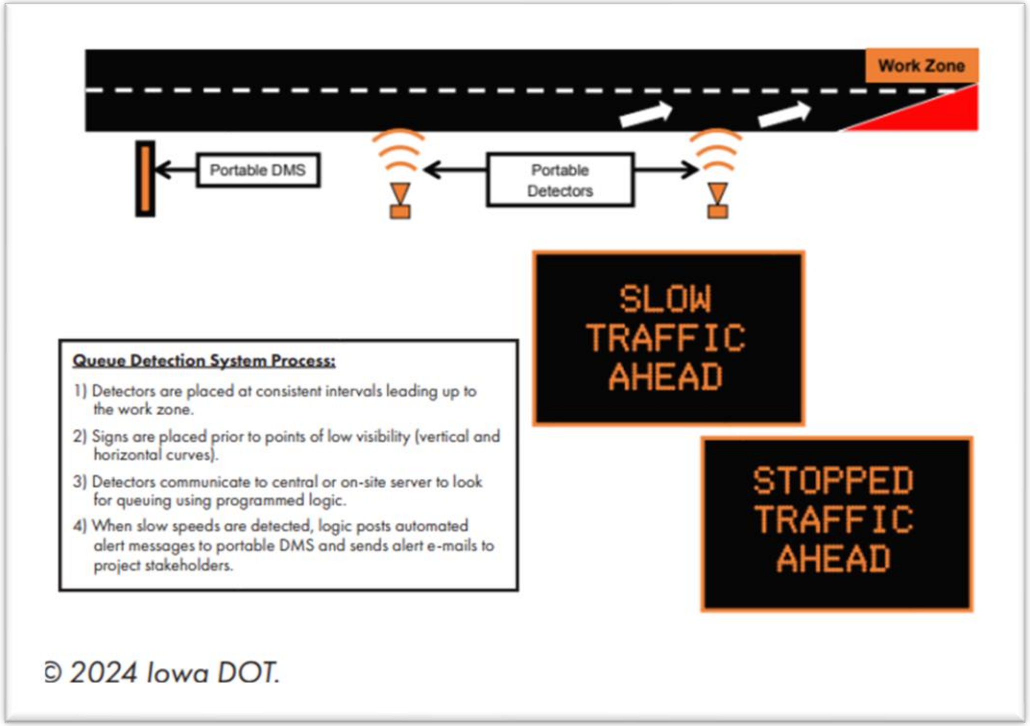
CSP 3: Dynamic Queue Warning (Medium Term)

Project Description:
This project proposes installation of vehicle-activated or sensor-based queue warning signs that alert approaching drivers to slow or stopped traffic ahead. These systems detect downstream conditions and provide real-time warnings upstream.

Crash analysis indicates that rear-end collisions represent one of the dominant crash type along this corridor, reflecting frequent encounters with unexpected slow or stopped traffic. Field observations show that traffic queues can form quickly during peak travel periods, incidents, or transitional traffic conditions, often without sufficient advance warning to approaching drivers.

Dynamic queue warning systems provide real-time alerts to drivers when congestion or stopped traffic is present ahead. These systems respond to changing conditions and communicate queue presence upstream, supporting smoother deceleration and improved driver response in environments with variable speeds and recurring congestion.

FHWA operations guidance identifies dynamic queue warning as an effective countermeasure for corridors with fluctuating speeds and recurrent congestion. By improving advance awareness of queues, this treatment supports earlier braking decisions, reduces abrupt speed changes, and limits chain-reaction rear-end crashes. Queue warning complements other speed-management and information-delivery strategies by reinforcing driver expectancy in locations where traffic conditions change rapidly.



Cost and Benefit Considerations

Dynamic queue warning systems involve moderate capital and ongoing maintenance costs relative to static signing, but they can often be added onto existing traffic management systems with limited additional expense. Costs vary based on detection technology, message display type, and system integration, but many deployments leverage existing infrastructure such as dynamic message signs and automated operations.

Queue warning systems directly address rear-end crash risk by improving driver awareness of slowed or stopped traffic ahead, reducing delayed recognition and sudden braking. Evaluations of operational deployments have demonstrated measurable safety benefits in corridors with recurring queues and variable operating speeds. For example, deployments in Minnesota documented reductions of more than 50 percent in crashes and near-crashes, while installations in Pennsylvania and Texas reported crash reductions ranging from approximately 12 percent to over 40 percent, depending on site conditions and system configuration.[17]

Safety benefits are most pronounced where queue formation is frequent or unpredictable and where advance warning provides drivers sufficient time to adjust speed and lane position. When implemented in appropriate contexts, dynamic queue warning systems can enhance driver expectancy and support other corridor strategies by ensuring that critical information is communicated clearly and in real time.

Implementation Considerations

- Conduct a targeted feasibility screen to confirm where queues form, how frequently they occur, and the appropriate upstream distance for warnings.
- Coordinate with FDOT and traffic operations staff to confirm warrants, placement constraints, and compatibility with existing ITS infrastructure.
- Select detection methods appropriate to corridor conditions, including radar, video, Bluetooth, or other sensing technologies.
- Evaluate power options, including hardwired and solar installations, based on site conditions and reliability needs.
- Define maintenance responsibilities, inspection schedules, and performance monitoring to ensure system reliability over time.
- Integrate queue warning with other corridor treatments, such as speed feedback signs and signing consolidation, to support consistent driver messaging.

[17] FHWA-HRT-25-049: Traffic Management Systems Actively Managing the Display of Queue Warning Messages

North Roosevelt Boulevard

Study Corridor: Triangle to Truman Avenue (approximately 2.3 miles)

North Roosevelt Boulevard is a high-volume arterial serving regional through traffic, local access, commercial destinations, and significant bicycle and pedestrian activity. Crash frequency is high in absolute terms, but must be interpreted relative to exposure, access density, and corridor function.

Crash data from 2018–2024 reveal patterns typical of access-intensive arterials. The corridor has with several access points connecting multiple businesses and driveways which adds to the challenges the corridors faces. Analysis of crash type and severity shows:

- Rear-end crashes are the most frequent crash type, reflecting speed variability, queue formation, and sudden braking associated with congestion and access-related conflicts.
- Bicycle- and micromobility-involved crashes occur at a relatively high frequency and severity, indicating elevated exposure combined with limited sight distance and frequent turning movements at driveways and intersections.
- Conflicts between vehicles entering or exiting driveways and micromobility users traveling along sidewalks and curb-adjacent spaces represent a crash pattern observed throughout the entire study period.
- Left-turn crashes into and out of access points are prevalent, suggesting challenges with gap acceptance and conflicting movements along the corridor.

Crash Type	**K**	**A**	**B**	**C**	**O**	**Total (2018 – 2024)**
Rear End	1	11	32	38	296	378
Same Direction Sideswipe		1	2	3	118	124
Bicycle	1	11	51	25	27	115
Single Vehicle	2	8	32	12	21	75
Off Road	1	5	10	6	38	60
Left Entering		4	9	5	21	39
Left Leaving		3	4	5	26	38
Right Angle		1	4	5	25	35
Left Rear	1	1	6	7	19	34
Other		2	1	1	28	32
Unknown					28	28
Backed Into					21	21
Head On			4		17	21
Parked Vehicle					18	18
Pedestrian		4	9	4	1	18
Rollover		3	3	3	4	13
Right/Through			2	2	7	11
Opposing Sideswipe			2		1	3
Right/Left	1	11	32	38	296	378
Total	**6**	**54**	**171**	**116**	**717**	**1064**

- Speeding and aggressive driving behaviors reduce reaction time, increasing the likelihood of rear-end and angle crashes.
- Restricted visibility from vegetation, driveway geometry, and access spacing contributes to conflicts involving vehicles, pedestrians, bicyclists, and micromobility users.

Access Density and Crash Concentration

The table summarizes access point density along different segments of North Roosevelt Boulevard. Segments with higher densities of access points also experience higher densities of vulnerable road user (VRU) crashes and fatal and serious injury (KSI) crashes. This relationship underscores the increased risk created by frequent driveway activity, particularly for pedestrians, bicyclists, and micromobility users operating along sidewalks and shared spaces.

#	Corridor Start	Corridor End	Length (mi)	Side	Access Points #	Access Points Density (#/mi)	VRU Crash D ensisty (#/mi)	KSI Crash Density (#/mi)
1	Triangle	Kennedy Dr	1.2	Ocean	3	2.5	47	18.3
				Island	42	35.0		
2	Kennedy Dr	Overseas Market	0.3	Ocean	8	26.7	193	36.7
				Island	10	33.3		
3	Overseas Market	Eisenhower Dr	1.1	Ocean	11	10.0	104	24.5
				Island	50	45.5		

Left-Turn Conflict Locations

In addition to overall access density, the types of movements permitted at access points influence crash outcomes. Table X identifies locations along North Roosevelt Boulevard with elevated numbers of left-turn crashes into and out of driveways and side streets. Several of these locations also experience KSI crashes and micromobility-related conflicts, highlighting the safety risks associated with unrestricted turning movements in a high-access corridor.

Along with the access point density, the movements allowed at access points matters. Table to the right shows locations along N Roosevelt Blvd that have high instances of left turn crashes into and out of access points

These findings support a system-level approach to safety improvements rather than isolated spot treatments. A coordinated set of strategies is recommended for North Roosevelt Boulevard, including:

- Speed management and queue mitigation
- Access management and evaluation of turning movements
- Visibility and sight-distance improvements at driveways and intersections
- Operational analysis to reduce conflicts involving pedestrians, bicyclists, and micromobility users

Location on N Roosevelt Blvd	**Left Turn Crashes (#)**	**KSI Left Turn Crashes (#)**
Between the Triangle and Blue Flamingo Resort	9	1
At 17th St	15	3
At 14th St	8	1
Between Kennedy Dr and Overseas Market	26	1
At 7th St	9	0
At 5th St	3	1
At George St	5	1

CSP-4: Speed Management and Visibility Improvements (Short Term)

Project Description:
This project focuses on near-term actions that improve visibility and reinforce appropriate speeds without major reconstruction. Elements include vegetation management, sight-line improvements, and coordination with Resurfacing, Restoration and Rehabilitation (RRR), where needed. As part of this effort, route shield pavement markings should be installed near the Triangle to help drivers navigate this complex intersection.

Crash analysis and field observations indicate that rear-end, bicycle, and pedestrian crashes frequently occur at locations where visibility is constrained by roadside vegetation, driveway geometry, and curbside features. These conditions limit sight distance for both drivers and non-motorized users, particularly at driveway crossings and midblock access points. Speed variability along the corridor further reduces available reaction time when visibility is compromised.

This project focuses on targeted visibility and speed-management improvements to reduce delayed recognition at conflict points. Treatments may include vegetation management, driveway sight-triangle clearing, curbside adjustments, and complementary speed awareness measures. Together, these actions improve driver expectancy and enhance the effectiveness of other corridor safety treatments.

Visibility improvements support safer turning and crossing decisions by restoring mutual visibility between drivers, bicyclists, pedestrians, and micromobility users. FHWA guidance recognizes that improving sight distance and managing operating speeds reduces conflict severity and supports safer interactions in mixed-use corridors. These treatments are particularly effective where frequent driveway access and sidewalk activity create midblock conflicts.

Cost and Benefit Considerations

Visibility and speed-management improvements typically involve low-cost, targeted interventions implemented within existing right-of-way. While these treatments do not correspond to a single crash modification factor, they directly support reductions in rear-end and vulnerable road user crashes by improving recognition time and reducing speed differentials. Benefits are often realized quickly and reinforce the performance of complementary countermeasures such as signing, pavement markings, and queue warning systems.

Implementation Considerations

- Coordinate with FDOT, City Public Works, and maintenance staff to identify vegetation, curbside, and driveway conditions affecting sight distance.
- Prioritize locations with documented rear-end or bicycle and pedestrian conflicts, particularly at driveway crossings and midblock access points.
- Implement treatments using routine maintenance activities where possible to support rapid deployment and cost efficiency.
- Verify sight triangles in the field under typical parking and curbside conditions rather than relying solely on design drawings.
- Combine visibility improvements with speed awareness measures to reinforce driver expectancy and response time.
- Monitor treated locations post-implementation and adjust maintenance practices to sustain visibility benefits over time.

CSP-5: Access Management (Medium Term)

Project Description:
This recommendation supports a corridor-wide access management approach, which may include:

- Evaluating opportunities to consolidate or better define access points to reduce conflict frequency.
- Retrofitting driveway crossings where feasible to improve visibility between drivers and sidewalk users and reinforce pedestrian priority.
- Considering right-in/right-out configurations or raised medians at select high-conflict locations.
- Installing pedestrian and bicycle warning signage at hotspot driveways.

North Roosevelt Boulevard contains a high spatial density of driveways serving commercial, residential, and mixed-use properties. These access points create frequent interactions among vehicles, pedestrians, bicyclists, and micromobility users within a constrained right-of-way. Crash records and narrative review indicate that driveway-related movements contribute meaningfully to injury crashes along the corridor, particularly during turning and merging maneuvers.

Access management strategies focus on organizing and simplifying how vehicles enter and exit the roadway. Rather than eliminating access, these treatments aim to reduce conflict frequency, improve spacing, and clarify expected movements to support safer operations for all users.

FHWA identifies access management as an effective safety strategy on arterial corridors with high turning activity and mixed traffic. Reducing the number and complexity of access points lowers conflict density, improves driver expectancy, and increases the time available for decision-making. On corridors with high pedestrian and bicycle activity, improved access management also reduces unexpected vehicle movements across sidewalks, bike facilities, and crossings.

Access management complements other corridor strategies such as speed management, signing clarity, and queue warning by stabilizing traffic flow and reducing mid-block turbulence that contributes to rear-end and turning-related crashes.

Cost and Benefit Considerations

Access management improvements range from low-cost operational changes to moderate capital treatments, depending on the specific strategy. Benefits accrue through reduced conflict points, improved predictability, and smoother traffic operations rather than a single device-specific crash reduction factor. Safety benefits are strongest when treatments focus on locations with observed driveway conflicts, documented injury crashes, and high pedestrian or bicyclist exposure.

Implementation Considerations

- Conduct a detailed driveway inventory to document spacing, usage, turning patterns, and proximity to crossings and intersections.
- Coordinate with property owners and adjacent land uses to evaluate consolidation opportunities and shared access where feasible.
- Prioritize locations with documented injury crashes, high pedestrian activity, or observed driveway-related conflicts.
- Evaluate context-appropriate treatments such as driveway consolidation, directional access, raised or tightened driveway geometry, and improved internal circulation.
- Coordinate closely with FDOT where access points fall under state jurisdiction or intersect state-maintained facilities.
- Phase implementation to align with resurfacing, redevelopment, or capital projects to reduce cost and disruption.
- Balance safety improvements with access needs for businesses, deliveries, emergency services, and short-term curb activity.

CSP-6: Traffic Simulation Study (Medium Term)

Project Description:

This project recommends a traffic simulation and signal operations study to:

- Evaluate existing signal timing, coordination, and offsets.
- Identify opportunities to reduce queue formation, delay, and conflict-prone maneuvers.
- Improve the availability of acceptable gaps for turning movements at critical locations.

Crash patterns along North Roosevelt Boulevard indicate elevated risk associated with turning movements, gap acceptance, and complex signal operations, particularly at signalized intersections and high-volume access points. These conditions reflect the corridor's role as a regional arterial with frequent turning activity, constrained space, and high pedestrian, bicycle, and micromobility presence.

A traffic simulation study provides a structured method to evaluate operational changes in a virtual environment before field implementation. This approach allows the City to test alternative configurations, signal timing strategies, access adjustments, and phasing concepts while assessing their effects on safety, delay, queuing, and multimodal operations.

FHWA recognizes traffic simulation as a best-practice tool for managing complex corridors where safety concerns arise from operational interactions rather than isolated geometric deficiencies. Simulation supports identification of unsafe conflict conditions, such as short gaps, spillback, and unexpected turning behavior, that may not be fully captured through crash data alone.

By modeling how vehicles, pedestrians, and bicyclists interact under different scenarios, simulation helps identify strategies that reduce conflict exposure, improve decision-making time, and support safer turning and crossing movements. This tool complements other corridor treatments by informing where physical or operational changes will deliver the greatest safety benefit.

Cost and Benefit Considerations

A traffic simulation study represents a moderate, one-time planning investment relative to capital construction. Benefits include risk reduction through informed decision-making, avoidance of unnecessary or counterproductive changes, and improved coordination across agencies before implementation. Simulation findings can also strengthen the technical basis for grant applications and support prioritization of subsequent capital projects.

Implementation Considerations

- Define clear study limits and objectives focused on documented crash patterns, turning conflicts, and multimodal interactions.
- Select appropriate simulation tools capable of representing signal operations, queues, pedestrian crossings, and bicycle movements.
- Calibrate the model using observed traffic volumes, turning counts, signal timing, and field conditions.
- Evaluate multiple scenarios, including signal timing changes, access modifications, turn restrictions, and pedestrian or bicycle priority treatments.
- Coordinate closely with FDOT where signalized intersections or operational changes fall under shared jurisdiction.
- Use study results to inform near-term operational changes, refine medium-term project design, and guide long-term corridor planning.

CSP-7: Sign Consolidation and Clarity (Medium Term)

Project Description:

This project recommends a **corridor-wide sign inventory and evaluation** to:

- Identify signs that provide overlapping or competing information.
- Improve placement, spacing, and prioritization of critical regulatory and warning signs.
- Enhance driver focus on people walking and bicycling and on key decision points.

Field observations along North Roosevelt Boulevard identified a high concentration of regulatory, warning, and informational signs within a constrained roadside environment. While individual signs may be warranted, their cumulative presence creates a visually complex operating context in which critical safety messages compete with less time-sensitive information.

This program is similar to CSP 2 recommended for US1 and the benefit cost and implementation consideration would remain same.

The proposed project can be implemented independently or coordinated with the recommended US-1 corridor study to ensure that sign consolidation supports broader operational and safety strategies identified through detailed analysis.

CSP-8: Origin–Destination Study (Long Term)

N Roosevelt is a regional gateway and a local access corridor and understanding how trips originate, where they are destined, and how travel patterns vary by time of day and season is critical for long-term safety planning and corridor decisions.

An origin–destination (O–D) study provides insight into through traffic versus local access demand, turning movement behavior, and diversion patterns during congestion or incidents. These findings support evaluation of future access management strategies, signal operations, and potential corridor reconfiguration concepts. This recommendation is limited to study and analysis and does not commit to specific design outcomes.

Cost–Benefit Considerations

The study provides high value by informing multiple future safety and operational investments through a single data-driven effort. By clarifying the balance between regional through traffic and local access trips, the study helps ensure long-term corridor strategies reflect actual travel behavior rather than assumptions. The results reduce the risk of misaligned capital investments, support targeted access management and signal strategies, and improve coordination with regional transportation partners. While the study does not directly reduce crashes, it strengthens the effectiveness and cost-efficiency of future safety improvements.

Project Description:

This study would:

- Analyze where trips on North Roosevelt originate and terminate.
- Distinguish between local access trips and through traffic.
- Identify opportunities to redistribute traffic to parallel corridors such as Flagler Ave and S Roosevelt Blvd, where appropriate.

Implementation Considerations

- Define clear study objectives, including peak-period conditions, seasonal tourism effects, and freight relevance
- Select appropriate data sources such as anonymized mobile device data, Bluetooth travel time data, or regional model outputs
- Coordinate with FDOT, MPO, and regional partners to ensure consistency with regional travel assumptions
- Establish corridor limits that capture gateway movements, diversion routes, and adjacent activity centers
- Schedule data collection to reflect typical and high-demand travel periods
- Integrate findings into future corridor studies, safety project refinement, and long-range planning project refinement, and long-range planning efforts

College Road Corridor

Study Corridor: Entire College Rd connecting US 1

College Road serves as a critical local connector College of the Florida Keys (CFK) and Lower Keys Medical Center, to US 1 with frequent pedestrian, bicycle, and vehicle activity associated with campus, medical, and service trips. While the corridor exhibits a relatively low total crash count compared to higher-volume arterials, its land-use context, user mix, and exposure characteristics warrant proactive safety treatments.

Between 2018 and 2024, a total of 47 crashes were reported along College Road. The crash profile is dominated by:

- Rear-end crashes
- Off-road and single-vehicle crashes
- Nighttime visibility-related issues
- Bicycle crashes occurring at low frequencies but elevated perceived risk

Crash Type	K	A	B	C	O	Total (2018 – 2024)
Rear End				1	18	19
Sideswipe					3	3
Bicycle			1	1		2
Off Road	1			1	6	8
Left Turn					5	5
Other		1	1		6	8
Head On	1					1
Rollover			1			1
Total	**2**	**1**	**3**	**3**	**38**	**47**

Importantly, the corridor includes pedestrian demand without a formal marked crossing between CFK and the medical center. Although no pedestrian crashes have been recorded at this location to date, community input and field observations indicate latent safety risk driven by crossing demand, limited nighttime visibility, and driver expectancy issues.

This corridor was therefore advanced using a proactive safety approach, consistent with Safe System principles, which emphasizes exposure, severity, and risk rather than relying solely on historical crash frequency.

CSP-9: Nighttime Visibility Enhancements (Short-Term)

Crash data and field observations indicate that nighttime operating conditions along College Road contribute to increased driver workload and delayed perception of roadway alignment, particularly during wet or low-contrast conditions. Pavement markings and raised pavement markers (RPMs) were observed to be faded or inconsistent in several locations, reducing lane definition and guidance after dark.

Limited nighttime visibility affects multiple crash types along this corridor, including lane departure, off-road, and rear-end crashes where drivers have reduced time to recognize curvature, edge conditions, or stopped traffic. These challenges are amplified by College Road's curvature, constrained width, and transitions between activity centers.

Enhanced pavement markings and delineation align with FHWA-recognized safety strategies that improve driver recognition, lane-keeping, and overall nighttime performance, particularly on corridors with mixed traffic and constrained geometry.

Cost–Benefit Considerations

Nighttime visibility treatments represent a low-cost, high-value investment that can be implemented corridor-wide with minimal disruption. While individual crash reduction effects may be modest at any single location, the cumulative safety benefit across the corridor is meaningful. High-visibility markings and RPMs offer favorable benefit–cost performance due to low installation and maintenance costs, quick deployment, and compatibility with resurfacing or routine maintenance activities.

Project Description:

This project focuses on improving nighttime guidance and delineation through:

- High-reflectivity thermoplastic pavement markings (centerline and edge line)
- Raised pavement markers (RPMs) where appropriate.

Implementation Considerations

- Conduct a nighttime field review under wet and dry conditions to confirm visibility deficiencies
- Prioritize segments with curvature, narrow lanes, and documented run-off-road or rear-end crash patterns
- Select durable, high-contrast pavement marking materials appropriate for coastal and high-moisture environments
- Coordinate installation with resurfacing or striping schedules to reduce cost and disruption
- Establish maintenance cycles to prevent gradual degradation of markings and RPM effectiveness

CSP-10: Crosswalk Construction (Medium-Term)

Project Description:
This project proposes construction of a high-visibility pedestrian crosswalk connecting College of the Florida Keys and Lower Keys Medical Center, along with installation of MUTCD-compliant W11-2 pedestrian warning signage.

Field observations and community input identify frequent pedestrian crossings along College Road between CFK and the adjacent medical center. Despite the absence of reported pedestrian crashes at this location, the corridor exhibits clear pedestrian demand combined with limited nighttime visibility and low driver expectancy for crossing activity.

This condition reflects a high-exposure environment where the potential severity of a pedestrian crash would be substantial, particularly given trip purposes related to education and healthcare access. Providing a designated, visible crossing improves predictability for all users and supports safer interactions between drivers and pedestrians.

High-visibility crosswalks and pedestrian warning signage align with FHWA-recognized safety treatments that improve yielding behavior, pedestrian conspicuity, and crossing compliance. These treatments are particularly effective in locations with established pedestrian demand but insufficient formal crossing infrastructure.

The proposed project location is marked in the figure provided.

Cost–Benefit Considerations

Traditional benefit–cost analysis based solely on historical crash data may underrepresent the value of this project, as no pedestrian crashes have occurred to date. However, the preventive benefit is significant given the vulnerable user population, essential trip generators, and nighttime operating conditions. Advancing this project supports proactive risk management by addressing exposure and severity potential before a serious injury occurs.

Implementation Considerations

- Confirm pedestrian demand through field counts or observational studies during peak activity periods
- Select crossing location to maximize sight distance and alignment with pedestrian desire lines
- Incorporate high-visibility markings and advance warning signage to reinforce driver expectancy
- Evaluate supplemental lighting or enhanced markings if nighttime visibility remains limited
- Coordinate design with adjacent land uses and access points to minimize conflicts
- Integrate the crossing into broader corridor safety improvements where feasible

Palm Avenue

Palm Avenue is a local collector that connects residential neighborhoods to North Roosevelt Boulevard and includes a pronounced horizontal curve near Eaton Street. While overall crash frequency along Palm Avenue is low compared to higher-volume corridors, crash patterns indicate a concentrated safety risk at the curve location, particularly during nighttime conditions.

Between 2018 and 2024, 19 crashes were recorded along the study segment, including 1 fatal crash and 6 serious injury crashes. Fifteen of these crashes occurred at or near the horizontal curve near Eaton Street, with 13 occurring during nighttime conditions. Observed crash types include off-road, sideswipe, rear-end, and rollover crashes, which are consistent with loss-of-control and delayed recognition on curves with limited nighttime guidance. The figure below shows the corridor with the crash locations mapped by severity.

Field observations and community input identified several contributing factors:

- Limited nighttime visibility along the curve
- Worn out pavement markings and raised pavement markers
- Reduced sign visibility due to foliage obstruction
- Inconsistent approach speeds entering the curve

Although Palm Avenue does not experience high crash volumes, the severity, spatial clustering, and nighttime concentration of crashes indicate a need for targeted safety improvements.

Palm Avenue was prioritized for proactive, location-specific treatment rather than corridor-wide interventions. This approach reflects a risk-based methodology that recognizes the need to address locations with lower crash counts when crashes are concentrated, involve higher severity, occur primarily at night, or are associated with challenging roadway geometry and community safety concerns.

CSP-11: Nighttime Visibility and Resurfacing (Short Term)

Project Description:

- High-reflectivity thermoplastic pavement markings (edge line and centerline)
- Installation of raised pavement markers (RPMs)

Crash data and field review indicate that nighttime guidance along Palm Avenue is limited by degraded pavement condition and insufficient delineation. Edge lines, centerlines, and curve definition provide reduced visual cues under low-light and wet conditions, affecting drivers' ability to perceive horizontal alignment and respond appropriately.

These conditions align with observed crash patterns that suggest delayed recognition of curvature rather than excessive speed alone. Improving nighttime guidance supports safer lane positioning and smoother vehicle operation through the corridor, particularly during unfamiliar or reduced-visibility conditions.

FHWA research consistently identifies enhanced pavement markings, raised pavement markers (RPMs), and surface condition improvements as effective treatments for reducing run-off-road crashes and improving nighttime recognition of horizontal curves.

Cost–Benefit Considerations

Nighttime visibility and resurfacing improvements offer strong benefit–cost performance due to their low to moderate cost and corridor-wide applicability. While Palm Avenue does not carry the highest crash volume citywide, the treatments directly address a documented risk factor associated with crash severity. Coordinating resurfacing with enhanced markings and RPM installation maximizes durability and safety benefit while minimizing lifecycle costs.

Implementation Considerations

- Coordinate marking upgrades with resurfacing schedules to improve durability and cost efficiency
- Select high-reflectivity materials suitable for coastal and high-moisture conditions
- Install RPMs and enhanced delineation on curves with documented nighttime crash patterns
- Establish periodic inspection and maintenance cycles to preserve reflectivity and performance

CSP-12: Curve Sign Improvement at Eaton Street (Short Term)

Project Description:

- Upgrade existing curve warning sign to oversized W1-6 sign with flashing beacon
- Replace existing curve signage with W1-2R/W1-2L curve warning signs
- Add advisory speed plaque (W13-1P) indicating a 15-mph advisory speed

Field observations confirm that existing curve warning signage along Eaton Street provides limited effectiveness due to vegetation blockage, placement constraints, and reduced nighttime conspicuity. Crash patterns suggest that drivers do not consistently recognize curve severity or receive adequate advance warning to adjust speed and positioning.

Enhanced curve signing improves driver awareness, reinforces appropriate speeds, and supports earlier decision-making, particularly at night and for unfamiliar drivers. Supplemental flashing beacons further increase conspicuity and emphasize curve presence during higher-risk periods.

FHWA identifies improved curve delineation and signing as effective countermeasures for reducing curve-related crashes, particularly where visibility constraints or alignment changes contribute to delayed driver response.

Cost–Benefit Considerations

Curve signing improvements represent a low-cost intervention with measurable safety benefits. While Eaton Street is not among the highest-volume corridors, the targeted nature of the treatment allows risk reduction at a known location without extensive construction. Benefits stem from improved nighttime recognition, reduced approach speeds, and prevention of run-off-road and loss-of-control crashes.

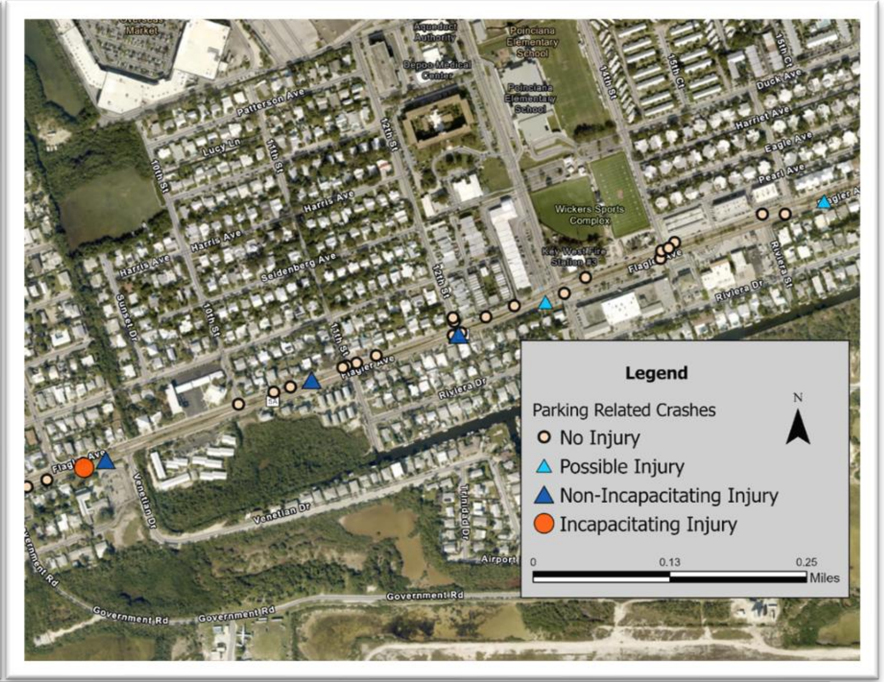
Implementation Considerations

- Trim and manage vegetation to restore and maintain clear sign visibility
- Review sign placement, size, and retroreflectivity to ensure nighttime effectiveness
- Evaluate flashing beacon use based on nighttime crash patterns and approach speeds
- Assess power source options, including solar where feasible
- Plan for ongoing maintenance of flashing devices and sign visibility

Flagler Ave

Study Corridor: Flagler Avenue from South Roosevelt Drive to Reynolds Street (approximately 2.75 miles)

Flagler Avenue is a key east–west corridor serving residential neighborhoods and local commercial destinations. While the corridor is currently undergoing redesign efforts to address broader operational and multimodal needs, crash data from 2018–2024 identify a safety issue related to restricted sight distance at intersections and driveway exits. Addresign this issue can supplement the current effort and improve the overall safety performance of the corridor.



Parked vehicle related crashes on Flagler Ave (2018 – 2024). From White Street to Government Road, Flagler Ave has seen 27 parking related crashes including two Incapacitating Injury crashes (Left). From Government Road to 16th Street, Flagler Ave has seen 30 parking related crashes, including five Injury and one Incapacitating Injury crashes (Right). These two hotspots account for 82.6% of the 69 parked vehicled related crashes along the length of the corridor.

Approximately 54 crashes along Flagler Avenue were associated with parked vehicles obstructing sight lines, particularly at side streets and driveways. These obstructions limit drivers' ability to detect approaching vehicles, pedestrians, and bicyclists, increasing the likelihood of angle and turning-related conflicts. Field observations confirmed that daylighting treatments are present at select locations but are not effective at several locations.

CSP-13: Daylighting (Medium Term)

Project Description:
This recommendation emphasizes evaluating and enhancing existing daylighting treatments to ensure they function as intended. Rather than introducing a one-size-fits-all solution, the approach allows for location-specific adjustments based on observed conditions and crash history. Key strategies to consider include:

- Adding flexible delineators at corners where parked vehicles continue to block critical sight lines.
- Replacing the first on-street parking stall at high-conflict locations with short-duration loading or drop-off zones, reducing vehicle storage near intersections while maintaining curb access.
- Installing painted or modular curb extensions to visually and physically reinforce daylighting zones.

This recommendation targets daylighting enhancement along Flagler Avenue in response to visibility constraints and turning conflicts at intersections and driveways. The approach focuses on evaluating and strengthening existing daylighting treatments so they perform as intended under current operating conditions.

Daylighting is also recommended as a system-wide safety treatment across the City of Key West, with emphasis on Old Town and other access-dense areas characterized by on-street parking, constrained right-of-way, and high pedestrian, bicycle, and micromobility activity. Flagler Avenue is identified as a priority corridor application of this broader citywide strategy, allowing systemwide principles to be applied in a location with demonstrated need.

Proposed enhancements allow for location-specific refinement informed by crash history, field observations, and curbside activity. Typical strategies may include reinforcing daylighting zones where sight lines remain constrained, adjusting curb use near high-conflict locations, and visually or physically emphasizing clear zones at intersections.

Cost–benefit considerations and implementation guidance for daylighting are discussed under **SWS-8 in Appendix** .

South Roosevelt Boulevard

Study Corridor: S Roosevelt Blvd from Triangle to Bertha St (approximatey 2.9 mi)

South Roosevelt Boulevard is a major oceanfront arterial that serves regional and local traffic while providing access to the airport, waterfront viewing areas, and several sea-facing businesses and resort destinations. The corridor also accommodates recreational activity, with people walking, stopping, and gathering along the ocean side.

The corridor was recently resurfaced and restriped, resulting in improved pavement condition and lane visibility. Field observations and operational reviews indicate that South Roosevelt Boulevard is currently functioning well, with acceptable traffic operations and no immediate geometric deficiencies.

Crash data analysis shows that South Roosevelt Boulevard is not a high-crash corridor, and the number of crashes that are directly correctable through infrastructure changes is limited. Observed safety concerns are generally localized and primarily associated with individual driveways where sight distance can be constrained, rather than reflecting systemic corridor-wide deficiencies.

Given the corridor's current condition and performance, no capital reconstruction projects are recommended. At the same time, the corridor's oceanfront context, access-driven activity, and role as a gateway to the airport and resort areas support a proactive planning approach. Based on prior discussions with City staff and long-term planning considerations, South Roosevelt Boulevard remains a candidate for future corridor reconfiguration analysis as travel patterns, land use, and multimodal needs evolve. Accordingly, recommendations for South Roosevelt Boulevard focus on targeted, low-cost visibility improvements in the near term and long-term evaluation to inform future planning decisions, rather than immediate capital investment.

CSP-14: Visibility Improvements (Short Term)

Project Description:
This recommendation advances targeted vegetation trimming to maintain clear sight lines at access points along the corridor.

The short-term recommendation emphasizes targeted vegetation trimming to maintain clear sight lines at select driveways and access points. This action supports safe turning and crossing movements and helps preserve the corridor's current safety performance as access-related activity continues.

Vegetation trimming is recommended as a system-wide safety practice across the City. For South Roosevelt Boulevard, this recommendation represents a focused application of those practices to address localized visibility constraints without introducing broader geometric changes. Detailed guidance on prioritization and implementation is provided under **Systemwide Strategy SWS-7**.

CSP-15: Road Diet Evaluation Study (Long Term)

Project Description:
This recommendation advances a feasibility and evaluation study to examine potential long-term safety, operational, and multimodal benefits of a road diet or alternative lane configuration.

This recommendation is limited to a feasibility and evaluation study only and does not propose any immediate lane reductions or design changes. The purpose of the study is to understand whether a road diet or alternative lane configuration could provide long-term safety and multimodal benefits under future conditions. The evaluation would consider:

- Traffic operations and capacity impacts, including peak-hour performance.
- Safety effects related to speed management, access spacing, and turning movements.
- Potential redistribution of traffic between South Roosevelt Drive, North Roosevelt Drive, and Flagler Avenue.

This approach supports data-driven, context-sensitive decision-making and recognizes that corridors with lower crash frequencies may still benefit from proactive evaluation as part of long-range network planning.

Cost–Benefit Considerations

Costs associated with this recommendation are limited to planning and technical analysis only and do not include design, construction, or implementation, making it a low- to moderate-cost action. While the study itself does not directly reduce crashes, it provides value by informing future decision-making, identifying potential tradeoffs, and reducing the risk of misaligned capital investments. The study helps ensure that any future investments, if pursued, are targeted, justified, and cost-effective.

Implementation Considerations

Implementation would involve scoping and conducting a planning-level study in coordination with City staff and relevant regional partners. The study can be timed to align with long-range planning efforts, policy updates, or future funding opportunities. Findings would be used to inform future corridor planning discussions should conditions or priorities change.

Benefit Cost Analysis for CSPs

Benefit Cost Estimation for CSP 1

The following example illustrates how benefit–cost estimates were developed for the Dynamic Queue Warning Sign project. FDOT Historical Item Average Costs[18] was used for standardized unit cost references and safety benefits were estimated using Crash Modification Factors (CMFs) from FDOT-recommended sources and the FHWA CMF Clearinghouse[19], consistent with federal and state practice.. Benefit–cost ratios were calculated using the FDOT-approved Benefit–Cost Analysis tool[20]**.**

Step 1: Annualized Project Cost

- Initial capital cost: $10,000
- Service life: 20 years
- Capital recovery factor: 0.0736
- Annualized cost is calculated by multiplying the capital cost by the capital recovery factor: $\$10{,}000 \times 0.0736 = \$736$ per year

This represents the equivalent annual cost of the project over its service life.

Step 2: Identify Correctable Crashes

- Total correctable crashes over study period: 35
- Study period: 7 years
- Average correctable crashes per year: 35/7 = 5

These crashes represent rear-end and queue-related crashes that the treatment is expected to influence.

Step 3: Apply Crash Reduction Factor

- Crash Reduction Factor (CRF): 16%

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18 Historical Item Average Cost Reports
19 CMF Clearinghouse
20 Tools

- Expected crashes reduced per year: $5 \times 0.16 = 0.8$ crashes prevented per year

Step 4: Estimate Safety Benefit

- Average cost per crash (FHWA values): $216,234
- Annual safety benefit:0.8 × $216,234 = $172,987 per year

This value represents the estimated societal cost avoided annually due to reduced crashes.

Step 5: BC Ratio

- Annualized cost: $736
- Annual safety benefit: $172,987
- Benefit Cost (BC) Ratio = $172,987$736 = 235.03

Even with conservative assumptions, the expected safety benefit substantially exceeds the annualized cost. This reflects the effectiveness of queue warning systems at reducing rear-end crashes combined with relatively low implementation cost.

Similarly, the BC ratio of remaining projects are estimated. Below shows the estimation of each in a tabular format

Project		Cost				Benefit							BC Ratio (=I/C)	Rank
		Cost of Project Component, A	Service Life Span	Capital Recovery Factor, B	Total Annual Cost, C (=A*B)	Correctable Crashes, D	Total Corrrectable crashes per year, E (=D/7)	Crash reduction factor (CRF), F	No of crashes correctable with treatment, G (=E*F)	Cost per corrected crash for road type, H	Benefit, I (=G*H)	CMF Clearning House ID		
CSP 1	Speed Feedback Signs	$10,000.00	20	0.0736	$736.00	78	11	7%	0.8	$216,234.00	$168,662.52	6885	229.16	8
CSP 2	Sign Consolidation and Clarity	$50,000.00	20	0.0736	$3,680.00	107	15	15%	2.3	$216,234.00	$495,793.67	62	134.73	13
CSP 3	Dynamic Queue Warning Sign	$10,000.00	20	0.0736	$736.00	35	5	16%	0.8	$216,234.00	$172,987.20	76	235.04	19
CSP 4	Speed Management and Visibility Improvements	$200,000.00	5	0.2246	$44,920.00	663	95	55%	52.6	$161,173.00	$8,470,762.45	11288, 307	188.57	6
CSP 5	Access Management	$496,000.00	20	0.0736	$36,505.60	189	27	44%	11.9	$161,173.00	$1,914,735.24	3097	52.45	16
CSP 6	Traffic Simulation Study	$40,000.00	20	0.0736	$2,944.00	536	77	13%	10.0	$161,173.00	$1,604,362.09	6861	544.96	23
CSP 7	Sign Consolidation and Clarity	$150,000.00	20	0.0736	$11,040.00	267	38	15%	5.7	$161,173.00	$922,139.81	62	83.53	5
CSP 8	Origin Destination Study	$125,000.00	20	0.0736	$9,200.00	268	38	47%	18.0	$161,173.00	$2,900,193.01	11135	315.24	9
CSP 9	Nighttime Visibility Enhancements	$316,063.26	20	0.0736	$23,262.26	52	7	33%	2.4	$245,281.00	$599,648.97	2120, 2116, 10281	25.78	4
CSP 10	Crosswalk Construction	$10,325.10	20	0.0736	$759.93	0	0	40%	0.0	$245,281.00	$ 0	4123	0.00	10
CSP 11	Nighttime Visibility and Resurfacing	$411,452.78	20	0.0736	$30,282.92	30	4	35%	1.5	$245,281.00	$368,447.10	2120, 2116, 94	12.17	37
CSP 12	Curve Signage Improvement	$26,896.67	20	0.0736	$1,929.04	13	2	39%	0.7	$245,281.00	$179,475.61	1851	93.04	43
CSP 13	Flagler Ave Daylighting	$10,560.00	20	0.0736	$777.22	54	8	48%	3.7	$216,234.00	$800,683.61	307	1030.19	31
CSP 14	Visibility Improvements	$30,000.00	2	0.5302	$15,906.00	19	3	48%	1.3	$161,173.00	$209,985.39	307	13.20	30
CSP 15	Road Diet Study	$100,000.00	20	0.0736	$7,360.00	81	12	47%	5.4	$161,173.00	$876,550.87	11135	119.10	32

H – Spot-Specific Safety Projects (SSP)

Triangle (Intersection of N Roosevelt Blvd and US1)

The Triangle serves as the primary gateway into Key West and represents the first major intersection encountered when traveling southbound on US-1 into the City. The intersection connects US-1 with North Roosevelt Blvd and South Roosevelt Blvd and functions as a critical transition point between regional traffic and local circulation. It carries it carries high daily traffic volumes and accommodates a broad mix of users, including passenger vehicles, freight traffic, transit, pedestrians, bicyclists, and micromobility users. The intersection operates as a signalized T-intersection with channelized right-turn movements under signal control. Pedestrian movements occur through staged, multi-stage crossings. Adjacent hotel and commercial driveways, nearby trail connections, and high visitor activity further increase operational complexity. The combination of gateway traffic, local access, and multimodal demand makes the Triangle one of the most operationally sensitive locations in the corridor.

Crash Patterns and Severity

Crash data for the Triangle influence area between 2018 and 2024 indicate a total of 103 reported crashes, as shown below. Rear-end crashes account for the largest share (39 crashes), followed by off-road crashes (15), same-direction sideswipes (12), and single-vehicle crashes (10). Bicycle-involved crashes total six, and one pedestrian-involved crash was recorded during this period.

Although no fatalities occurred during the analysis period, the intersection experienced 7 incapacitating injury crashes and 16 non-incapacitating injury crashes. Most rear-end crashes (32 of 39) resulted in property damage only, which is consistent with congestion-related braking and queue conflicts rather than high-speed impact conditions. However, the presence of injury crashes indicates that conflicts at this location still produce meaningful safety consequences.

Crash review suggests that rear-end and sideswipe crashes frequently occur under congested conditions on the US-1 approaches. Stop-and-go traffic, sudden deceleration, and lane-change maneuvers appear to contribute to these patterns. Several corridor-level strategies along US-1 and North Roosevelt Boulevard are addressed elsewhere in the plan to respond to broader congestion and speed-management issues influencing the Triangle.

Crash Type	K	A	B	C	O	Total (2018 – 2024)
Rear End			3	4	32	39
Off Road		2	3	3	7	15
Same Direction Sideswipe				2	10	12
Single Vehicle		1	4	2	3	10
Bicycle		2	4			6
Other					4	4
Head On			2		1	3
Left Leaving					3	3
Backed Into					2	2
Left Entering		1			1	2
Parked Vehicle					2	2
Animal					1	1
Left Rear					1	1
Pedestrian		1				1
Right Angle					1	1
Rollover					1	1
Grand Total	0	7	16	11	69	103

Crash data from 2018–2024 show that rear-end crashes dominate at the Triangle and are closely associated with congestion and queue formation on US-1 approaches. Most rear-end crashes result in property damage only, while several injury crashes indicate ongoing safety risk during peak periods.

Operational Conditions

Rear-end crashes account for the largest share of total crashes at the Triangle. To better understand the conditions under which these crashes occur, the project team examined the distribution of rear-end crashes by time of day (TOD) and day of week (DOW), including severity. The accompanying table presents this breakdown and helps identify whether specific operating periods correspond with elevated crash occurrence.

The analysis shows a clear concentration of rear-end crashes during the weekday PM peak, particularly between 4 PM and 5 PM. This period represents the highest traffic demand at the Triangle and reflects the intersection's role as the primary gateway into Key West. Traffic volumes increase substantially during this window as inbound and outbound commuter traffic, visitor traffic, and local circulation overlap.

Signal timing at the Triangle is structured to manage these peak-period volumes. During the PM peak, cycle lengths approach approximately 160 seconds in order to move high traffic demand efficiently through a constrained intersection geometry. The longer cycle length supports throughput and helps prevent excessive spillback on US-1 and connecting approaches. In a high-volume gateway context, maintaining progression and minimizing upstream gridlock are important operational objectives.

	Sun			Mon				Tue		Wed			Thu			Fri			Sat			Grand Total
	O	B	Total	O	B	C	Total	O	Total	O	C	Total	O	C	Total	O	C	Total	O	B	Total	
6 AM										1		1										1
7 AM													2		2							2
8 AM					1		1						1		1							2
9 AM																1		1				1
11 AM				1			1							1	1							2
12 PM				1			1						1		1							2
1 PM		1	1					1	1											1	1	3
2 PM	1		1	2			2									1		1				4
3 PM								1	1													1
4 PM	1		1	3			3	1	1	1		1	1		1	1		1	1		1	9
5 PM						1	1			2	1	3	1		1	2	1	3				8
7 PM				1			1															1
8 PM	1		1																			1
9 PM										1		1										1
10 PM																			1		1	1
Grand Total	3	1	4	8	1	1	10	3	3	5	1	6	6	1	7	5	1	6	2	1	3	39

The table summarizes rear-end crashes by time of day and day of week, disaggregated by severity, to highlight peak periods associated with higher crash occurrence.

At the same time, longer cycle lengths coincide with extended red intervals for certain movements, which can increase delay and queue formation. As queues build and dissipate, drivers encounter changing traffic conditions that require frequent deceleration and lane adjustments. Stop-and-go operations become more pronounced, particularly on US-1 approaches. When approach speeds remain relatively high outside of congested intervals, the transition into queued traffic can lead to late braking and rear-end conflicts.

The time-of-day pattern observed in the crash data aligns closely with these peak-period operating conditions. Rear-end crashes increase during the same hours when demand, delay, and queue formation are most significant. This relationship suggests that congestion dynamics and traffic flow transitions, rather than isolated geometric deficiencies, play a central role in crash occurrence at the Triangle. The analysis does not indicate that the existing signal timing strategy is inappropriate. Instead, it illustrates the operational tradeoffs inherent in managing high traffic volumes at a gateway intersection with multiple competing movements. The findings help identify where targeted refinements such as adjustments to cycle length, phase allocation, pedestrian timing, or peak-period operational strategies may warrant further evaluation while maintaining the performance objectives that the current timing plan is designed to achieve.

In addition to signal timing, operating speeds on certain approaches exceed posted limits during uncongested periods. This variability between free-flow speeds and queued conditions increases the likelihood of abrupt deceleration during peak periods. The combination of high approach speeds, long queues, and heavy traffic demand contributes to the observed rear-end crash pattern.

Multimodal and Pedestrian Considerations

The Triangle serves significant pedestrian and micromobility demand, including rental scooters and e-bikes. The current pedestrian crossing configuration requires multi-stage movements with long wait times, which can discourage compliant behavior and increase exposure. Community feedback consistently notes discomfort with the staged crossing arrangement and difficulty navigating the intersection as a pedestrian or micromobility user.

These concerns are supported by field observations, which identified complex vehicle movements, limited pedestrian priority, and conflicts between turning vehicles and vulnerable road users. While pedestrian crashes are relatively infrequent in the crash record, the combination of exposure, operational complexity, and user discomfort indicates elevated risk.

Community Feedback and Perceived Safety

Community input reinforces the data-driven findings. Residents and visitors identify the Triangle as a stressful location to navigate, particularly during peak periods. Common concerns include heavy congestion, difficulty judging vehicle behavior, long pedestrian wait times, conflicts involving rental scooters and e-bikes, and discomfort with the multi-stage pedestrian crossing design.

Perceived safety concerns closely mirror observed crash patterns and operational conditions, underscoring the need for improvements that address both measured safety outcomes and user experience.

SSP-1: Signal Plan Update

The current signal timing structure reflects the need to manage substantial peak-period traffic demand at a constrained gateway intersection. At the same time, the operational environment presents opportunities to enhance pedestrian comfort and visibility while maintaining throughput objectives.

This project focuses on refining pedestrian operations through implementation of Leading Pedestrian Intervals (LPIs), reevaluating pedestrian clearance intervals, and assessing overall phase allocation. Providing an LPI would allow pedestrians to enter the crosswalk before turning vehicles receive a green indication, increasing pedestrian visibility and reducing turning conflicts. Pedestrian clearance intervals can also be evaluated to determine whether modest adjustments could further improve crossing confidence and comfort for users navigating multi-stage movements. Targeted timing refinements during peak periods may also help reduce variability in queue formation and sudden braking events, supporting smoother operations. FHWA guidance supports LPIs and optimized pedestrian timing as effective measures for improving intersection safety and pedestrian visibility.

Project Description:
Refine signal timing at the Triangle by evaluating Leading Pedestrian Intervals (LPIs), pedestrian clearance intervals, and peak-period phase allocation to enhance pedestrian visibility and improve operational consistency.

Cost–Benefit Considerations

Signal timing adjustments represent a low-cost treatment with the potential for meaningful safety and user-experience benefits. The approach leverages existing infrastructure and can be implemented incrementally. Improvements to pedestrian priority and operational smoothness may reduce conflict risk without requiring geometric reconstruction.

Implementation Considerations

- Review pedestrian clearance intervals relative to observed crossing distances
- Evaluate LPI feasibility on selected approaches
- Assess peak-period cycle length and phase distribution tradeoffs
- Coordinate updates with corridor progression objectives

SSP-2: Sight Distance and Vegetation Management at Driveways

Project Description:
Improve visibility at select driveways near the Triangle through targeted vegetation trimming and sight-distance restoration to reduce turning-related conflicts.

Field observations identified localized sight-distance constraints at select driveways near the Triangle, including hotel access points. These conditions are consistent with driveway-related visibility concerns documented along other corridors in the study area.

This project applies the same targeted vegetation management approach recommended elsewhere in the plan. Restoring clear sight lines at key access points will improve visibility between turning vehicles, pedestrians, bicyclists, and through traffic, reducing localized conflict risk. Implementation and maintenance considerations align with the vegetation management guidance outlined under systemwide treatments.

SSP-3: Speed Feedback and Driver Awareness

Project Description:
Install a radar-based speed feedback sign on the North Roosevelt approach to reinforce speed expectations and reduce approach speed variability entering the Triangle.

Observed operating speeds on certain approaches exceed posted limits during uncongested periods, contributing to speed variability as vehicles transition into queued conditions near the Triangle.

Installation of a radar-based speed feedback sign on the North Roosevelt and US 1 approach would reinforce posted speed expectations before drivers enter the high-demand intersection area. This treatment is consistent with similar speed management strategies recommended along other corridor segments. Installation, placement, and monitoring considerations follow the same guidance outlined for corridor-level speed awareness treatments.

Speed feedback signs represent a moderate-cost intervention with documented effectiveness in moderating approach speeds and improving driver awareness.

SSP-4: Traffic Simulation Study

The operational complexity of the Triangle warrants structured evaluation of potential signal timing refinements under peak conditions. A traffic simulation study would allow the City to test alternative timing strategies in a controlled environment before implementation.

This effort can be coordinated with CSP-6, the traffic simulation study recommended for North Roosevelt Boulevard, to ensure consistency in corridor-level modeling assumptions and progression strategies. Evaluating the Triangle in conjunction with adjacent corridor segments would provide a more comprehensive understanding of queue spillback, traffic redistribution, and signal coordination impacts.

The study would evaluate shorter cycle lengths during peak periods, pedestrian recall during high vulnerable road user (VRU) activity, and maximum green adjustments to manage dilemma zone conditions. Simulation modeling would also assess queue spillback, progression, and operational impacts under varying demand levels.

Project Description:
Conduct a peak-period traffic simulation study to evaluate alternative signal timing strategies, including cycle length adjustments and pedestrian recall options.

Cost–Benefit Considerations

The study represents a moderate planning investment with broad applicability. Coordinating this effort with the North Roosevelt simulation study improves efficiency, reduces duplication of analysis, and strengthens the reliability of corridor-level findings.

Implementation Considerations

- Develop a calibrated model reflecting peak-period conditions at the Triangle and along North Roosevelt
- Coordinate modeling assumptions with CSP-2 to ensure corridor consistency
- Test alternative phasing and cycle-length scenarios
- Evaluate pedestrian timing impacts
- Assess queue spillback and progression across adjacent segments

SSP-5: Speed Study

Project Description:
Perform a formal speed study to assess operating speeds and approach speed transitions to inform future speed management and operational strategies.

Speed variability also contributes to rear-end and lane-change conflicts at the Triangle, particularly where high approach speeds transition into congested queues.

A formal speed study would evaluate operating speeds during peak and off-peak periods, including 85th percentile speeds and approach speed differentials. The study would provide objective data to inform future decisions related to speed management, signal coordination, and enforcement strategies.

Understanding operating speed patterns supports targeted safety interventions rather than assumption-based adjustments.

Cost–Benefit Considerations

The study requires limited investment and provides foundational data that supports multiple safety and operational strategies.

Implementation Considerations

- Collect speed data during varied demand conditions
- Evaluate speed transition zones approaching the Triangle
- Compare operating speeds with posted limits
- Coordinate findings with enforcement and design considerations

SSP-6: Intersection Redesign Study

Project Description:
A planning-level study to evaluate alternative intersection configurations that may enhance long-term safety, operations, and multimodal accommodation.

The Triangle functions as a high-volume gateway intersection with evolving multimodal demand. A long-term redesign study would evaluate alternative configurations that may enhance safety, operations, and pedestrian experience.

Concepts for evaluation may include modified T-intersection treatments, roundabout alternatives, reconfiguration of pedestrian staging, raised crossings, or other multimodal-oriented design approaches. The study would assess safety performance, operational feasibility, right-of-way constraints, and multimodal accommodation under each alternative.

This recommendation is limited to evaluation and does not commit to construction.

Cost–Benefit Considerations

The study represents a planning-level investment that informs long-term capital decisions. Evaluating alternatives before advancing design reduces financial risk and ensures that future investments align with corridor needs.

Implementation Considerations

- Coordinate closely with FDOT due to US-1 jurisdiction
- Assess geometric and right-of-way constraints
- Evaluate multimodal safety performance under alternatives
- Conduct stakeholder and community engagement during study phase

Staples Bridge Area

Staples Bridge is a community-identified location with pedestrian and micromobility safety concerns. The bridge provides an important connection within the Crosstown Greenway network and serves pedestrians, bicyclists, and e-bike users traveling between adjacent neighborhoods and activity centers.

The existing bridge cross-section is narrow, limiting available space for shared use. Speed differentials between pedestrians, traditional bicycles, and higher-speed e-bikes create potential for user conflicts, particularly during peak recreational and commuting periods. The constrained width requires users to make quick adjustments in lane position and speed, increasing the likelihood of uncomfortable passing maneuvers.

Advance warning and on-bridge signing is limited, reducing user awareness of shared-use conditions and expectations for yielding. Field observations indicate that the designated pedestrian walkway appears underutilized, suggesting a legibility or wayfinding issue rather than a lack of demand.

No crash history has been documented at this location to date. Recommendations are therefore proactive and based on bridge

geometry, observed user behavior, exposure levels, and community concerns rather than reactive to crash occurrence.

The proposed treatments are advisory and non-capacity-expanding. The strategy emphasizes speed moderation, clearer expectations, and conflict reduction without structural reconstruction. Following implementation, the City may conduct a before-and-after observational review to evaluate user speeds, yielding behavior, pedestrian walkway utilization, and perceived comfort. These observations can help inform future refinements if needed.

SSP-7: Shared-Use Path Warning (Short Term)

This treatment provides advance warning to pedestrians, bicyclists, and e-bike users that they are approaching a shared-use facility with constrained space. The W11-15 (Shared-Use Path) warning sign alerts users to mixed traffic conditions ahead, while supplemental plaques such as "NARROW BRIDGE" and/or "YIELD TO PEDESTRIANS" clarify expectations for speed moderation and yielding behavior. The goal is to improve awareness before users enter the bridge, where limited width and speed differences increase the potential for conflicts.

Project Description:
Install MUTCD-compliant W11-15 (Shared-Use Path) warning signs at both bridge approaches. Supplemental plaques such as "NARROW BRIDGE" and/or "YIELD TO PEDESTRIANS" may be included based on engineering judgment.

Cost–Benefit Considerations

This is a low-cost treatment with immediate clarity benefits. Advance warning improves user awareness prior to entering the constrained segment and supports earlier speed adjustment and positioning. While no crash history exists, the treatment addresses documented exposure and behavioral conditions at minimal cost.

Implementation Considerations

• Confirm appropriate sign placement distances per MUTCD guidance
• Select plaque messaging based on observed yielding behavior
• Coordinate installation with other bridge visibility enhancements

SSP-8: Speed Awareness and Expectation Setting (Short Term)

This treatment reinforces appropriate approach speeds before users enter the narrow bridge segment. Installing W16-13P "SLOW" plaques or W16-9P "AHEAD" plaques, along with pavement "SLOW" legends, provides advance visual cues that the upcoming segment requires caution. Where appropriate, transverse markings or similar visual treatments may be added to create a perceptual speed-reduction effect. The objective is to encourage users to moderate speed before reaching the constrained area, reducing abrupt braking and unsafe passing movements.

Project Description:
Install W16-13P "SLOW" plaques or W16-9P "AHEAD" plaques and apply pavement "SLOW" legends prior to bridge entry. Where appropriate, incorporate additional visual speed-management cues such as transverse markings.

Cost–Benefit Considerations

These measures are low-cost and focus on influencing user behavior rather than physical reconstruction. Early speed moderation reduces the likelihood of close-proximity conflicts between pedestrians, bicyclists, and e-bike users. Benefits are derived from improved user awareness, smoother transitions into the constrained bridge section, and reduced speed variability.

Implementation Considerations

- Place pavement legends at a sufficient advance distance to allow user response
- Evaluate sign and marking placement relative to shared-use path transitions
- Monitor observed approach speeds after installation
- Coordinate with other bridge warning and delineation treatments

SSP-9: Wayfinding and Pedestrian Priority (Short Term)

This treatment improves legibility and reinforces intended space allocation on the bridge. Installing MUTCD-compliant D1-1 destination guide signs identifies key connections served by the bridge and clarifies its role within the Crosstown Greenway network. Additional cues may reinforce appropriate pedestrian use of the designated walkway to reduce conflicts within the shared-use space.

Cost–Benefit Considerations

Wayfinding improvements are low-cost and enhance user predictability and comfort. Clear guidance reduces uncertainty and mid-bridge repositioning, which can contribute to passing conflicts. Benefits include improved compliance with pedestrian-priority areas and more consistent user distribution across available space.

Project Description:
Install MUTCD-compliant D1-1 destination guide signs identifying key connections served by the bridge. Provide clear cues reinforcing appropriate pedestrian use of the designated walkway.

Implementation Considerations

- Identify key destinations to include on guide signs
- Position signage to reinforce walkway use and shared-use expectations
- Ensure consistency with Crosstown Greenway branding and standards
- Evaluate pedestrian walkway utilization after implementation

SSP-10: Delineation and Visibility Enhancements (Short Term)

This treatment strengthens visual definition of the bridge edges and entry points. Enhancing edge delineation, reflectivity, and nighttime visibility reinforces the constrained width and improves spatial awareness for all users. Improvements focus on making the bridge limits more clearly recognizable, particularly under low-light conditions.

Cost–Benefit Considerations

Delineation and reflectivity upgrades represent a moderate investment relative to structural widening. Improved visual definition reduces uncertainty and helps users maintain consistent positioning within the narrow cross-section. Benefits are particularly meaningful during nighttime or reduced-visibility conditions.

Project Description:

Implementation Considerations

- Use high-reflectivity materials suitable for coastal and high-moisture environments
- Reinforce transition zones where users move from wider path sections to the constrained bridge
- Establish periodic inspection and maintenance cycles to maintain reflectivity
- Coordinate with warning signage to create a cohesive visual environment

Palm Avenue and Eisenhower Drive

The figure shows a view of Palm Avenue approaching Eisenhower Drive, showing the two-lane configuration, driveway access to adjacent industrial and commercial properties, pedestrian crossing signage, and buffered edge areas with bollards intended to define pedestrian space and discourage encroachment.

A total of 26 crashes were reported at this location during the study period, including 3 incapacitating injury (A), 6 non-incapacitating injury (B), and 3 possible injury (C) crashes. Most crashes occurred during daylight conditions, with limited involvement during dark periods.

Rear-end crashes dominate the pattern, accounting for 10 crashes, the majority occurring in the eastbound direction. Crash reports do not indicate speeding as a primary contributing factor. Instead, crashes are concentrated during peak periods and coincide with congestion on Palm Avenue and downstream operational influence from Truman Avenue.

Crash characteristics indicate an operational and congestion-related pattern rather than a visibility- or speed-driven safety issue. Stop-and-go traffic, queue formation, and turning-related conflicts appear to contribute to rear-end crashes during peak periods.

While treatments such as delineators may enhance pedestrian and bicyclist visibility, they are unlikely to address the underlying rear-end crash pattern associated with congestion and queue dynamics.

Palm Avenue is already recommended for resurfacing and roadway rehabilitation (RRR) under CSP-11. Implementing these baseline corridor improvements will address pavement condition and overall roadway quality while the operational review evaluates targeted measures specific to the Eisenhower Drive intersection.

SSP-11: Targeted Operational Review (Medium Term)

Project Description:
Conduct a focused peak-period operational assessment to evaluate queue spillback, stopping behavior, turning movements, access-related conflicts, and interaction with congestion patterns influenced by Truman Avenue. Use findings to determine whether additional operational or access management measures are warranted.

This project involves conducting a focused peak-period operational assessment at Palm Avenue and Eisenhower Drive to better understand congestion-related crash patterns. The review would evaluate queue spillback, stopping behavior, turning movements, access-related conflicts, and the interaction between Palm Avenue operations and downstream congestion influenced by Truman Avenue. The goal is to determine whether targeted operational adjustments or access management measures could reduce rear-end conflicts without introducing unnecessary geometric changes.

Cost–Benefit Considerations

This recommendation represents a moderate planning-level investment focused on diagnosis before construction. By identifying the operational drivers behind rear-end crashes, the City can prioritize solutions that directly address congestion dynamics rather than implementing physical modifications that may not resolve the underlying issue. This approach improves cost efficiency and supports context-sensitive decision-making.

Implementation Considerations

- Collect peak-period turning movement counts and queue length data
- Document stopping behavior and eastbound rear-end concentration patterns
- Assess interaction with Truman Avenue signal progression and spillback
- Evaluate potential signal timing refinements or minor access adjustments
- Coordinate findings with broader Palm Avenue corridor improvements

Benefit Cost Analysis for SSP

Project		Cost				Benefit							BC Ratio (=I/C)	Rank
		Cost of Project Component, A	Service Life Span	Capital Recovery Factor, B	Total Annual Cost, C (=A*B)	Correctable Crashes, D	Total Corrrectable crashes per year, E (=D/7)	Crash reduction factor (CRF), F	No of crashes correctable with treatment, G (=E*F)	Cost per corrected crash for road type, H	Benefit, I (=G*H)	CMF Clearning House ID		
SSP 1	Signal Plan Update	$20,000.00	20	0.0736	$1,472.00	11	2	19%	0.3	$161,173.00	$48,121.65	9903	32.69	5
SSP 2	Sight Distance/Vegetation Management at Driveways	$50,000.00	2	0.5302	$26,510.00	6	1	48%	0.4	$161,173.00	$66,311.18	307	2.50	3
SSP 3	Speed Feedback and Driver Awareness	$10,000.00	20	0.0736	$736.00	30	4	7%	0.3	$161,173.00	$48,351.90	6885	65.70	1
SSP 4	Traffic Simulation Study	$20,000.00	20	0.0736	$1,472.00	135	19	13%	2.5	$161,173.00	$404,083.74	6861	274.51	11
SSP 5	Speed Study	$20,000.00	20	0.0736	$1,472.00	45	6	22%	1.4	$161,173.00	$227,944.67	148	154.85	12
SSP 6	Intersection Redesign Study	$20,000.00	20	0.0736	$1,472.00	45	6	24%	1.6	$161,173.00	$252,811.36	9445	171.75	26
SSP 7	Shared-Use Path Warning Signage	$5,000.00	20	0.0736	$368.00	0	0	15%	0.0	$245,281.00	$-	62	0.00	38
SSP 8	Speed Awareness & Expectation	$5,000.00	20	0.0736	$368.00	0	0	15%	0.0	$245,281.00	$-	62	0.00	39
SSP 9	Wayfinding Signs	$5,000.00	20	0.0736	$368.00	0	0	15%	0.0	$245,281.00	$-	62	0.00	40
SSP 10	Delineation and Visibility Enhancements	$5,000.00	20	0.0736	$368.00	0	0	15%	0.0	$245,281.00	$-	62	0.00	41
SSP 11	Targeted Operational Review	$20,000.00	20	0.0736	$1,472.00	15	2	5%	0.1	$245,281.00	$26,280.11		17.85	35

I - System-Wide Safety Strategies (SWS)

System-wide strategies are intended to deliver systemic safety gains by applying proven treatments at multiple locations with similar risk factors (for example, low nighttime visibility, complex pedestrian crossing activity, or limited sight triangles). These items support the corridor-specific projects by addressing common contributing factors observed during the crash review, field observations, and stakeholder input. Where available, expected safety effects are summarized using **FHWA Proven Safety Countermeasures (PSC)** evidence. For strategies that are not formal PSC items, the appendix describes the safety rationale and the operational mechanism (how the treatment reduces conflict or severity), and notes that a single percentage reduction is often not defensible without a location-specific scope.

SWS 1. Sign Consolidation and Clarity (Long Term)

Recommendation:

A corridor/area-level signing review that inventories existing regulatory, warning, and guide signs and then refines the "information environment" so the most safety-critical messages are easier to notice, understand, and comply with. This is not simply sign removal. It is a structured approach to prioritization, placement, and consistency so that critical messages are not competing with redundant or low urgency information.

Target Area/Corridors

- US 1 and North Roosevelt (high sign density, multiple decision points, trail crossings, mixed user activity)
- Old Town (narrow streets, high pedestrian activity, frequent visual competition)

While CSP-2 addresses sign density and clarity specifically along US-1, this systemwide recommendation expands the same principles to other corridors and neighborhoods where similar conditions may exist.

Across several corridors, field review noted locations with high sign density combined with frequent driveway activity and active pedestrian and bicycle movements. In these environments, drivers must process multiple sources of information within a limited time and space. Human factors research indicates that driver attention and information-processing capacity are finite, and that increases in visual demand can affect scanning behavior and response time[21].

A structured corridor-level signing program supports these principles by:

- reinforcing driver expectancy through consistent application of similar messages in similar contexts;
- reducing redundant or low-value sign installations so higher-priority regulatory and warning devices remain visually prominent;
- supporting complementary safety investments, such as speed management treatments and pedestrian crossings, by improving the overall clarity of the roadside information environment.

This recommendation is not presented as a single, standalone countermeasure with a standardized crash modification factor. Signing effectiveness depends on sign type, placement, spacing, retroreflectivity, sight distance, and surrounding context. National guidance does not provide a universal crash reduction value for "sign reduction" absent a defined treatment scope. Instead, this strategy functions as a corridor-level operational improvement intended to align with established human factors principles and MUTCD guidance by prioritizing critical information and reducing unnecessary visual competition.

For planning-level benefit estimation, this strategy is best treated as either:

1. A supporting program that enhances the effectiveness of other implemented safety countermeasures; or
2. A scoped design package evaluated after specific sign elements, placements, and removal actions are defined.

Implementation considerations

- Conduct a full sign inventory (type, purpose, condition, visibility, retroreflectivity, obstructions).
- Identify "critical messages" that must remain highly salient (for example, regulatory controls, key pedestrian and trail crossing warnings, and location-specific hazards).
- Resolve conflicts in space, placement, and redundancy.

[21] NCHRP Report 600A – Human Factors Guidelines for Road Systems Collection A: Chapters 1, 2, 3, 4, 5, 10, 11, 13, 22, 23, 26

- Develop a citywide sign management policy aligned with MUTCD guidance.

SWS 2. High Visibility Crosswalk (City-Wide)

Recommendation:

Install or upgrade marked crossings using high-visibility crosswalk markings (for example, ladder or continental patterns), paired with appropriate pedestrian signing and advance yield or stop markings where relevant. The intent is to make crossings easier to see, more predictable for drivers, and more legible for pedestrians.

Target Area/Location:

City-wide, with high priority to intersections identified through data analysis, community input and field review.

- Fleming and Margaret
- Southard and Margaret
- Duval and Angela
- 1st Street intersections
- S Roosevelt and Duck
- Eaton and Grinnell
- Eaton and White
- Truman and White

Key West experiences high pedestrian activity, including both intersection and midblock crossings in constrained urban conditions. High-visibility crosswalk markings increase pedestrian conspicuity and reinforce where drivers should anticipate crossing activity. Clearer visual definition supports improved yielding behavior and reduces ambiguity about appropriate crossing locations.

The FHWA Proven Safety Countermeasures (PSC) program identifies crosswalk visibility enhancements as an approved countermeasure with documented safety benefits. Reported effectiveness includes substantial reductions in pedestrian injuries associated with high-visibility crosswalk markings. When lighting improvements are incorporated, reductions in nighttime pedestrian crashes have also been documented. In addition, the use of advance yield or stop markings in appropriate contexts has been associated with measurable reductions in pedestrian crashes. The figure below summarizes these documented benefit ranges.

These effectiveness values are most applicable when project elements align with the defined PSC treatment components, including appropriate marking patterns, signing, lighting where warranted, and

Source: FHWA

advance yield markings where operational context supports their use.

Implementation Considerations

- Prioritize locations with high pedestrian demand, complex turning movements, limited nighttime visibility, and observed yielding concerns.
- Confirm appropriate marking patterns, signing, and placement consistent with MUTCD guidance and available sight distance.
- Consider lighting enhancements at crossings with documented nighttime activity or limited ambient illumination.
- When installing advance yield markings, confirm suitability for multi-lane or higher-speed approaches and reinforce compliance expectations through proper signing and placement.

SWS 3. Thermoplastic Pavement Markings with RPMs

Recommendation:

Upgrade pavement markings to durable, high-reflectivity thermoplastic (edge line and centerline where applicable) and install raised pavement markers (RPMs) in corridors where nighttime guidance is a concern. The goal is to improve lane tracking, reduce late recognition of alignment, and lower driver workload at night and during wet conditions.

Field reviews identified faded or low-contrast markings in locations with horizontal alignment changes, frequent conflict points, and high nighttime exposure. Reduced marking visibility can increase driver workload and delay recognition of lane boundaries, particularly where ambient lighting is limited or pavement is wet.

Target Area/Location:

City-wide, with high priority to corridors identified through data analysis, community input and field review

- Truman
- White
- Whitehead
- Duval
- Eaton
- Simonton
- Caroline
- Angela
- College Road
- Palm Avenue

FHWA guidance consistently emphasizes the importance of clear and consistent delineation to support lane-keeping and driver expectancy. Research synthesized in NCHRP Report 600 [13] notes that drivers rely heavily on pavement markings and edge definition for guidance, particularly at night and on curves, and that reduced visibility can affect scanning behavior and response time.

A FHWA study [22] further identifies improved pavement marking retroreflectivity and edge delineation as practical strategies for reducing lane departure risk and supporting nighttime visibility. Raised pavement markers enhance retroreflective guidance under wet conditions when standard markings may be less visible.

Implementation considerations

- Confirm whether the priority risk is "general nighttime guidance" versus "specific curve recognition," and select the PSC-aligned treatment package accordingly.
- Include a maintenance plan: RPMs and markings require periodic inspection and replacement to sustain reflectivity.
- Coordinate with resurfacing schedules where possible to improve durability and reduce rework.
- Ensure markings are consistent through conflict zones (approaches, transitions, and curves), not only at isolated segments.

SWS 4. Retroreflective Backplates with LED Signal Heads

Recommendation:

Install signal backplates with retroreflective borders and upgrade signal heads to 12" where applicable to improve the conspicuity of traffic signal indications, particularly at night and in visually complex environments.

Signal backplate framed with a retroreflective border. Source: FHWA

Target Area/Location:

Old Town Area, with high priority to corridors identified through data analysis, community input and field review

- Truman
- White
- Duval
- Whitehead
- Eaton
- Simonton

[22] fhwasa1109.pdf

In dense urban settings, drivers are often exposed to multiple competing visual elements, including storefront lighting, parked vehicles, pedestrian activity, and closely spaced intersections. Larger signal lenses increase the visual target size of the indication, and backplates provide contrast between the signal display and the surrounding background. Retroreflective borders further enhance signal visibility during nighttime and power-out conditions by outlining the signal head in vehicle headlights.

The Manual on Uniform Traffic Control Devices (MUTCD) permits the use of 12-inch signal indications in locations where greater visibility or emphasis is needed. FHWA's Proven Safety Countermeasures program identifies signal backplates with retroreflective borders as an approved countermeasure, reporting an associated reduction in total crashes of approximately 15 percent when installed at signalized intersections[23].

Implementation Considerations

- Prioritize intersections with nighttime crash patterns, complex visual environments, higher pedestrian activity, or documented compliance concerns.
- Confirm structural and mounting compatibility when upgrading from 8-inch to 12-inch signal heads.
- Coordinate installation with planned signal equipment upgrades or maintenance cycles to improve efficiency.
- Ensure consistent application at approaches where visibility challenges are similar.

SWS 5. Curb Ramps at Intersections to be ADA-Compliant

Recommendation:

Upgrade or install curb ramps that meet ADA standards, including appropriate slopes, detectable warnings, and alignment to crossing paths.

Target Area/Location:

City-wide, with high priority to intersections identified through data analysis, community input and field review

- S Roosevelt and Douglas Circle
- White and Fleming
- S Roosevelt and Duck

[23] Backplates with Retroreflective Borders

This recommendation primarily addresses accessibility and network completeness. However, properly designed curb ramps also support safer and more predictable pedestrian movement at intersections. Federal accessibility guidance requires that curb ramps align with the intended crossing direction to avoid directing users into traffic [24].

Where curb ramps are misaligned, too steep, lack detectable warnings, or are missing entirely, pedestrians may use informal paths or enter the roadway at unintended locations. FHWA pedestrian safety guidance emphasizes that clear, well-defined pedestrian facilities improve predictability for both drivers and pedestrians [25].

Properly aligned curb ramps help direct pedestrians toward intended crossing paths. When ramps are missing, misaligned, or noncompliant, pedestrians may enter the roadway at unintended angles or use informal paths. FHWA pedestrian safety guidance emphasizes that clearly defined pedestrian facilities improve predictability and support safer interactions between drivers and pedestrians (FHWA, Pedestrian Safety Guide and Countermeasure Selection System).

Curb ramp upgrades therefore contribute to:

- improved accessibility for wheelchair users, older adults, and individuals with mobility impairments;
- clearer and more predictable crossing paths;
- reduced reliance on informal or diagonal crossing movements at intersections.

This is recommended to be considered part of the City's broader ADA compliance and pedestrian infrastructure improvement efforts.

Implementation considerations

- Treat as a network gap-closure and compliance program with clear prioritization criteria (pedestrian generators, transit access, schools, medical facilities, senior centers, and documented barriers).
- Coordinate ramp upgrades with resurfacing, signal work, and drainage projects to avoid rework.
- Confirm ramp orientation aligns pedestrians toward the intended crosswalk, not into the intersection.

[24] 2010 ADA Standards for Accessible Design | ADA.gov

[25] Pedestrian Safety Guide and Countermeasure Selection System

SWS 6. Retroreflective Signs

Recommendation:

Upgrade sign retroreflectivity and condition so regulatory and warning signs remain legible at night and during rain, consistent with traffic control device standards and maintenance practices.

Nighttime visibility plays a critical role in driver recognition and response. The Manual on Uniform Traffic Control Devices (MUTCD) requires that regulatory and warning signs be maintained so they are visible and legible under both daytime and nighttime conditions.

FHWA research on sign retroreflectivity shows that reduced retroreflectivity shortens legibility distance, particularly for older drivers, and decreases the time available for drivers to detect and comprehend sign messages[26]. Increased detection distance provides additional reaction time, which is especially important in environments with complex geometry, pedestrian activity, or unfamiliar roadway conditions.

Studies summarized by FHWA indicate that improving retroreflectivity increases sign recognition distance and improves nighttime sign conspicuity. While effectiveness varies depending on roadway context, traffic speed, and sign type, maintaining adequate retroreflectivity is widely recognized as a foundational safety practice to support driver expectancy and timely decision-making.

Target Area/Location:

City-wide, with high priority to locations identified through data analysis, community input and field review

- School zones and marked pedestrian crossing locations, including Poinciana Elementary and Virginia Street at Jose Marti Drive.
- Uncontrolled crosswalk approaches and trail crossings where warning signs are critical to driver awareness.
- Intersections with documented nighttime visibility concerns or high pedestrian activity.

In Key West, where glare, storefront lighting, wet pavement reflections, and visitor unfamiliarity can affect nighttime driving conditions, improved sign visibility supports clearer communication of regulatory and warning information.

Implementation considerations

- Inventory sign condition, placement, and retroreflectivity as part of a structured maintenance program.

[26] Methods for Maintaining Traffic Sign Retroreflectivity

- Prioritize regulatory and warning signs at locations with nighttime sensitivity, including curves, pedestrian crossings, and complex intersections.
- Replace faded or outdated sheeting with high-performance retroreflective materials appropriate for coastal and high-moisture environments.
- Pair retroreflectivity upgrades with vegetation management where intermittent obstruction reduces visibility.
- Establish inspection cycles consistent with MUTCD compliance methods to sustain long-term performance.

SWS 7. Vegetation Management and Sight Distance Improvement (City-Wide)

Recommendation:

Systematic identification and correction of blocked sight triangles and visibility constraints caused by vegetation, landscaping, or roadside obstructions, focused on intersections, driveways, and crossings where conflicts occur.

Target Area/Location:

City-wide, with high priority to locations identified through data analysis, community input and field review

- North Roosevelt
- South Roosevelt
- Truman
- 1st Street
- Private driveways referenced in PPS 3

Across multiple corridors, crash narratives and field observations identified limited visibility as a contributing condition, particularly for:

- vehicles entering from driveways or minor streets,
- pedestrians and bicyclists crossing at conflict points,
- drivers attempting turning movements with constrained gaps.

The AASHTO Policy on Geometric Design of Highways and Streets establishes minimum intersection sight distance and stopping sight distance criteria to allow drivers sufficient time to detect and respond to conflicts. When vegetation or other obstructions restrict these sight lines, drivers may experience delayed detection of approaching vehicles or vulnerable road users.

FHWA guidance in the Intersection Safety and Pedestrian Safety Guide and Countermeasure Selection System[17] notes that restricted sight distance can contribute to angle, turning, and pedestrian crashes by limiting the time available for recognition and decision-making. Restoring clear sight triangles improves early detection, supports safer gap selection, and reduces unexpected conflict conditions.

Vegetation management is therefore best understood as a safety maintenance function that preserves intended design sight distance and supports the effectiveness of other treatments such as signing, crosswalk markings, and access management.

Implementation considerations

- Use a repeatable field screening process to document sight restrictions (photos, measured sight lines, and specific obstruction type).
- Prioritize locations with injury crashes, high pedestrian and bicycle exposure, and constrained decision sight distance.
- Establish a maintenance cycle so improvements persist (especially before seasonal growth periods).
- Where the obstruction is on private property, implementation may rely on coordination and voluntary compliance rather than enforcement authority.*

** Private-property actions are context-specific and may be most feasible as voluntary or incentive-based coordination, depending on City authority and property owner willingness.*

SWS 8. Reevaluate Daylighting

Recommendation:

Review and refine existing daylighting practices at intersections and high-conflict corners to ensure curb clearances and parking setbacks actually preserve sight lines for drivers, pedestrians, and bicyclists. Where needed, consider quick-build tools such as flexible delineators, painted or modular corner extensions, and targeted parking management adjustments.

Parked-vehicle crashes represent the most frequently occurring crash type in Key West, accounting for approximately 32 percent of all reported crashes, though they are generally low in severity. Nearly 60 percent of these crashes occur on City-maintained streets, with about 80 percent concentrated in Old Town.

Target Area/Location:

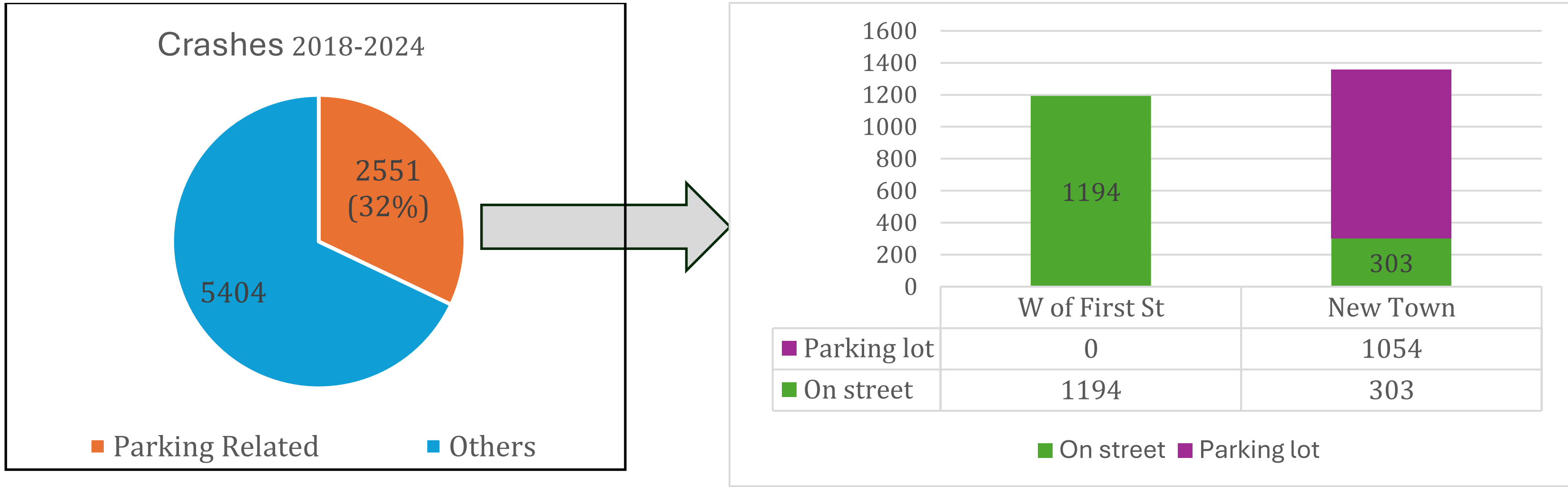
City-wide, with high priority to hotspot locations identified through data analysis, community input and field review, listed below in the table.

Review of crash narratives and field conditions indicates that these patterns are closely linked to visibility constraints created by on-street parking and curbside activity. At intersections, driveways, and other high-conflict locations, parked vehicles often intrude into functional sight triangles, delaying driver recognition of cross traffic and people walking or bicycling during turning movements. These conditions increase the likelihood of minor collisions and reinforce the need for targeted visibility management in constrained environments.

Location: 1st St @ Staples St

Rank	Hotspot Streets with high parked vehicle crashes reported	Parked-Vehicle Crashes (2018 – 2024)
1	Duval St	63
2	Simonton St	43
3	Whitehead St	35
4	Eaton St	30
5	Truman Ave	29
6	Caroline St	26
7	White St	25
8	Olivia St	22
9	Petronia St	21
10	Fleming St	20

Existing daylighting treatments are present at several locations but are not consistently effective, example shown in the figure to the left. Field review shows that daylighting may fail to preserve adequate sight distance when curb setbacks are too short for prevailing approach speeds and vehicle sizes, when compliance with no-parking restrictions is inconsistent, or when corner geometry allows parking to encroach into the functional sight triangle. These conditions create situations where drivers commit to turns with incomplete visual information, increasing the likelihood of turning-related conflicts.



Parking-related crashes account for approximately 32% of all crashes in Key West. The majority of on-street parking crashes are concentrated in Old Town, including Upper Duval and the Bahamas Village area, while parking-related crashes in New Town occur primarily within off-street parking lots, with relatively few occurring on-street.

Restoring functional sight triangles is consistent with AASHTO intersection sight distance guidance, which establishes minimum visibility criteria to allow drivers adequate time to detect and respond to conflicting vehicles and pedestrians. When parked vehicles obstruct these sight lines, available reaction and gap-selection time is reduced. FHWA pedestrian safety guidance similarly emphasizes that improving visibility at intersections enhances driver yielding behavior and reduces conflict risk. While daylighting does not carry a single crash modification factor, it directly addresses the visibility mechanism associated with turning and angle conflicts in constrained urban environments.

Daylighting addresses this risk by restoring mutual visibility at conflict points. Clear sight lines allow drivers to identify cross traffic earlier and reduce the likelihood that pedestrians and bicyclists are concealed behind parked vehicles during critical decision moments.

Context-specific strategies to consider as part of the project include:

- Re-evaluate existing daylighting at intersections – Assess whether current curb clearances and parking setbacks adequately preserve sight lines for drivers, pedestrians, and bicyclists.
- Flexible delineators at corners - Install delineators at locations where parked vehicles continue to encroach into critical sight triangles, particularly at high-turnover parking areas.
- Targeted parking management adjustments – Where elevated conflict frequencies are observed, consider replacing the first on-street parking stall on hotspot corridors with short-duration loading or drop-off zones to reduce visibility obstructions while maintaining access.
- Painted or modular corner extensions (pilot treatments) - Use paint, modular curbing, or removable elements to visually tighten corners, reinforce daylighting intent, and reduce turning speeds prior to permanent construction.
- Advisory speed / visual narrowing treatments (select locations) - Apply visual narrowing or advisory markings on streets with frequent sideswipe or maneuver-related crashes, where consistent with corridor function and community context.
- Curb extension feasibility at hotspot locations - Analyze turning envelopes, curb radii, and clearance requirements at top parked-vehicle-related crash locations to determine where curb extensions may improve sight lines and pedestrian safety.

Note: *Recommendations are context-sensitive and non-binding. Final selection and implementation should be based on field review, operational needs, and stakeholder coordination.*

Implementation considerations

- Validate “daylighting effectiveness” in the field by checking actual sight triangles with parked vehicles present.
- Focus first on corners with a high frequency of observed conflicts, high pedestrian activity, and a documented pattern of parked-vehicle sight obstruction in crash narratives.
- Pilot with removable materials (paint, modular curb, delineators) before permanent construction, then refine based on operations and stakeholder feedback.
- If converting a parking space, consider replacements like short-duration loading and drop-off zones to maintain access needs while restoring visibility.

Benefit Cost Analysis for SWS

Project		Cost				Benefit							BC Ratio (=I/C)	Rank
		Cost of Project Component, A	Service Life Span	Capital Recovery Factor, B	Total Annual Cost, C (=A*B)	Correctable Crashes, D	Total Corrrectable crashes per year, E (=D/7)	Crash reduction factor (CRF), F	No of crashes correctable with treatment, G (=E*F)	Cost per corrected crash for road type, H	Benefit, I (=G*H)	CMF Clearning House ID		
SWS 1	Sign Consolidation and Clarity[27]	$1,000,000.00	20	0.0736	$73,600.00	1295	185	15%	27.8	$161,173.00	$4,472,550.75	62	60.77	**15**
SWS 2	High Visibility Crosswalks[28]	$103,251.00	20	0.0736	$7,599.27	26	4	40%	1.5	$161,173.00	$239,457.03	4123	31.51	**29**
SWS 3	Pavement Marking Improvements[29]	$277,323.00	20	0.0736	$20,410.97	124	18	18%	3.2	$245,281.00	$782,095.99	94	38.32	**28**
SWS 4	Signal Head Improvements[30]	$168,000.00	20	0.0736	$12,364.80	289	41	15%	6.2	$125,974.00	$780,138.99	1410	63.09	**14**
SWS 5	Curb Ramp Improvements[31]	$30,000.00	20	0.0736	$2,208.00	6	1	11%	0.1	$125,974.00	$11,877.55	2375	5.38	**18**
SWS 6	Retroreflective Signage Improvements[32]	$100,000.00	20	0.0736	$7,360.00	500	71	15%	10.7	$125,974.00	$1,349,721.43	62	183.39	**27**
SWS 7	Vegetation Management and Sight-Distance Improvements	$500,000.00	2	0.5302	$265,100.00	485	69	48%	33.3	$125,974.00	$4,189,535.31	307	15.80	**17**
SWS 8	Daylighting Reevaluation	$300,000.00	20	0.0736	$22,080.00	750	107	48%	51.43	$125,974.00	$6,478,662.86	307	293.42	**20**

[27] Assumed 1,000 signs @ $1,000/ea will be necessary
[28] Cost assumed 10 crosswalks each at 30 ft length
[29] Cost was $4.99/ft for the length of the corridors
[30] Costs include replacing 4 signals per intersection @ 28 intersections @ $1,500/signal
[31] Cost assumed $5,000 per curb ramp, and 2 curb ramps for each of 3 intersections
[32] Costs assumed 100 signs needed @ $1,000 per sign

J - Targeted Safety Deployments (TSD)

Targeted Safety Deployments consist of focused, location-specific treatments applied at a defined set of priority intersections and crossings. Unlike corridor-wide strategies, these deployments respond to observed crash patterns and exposure risks at individual locations where targeted interventions can deliver near-term safety benefits. Locations were identified based on crash history, field observations, and stakeholder input, with emphasis on pedestrian and bicycle safety in high-activity areas.

Recommended Projects

TSD-1: Pedestrian and Bicycle Warning Signs (Short-Term)

Recommendation:

Install MUTCD-compliant pedestrian (W11-2) and bicycle (W11-1) warning signs at priority intersections with documented pedestrian and bicycle crash history or high crossing activity, particularly in Old Town and other high-activity areas, to improve driver awareness and yielding behavior.

Crash data and field review identified multiple intersections with observed pedestrian and bicycle conflicts, particularly in Old Town and along high-activity corridors. These locations experience frequent crossing activity combined with turning movements and limited driver expectancy.

This deployment recommends installation of MUTCD-compliant pedestrian (W11-2) and bicycle (W11-1) warning signs at selected high-priority intersections. The intent is to reinforce

Target Area/Location:

- Simonton & Greene St
- Duval & Greene St
- Duval & Eaton St
- Duval & Southard St
- Southard & Whitehead St
- Southard & Olivia St
- Duval & Truman Ave
- Truman Ave & Windsor Ln
- Truman Ave & White St
- N Roosevelt Blvd & 1st St

driver awareness of non-motorized activity in locations where pedestrian and bicycle presence may not be immediately apparent, especially to visitors or unfamiliar drivers.

Warning signs are not intended to replace geometric or operational improvements but serve as an immediate, low-cost measure to improve driver recognition and yielding behavior. When applied selectively at documented problem locations, these signs support improved situational awareness and complement other safety treatments.

Implementation considerations

- Confirm sign placement and sight distance to ensure visibility without adding visual clutter
- Coordinate with existing signing to avoid redundancy
- Prioritize locations with documented pedestrian and bicycle crash history or high exposure
- Monitor post-installation conditions to ensure signs remain effective and visible

TSD-2: Targeted Traffic Calming Measures (Short-Term)

Recommendation:
Implement targeted, context-sensitive traffic calming treatments at selected high-risk intersections based on crash history and field conditions. Treatments may include raised crossings, curb extensions, tightened curb radii, hardened centerlines, and enhanced crosswalk visibility to reduce vehicle speeds and improve pedestrian and bicycle safety.

Crash analysis shows a concentration of pedestrian and bicycle crashes at a subset of intersections, including both stop-controlled and signalized locations. These crashes frequently involve turning movements, higher-than-desired approach speeds, and limited crossing visibility. The priority locations identified for the project based on the crash data is given in table below.

This deployment advances targeted traffic calming treatments at selected intersections based on crash history and field conditions. Rather than applying uniform measures citywide, treatments will be evaluated and tailored to individual locations to address specific risk factors.

At stop-controlled intersections, evaluation may include raised crossings or raised intersection treatments to reinforce pedestrian priority and reduce vehicle speeds. At signalized intersections, measures may include curb extensions, hardened centerlines, enhanced crosswalk visibility, and advance yield treatments to reduce crossing distance and improve driver awareness.

Final treatment selection will be based on geometric feasibility, emergency access needs, drainage constraints, and coordination with City departments and stakeholders.

Implementation considerations

- Conduct site-specific field reviews to confirm geometric feasibility
- Coordinate with emergency services to maintain access
- Evaluate drainage impacts for raised treatments
- Apply context-sensitive designs rather than standard templates
- Implement initially with quick-build materials where appropriate

Target Locations - Bicycle and Pedestrian Involved Crashes (2018 – 2024)

Street	Type	K	A	B	C	O	Total
Simonton & Greene St	Stop Controlled	0	2	1	3	1	**7**
Duval & Greene St	Signalized	0	3	2	1	2	**8**
Duval & Caroline St	Signalized	0	0	3	0	1	**4**
Duval & Eaton St	Signalized	0	0	2	1	3	**6**
Duval & Southard St	Signalized	0	0	3	2	2	**7**
Duval & Petronia St	Stop Controlled	0	0	2	1	2	**5**
Southard & Whitehead St	Signalized	1	0	1	0	3	**5**
Whitehead & Olivia St	Stop Controlled	0	0	1	1	2	**4**
Duval & Truman Ave	Signalized	0	1	1	2	4	**8**
Eaton & Elizabeth St	Stop Controlled	0	1	2	1	0	**4**
Eaton & Grinnel St	Signalized	0	2	1	1	0	**4**
Caroline & Margaret St	Stop Controlled	0	1	1	0	1	**3**
Total		**1**	**10**	**20**	**13**	**21**	**65**

TSD-3: Crosstown Greenway Crossing Improvements (Short-Term)

Recommendation:
Enhance crossings along the Crosstown Greenway at key intersections through improved pavement markings, wayfinding, and visibility treatments, and evaluate the feasibility of HAWK pedestrian signals or raised intersection treatments where warranted, to improve safety, legibility, and continuity for Greenway users.

Target Area/Location:

- 1st & Staples Ave
- Crosstown Greenway & Kennedy Dr
- S Roosevelt & Duck Ave

Crosstown Greenway Bicycle and Pedestrian Crashes (2018-2024)				
K	**A**	**B**	**C**	**O**
0	3	10	6	4

The Crosstown Greenway functions as a primary east–west bicycle and pedestrian spine in Key West and intersects several higher-volume roadways. Crash data show a total of 23 reported bicycle- and pedestrian-related crashes along the Greenway influence area during the study period, including 3 incapacitating injury crashes and 10 non-incapacitating injury crashes. Although no fatalities were recorded, the presence of serious injuries highlights the need for focused crossing improvements.

Field observations indicate that several crossing locations lack consistent visual emphasis, advance driver awareness, and clear user priority. At some intersections, pavement markings are faded or inconsistent, and driver expectancy for trail crossings appears limited. These conditions can reduce yielding compliance and increase exposure for people walking and bicycling.

This project proposes targeted crossing and marking enhancements at three priority locations along the Greenway to improve visibility, reinforce continuity, and strengthen driver awareness. Treatments may include:

- High-visibility crosswalk or trail crossing markings
- Advance yield markings and signage where appropriate
- Greenway-specific wayfinding and continuity elements
- Intersection control refinements to clarify priority

At select locations with higher volumes or documented conflicts, the City may evaluate additional control strategies such as a pedestrian hybrid beacon (HAWK) or a raised intersection treatment to provide stronger visual and operational emphasis. The intent is to improve safety, legibility, and user comfort for

Greenway travelers while maintaining appropriate operation of intersecting roadways.

Implementation Considerations

- Confirm pedestrian and bicycle volumes and evaluate applicable control warrants where relevant
- Coordinate treatments with existing signal timing and intersection control
- Use durable materials visible under nighttime and wet conditions
- Maintain consistent Greenway branding and wayfinding across crossings
- Align installation with resurfacing or scheduled maintenance where feasible

TSD-4: Crosstown Greenway Intersection Reconfiguration Study (Long-Term)

Target Area/Location:

- Staples & 5th St
- Staples & 6th St
- Staples & 7th St
- Staples & 8th St

Recommendation:
Conduct a planning-level feasibility study to evaluate the potential conversion of selected stop-controlled intersections along the Crosstown Greenway to mini-roundabouts, or where space and operations permit, full roundabouts.

Given the constrained right-of-way along much of the Greenway, mini-roundabouts may be more appropriate in several locations. However, the study would assess intersection-specific conditions to determine the most suitable configuration based on available space, traffic volumes, bicycle activity, emergency access needs, and neighborhood context.

This effort builds on the crash patterns and crossing observations identified under TSD-3. Rather than focusing solely on markings and visibility, this recommendation examines whether geometric intersection control could:

- Reduce vehicle speeds through deflection
- Minimize severe angle and turning conflict
- Improve yielding behavior
- Support smoother, more continuous movement along the Greenway
- Enhance corridor legibility through consistent intersection treatment

The study would also evaluate how potential roundabout conversions could coordinate with the existing roundabout at

Staples & 4th Street to create a more cohesive half-mile segment with consistent operating characteristics.

This recommendation is limited to evaluation and does not commit the City to construction. The goal is to determine whether intersection reconfiguration would provide long-term safety and operational benefits under current and future conditions.

Implementation Considerations:

- Conduct intersection-level feasibility screening, including turning path analysis
- Evaluate impacts to parking, drainage, utilities, and adjacent properties
- Engage residents and corridor stakeholders early in concept development
- Coordinate with resurfacing cycles and capital planning timelines
- Integrate findings with broader Greenway and network safety planning efforts

Benefit Cost Analysis for TSD

Project		Cost				Benefit							BC Ratio (=I/C)	Rank
		Cost of Project Component, A	Service Life Span	Capital Recovery Factor, B	Total Annual Cost, C (=A*B)	Correctable Crashes, D	Total Corrrectable crashes per year, E (=D/7)	Crash reduction factor (CRF), F	No of crashes correctable with treatment, G (=E*F)	Cost per corrected crash for road type, H	Benefit, I (=G*H)	CMF Clearning House ID		
TSD 1	Pedestrian and Bicycle Warning Signage	$ 50,000.00	20	0.0736	$ 3,680.00	52	7	15%	1.1	$ 125,974.00	$ 140,371.03	62	38.14	2
TSD 2	Traffic Calming	$ 123,901.20	20	0.0736	$ 9,119.13	65	9	46%	4.3	$ 125,974.00	$ 538,088.94	136	59.01	33
TSD 3	Crosstown Greenway Crossing Improvements	$ 51,625.00	20	0.0736	$ 3,799.60	11	2	46%	0.7	$ 245,281.00	$ 177,303.12	136	46.66	21
TSD 4	Crosstown Greenway Intersection Reconfiguration Study	$ 400,000.00	20	0.0736	$ 29,440.00	8	1	24%	0.3	$ 245,281.00	$ 67,277.07	9445	2.29	34

K - Private Property / Non-Jurisdictional Safety Projects (PPS)

Projects in this category address safety risks that originate at private driveways or on-site conditions but affect safety on adjacent public roadways. These recommendations are advisory and focus on improving visibility, reducing conflicts, and reinforcing pedestrian and bicyclist priority at high-conflict driveway locations. Improvements located entirely on private property are not City-funded capital projects. The City's role is limited to coordination, permitting, and implementation of any elements within the public right-of-way, consistent with local authority and applicable regulations.

Target Area/Location for PPS 1-3:

High conflict driveways on N Roosevelt (Triangle to Truman) and S Roosevelt (Triangle to Berta), as identified through field review

Recommended Projects

PPS-1: Private Driveway Sight Distance Improvement Program

Recommendation

Coordinate with private property owners to improve sight distance and visibility at high-conflict driveways through context-sensitive driveway design treatments, where feasible.

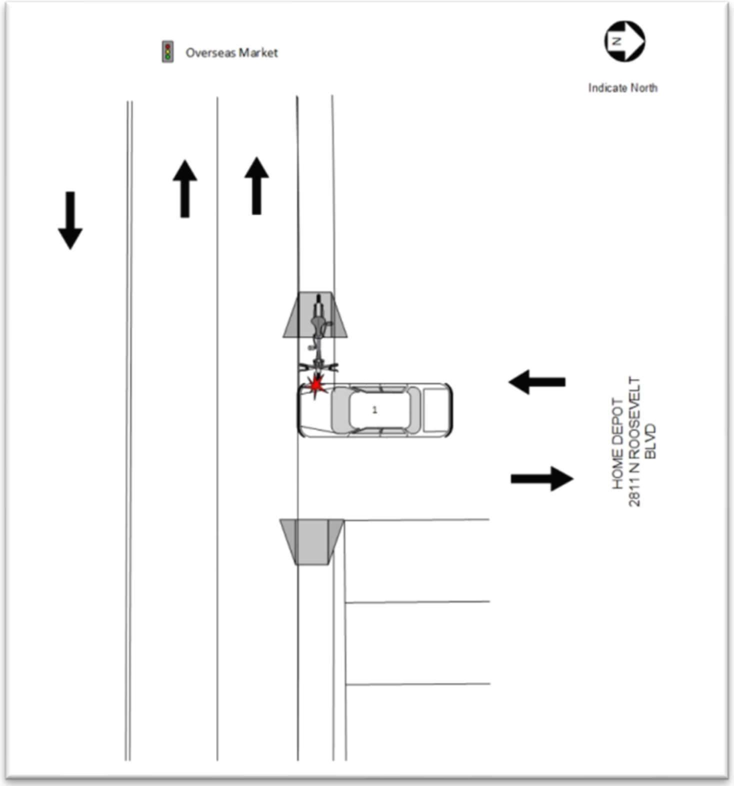
Crash analysis and field observations along North Roosevelt Boulevard and South Roosevelt Boulevard identified a pattern of conflicts at private driveway. These locations experience high volumes of pedestrian, bicycle, and micromobility activity, combined with frequent turning movements into and out of private properties. Crash narratives indicate that drivers exiting driveways often have delayed recognition of pedestrians and bicyclists traveling along adjacent sidewalks, increasing the likelihood of turning and angle crashes.

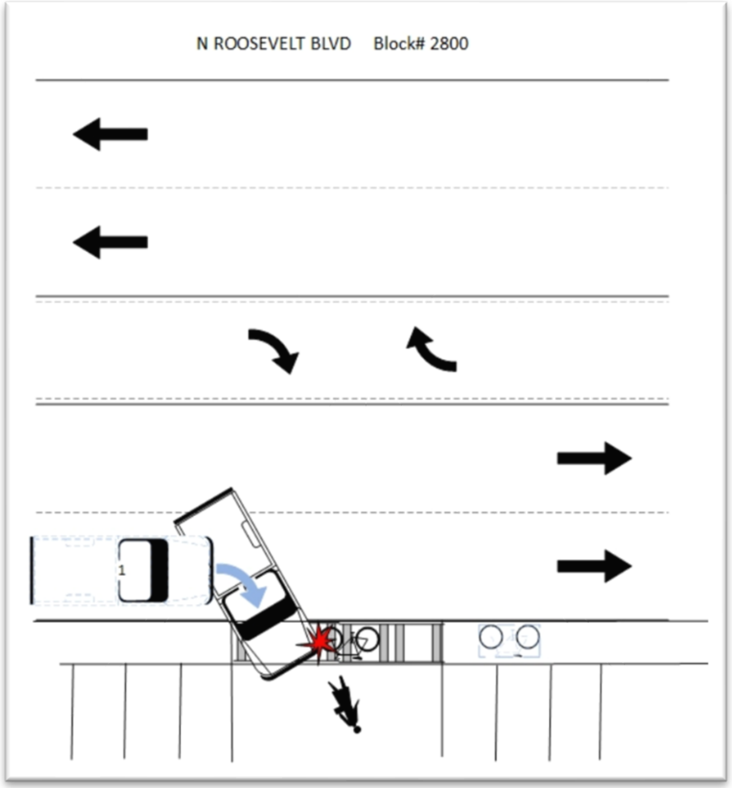
A detail analysis of the driveway density and crash data is presented in Appendix G. A total of 130 crashes resulting in 14 KSI and 88 other injury crashes were reported between 2018 and 2024. During the same timeframe, more than 30 crashes were reported on S Roosevelt associated with limited sight distance.

Several driveways along these corridors contribute to elevated crash exposure due to wide curb cuts, poor vertical alignment, and driveway geometry that does not reinforce pedestrian priority.

Crash diagrams of typical crashes along the corridors is shown in figure below.

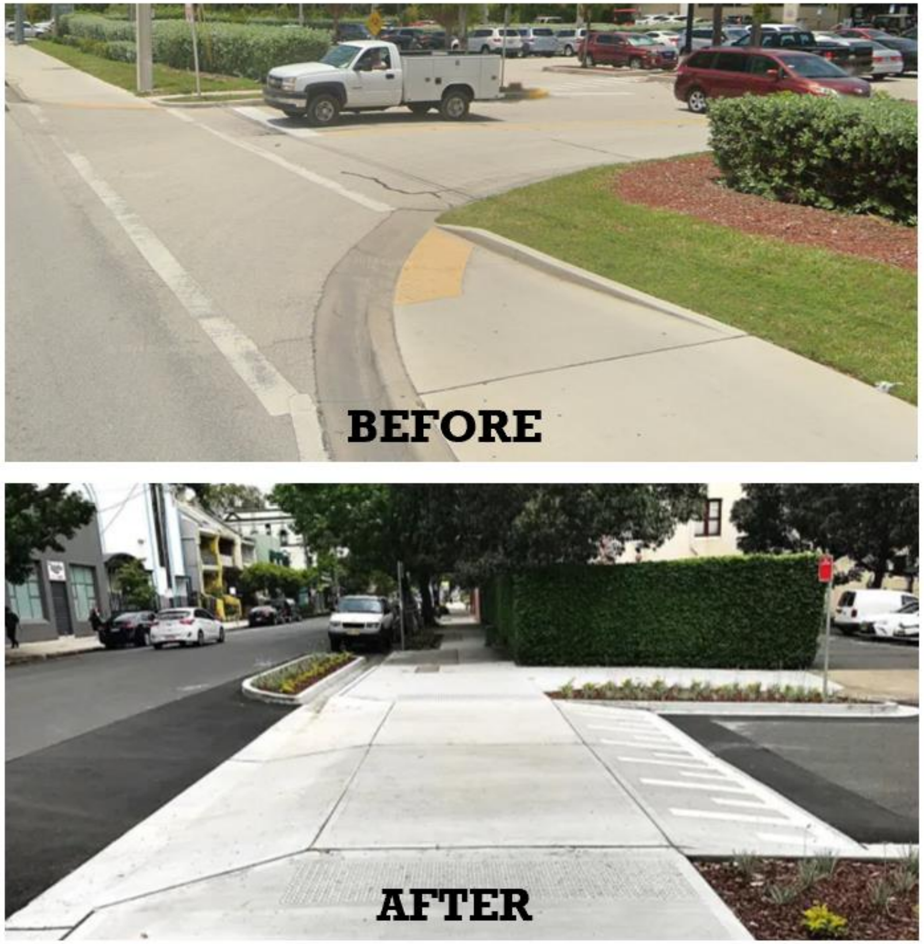
	N Roosevelt Bicycle-Pedestrian related Driveway Crashes (2018-2024)				
	Crashes	Driver made contributing action	KA	BC	O
Bike	122	115	13	81	28
Pedestrian	8	6	1	7	0
Total	**130**	**121**	**14**	**88**	**28**





In response, this program focuses on evaluating and improving driveway design at select high-conflict locations through voluntary coordination with property owners. Potential strategies include: 1) raising driveway crossings to sidewalk elevation, 2) retrofitting driveway aprons to remain level with sidewalks, and 3) modifying driveway geometry to improve sight lines to pedestrians, bicyclists, and approaching traffic. Treatments are intended to reinforce pedestrian priority and reduce conflict severity rather than expand driveway capacity.

An illustration of a recommended strategy is shown in the figure.



Constant Sidewalk Elevation treatment recommended by FDOT Multi-Modal Access Management Guidebook

Cost–Benefit Considerations

Driveway sight distance improvements are relatively low-cost when implemented as part of private site modifications or coordinated with public right-of-way improvements. While these treatments do not correspond to a single crash modification factor, they directly address visibility-related conflicts involving vulnerable road users. Benefits are driven by reduced conflict severity, improved driver expectancy, and enhanced pedestrian safety in high-exposure locations.

Implementation Considerations

- Coordination with private property owners is required; participation is voluntary
- City role is limited to coordination, permitting, and any elements within the public right-of-way

- Drainage and stormwater runoff constraints must be evaluated, particularly where driveway slopes currently convey runoff away from the sidewalk
- Raised driveway crossings may require additional drainage design to prevent ponding, cross-slope issues, or water intrusion onto adjacent properties
- Feasibility depends on existing grades, curb and gutter configuration, underground utilities, and compliance with ADA cross-slope requirements
- Emergency access, service vehicle turning needs, and site circulation must be maintained
- Opportunities to implement improvements during private redevelopment or resurfacing cycles should be prioritized
- Opportunities to integrate improvements during private redevelopment or site circulation updates

PPS-2: Pedestrian and Bicycle Warning Signs at Driveways

Recommendation

Install MUTCD-compliant pedestrian (W11-2) and bicycle (W11-1) warning signs within the public right-of-way at high-conflict private driveway locations, based on engineering judgment.

Field observations identified multiple driveways where drivers exiting private property have limited awareness of pedestrians, bicyclists, and micromobility users traveling along adjacent sidewalks and shared-use paths. These conditions are most common at wide commercial driveways with high turnover and frequent turning movements. Crash narratives and near-miss observations indicate that driver expectancy is often low at these locations.

This project provides targeted warning signage near high-conflict driveways to alert drivers to the presence of pedestrians and bicyclists. Signs would be placed within the public right-of-way and used selectively to reinforce awareness at locations with documented conflict patterns, limited visibility, or high pedestrian activity.

Cost–Benefit Considerations
Pedestrian and bicycle warning signs are low-cost, quick-build treatments that can be implemented with minimal design effort. While the individual crash reduction effect may be modest, the benefit–cost ratio is favorable due to low installation and maintenance costs and the ability to target locations with elevated exposure and risk.

Implementation Considerations

- Signs installed only within the public right-of-way
- Final placement based on sight distance, visibility, and avoidance of sign clutter
- Use limited to high-conflict locations to preserve sign effectiveness
- Coordination with vegetation management and driveway design improvements recommended.

PPS-3: Vegetation Management at Driveways

Recommendation
Coordinate with private property owners to address vegetation that obstructs sight lines at high-conflict driveway entrances adjacent to public roadways.

Field reviews identified multiple locations where landscaping and vegetation near driveway entrances obstruct visibility between exiting drivers and pedestrians, bicyclists, and approaching vehicles. These obstructions reduce reaction time and contribute to delayed recognition at conflict points, particularly in areas with high pedestrian and micromobility activity.

Vegetation-related sight obstructions are an observed issue and were frequently noted in field observations along North Roosevelt Boulevard and South Roosevelt Boulevard.
This project focuses on identifying driveway locations where vegetation interferes with required sight triangles and coordinating corrective action with property owners. Actions may include trimming, removal, or ongoing maintenance of vegetation to maintain clear visibility between driveways and adjacent sidewalks and travel lanes.

Cost–Benefit Considerations
Vegetation management is a low-cost safety measure with

immediate safety benefits. While it does not correspond to a formal crash modification factor, maintaining clear sight lines is foundational to safe operations and supports the effectiveness of other safety treatments. Benefits are realized through improved visibility, reduced conflicts, and lower likelihood of crashes involving vulnerable users.

Implementation Considerations

- Vegetation management on private property remains the responsibility of the property owner
- City role includes coordination, notification, and enforcement of existing sight distance requirements
- Periodic follow-up needed to prevent re-encroachment
- Opportunities to pair vegetation management with signage or driveway design improvements

Benefit Cost Analysis for PPS

Project		Cost				Benefit							BC Ratio (=I/C)	Rank
		Cost of Project Component, A	Service Life Span	Capital Recovery Factor, B	Total Annual Cost, C (=A*B)	Correctable Crashes, D	Total Corrrectable crashes per year, E (=D/7)	Crash reduction factor (CRF), F	No of crashes correctable with treatment, G (=E*F)	Cost per corrected crash for road type, H	Benefit, I (=G*H)	CMF Clearning House ID		
PPS 1	Sidewalk-Level Driveway Crossings	$1,280,312.00	20	0.0736	$94,230.96	130	19	46%	8.5	$161,173.00	$1,376,877.91	136	14.61	24
PPS 2	Pedestrian and Bicycle Warning Signs	$124,000.00	20	0.0736	$9,126.40	130	19	15%	2.8	$161,173.00	$448,981.93	62	49.20	26
PPS 3	Vegetation Management and Sight Distance Improvements	$150,000.00	2	0.5302	$79,530.00	150	21	48%	10.3	$161,173.00	$1,657,779.43	307	20.84	25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